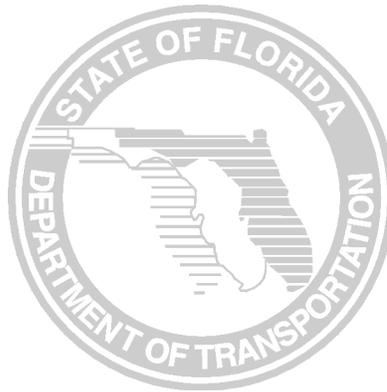


Florida Department of Transportation

# Design Build Program Evaluation



*November 2004*  
*Evaluation for July 1996 – June 2003*

Produced by the Florida Department of Transportation  
Project Management, Research & Development Office  
605 Suwannee Street, MS 40  
Tallahassee, Florida 32399-0450

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# Design-Build Contracting

## BACKGROUND

The Design-Build technique was the first innovative contracting concept to be used in Florida. It originated with the 1987 legislative statute authorizing the Department to experiment with a \$50 million pilot program. Resurfacing, bridge replacement, new construction, multi-lane new construction, reconstruction, and fixed capital outlay and parking garages were all identified as potential Design-Build projects. The use of the Design-Build concept opened up a new degree of flexibility for innovations by both the design engineer and the construction contractor, while allowing the project design to be tailored to the contractor's strengths. In addition, Design-Build contracting allowed the contractor to optimize his work force, equipment, and scheduling.

In 1995, the Florida Legislature authorized the Department to use the Design-Build process for buildings, major bridges, and rail corridor projects. In 1996, this authority was further expanded to include all project types as a part of the "innovative" practices package. The Department is required to comply with the annual contracting monetary cap set by the statute for Innovative Contracting.

In November 2001, the Florida Governor announced an economic stimulus initiative to accelerate 63 road building projects with an estimated cost of \$668 million. The legislation authorized the Department of Transportation, until June 30, 2003, to combine right-of-way services with the design and construction phases of any project awarded, except for a resurfacing or minor bridge project. It also allows the Department to enter into Design-Build contracts prior to obtaining title to all necessary right of ways. However, construction activities are prohibited on any portion of a project for which the department has not obtained title. These changes allow construction to begin much sooner than originally scheduled.

## OBJECTIVES

There are three main objectives to Design-Build:

**Time:** Compared to traditional contract procurement, time is saved when the project construction begins during design. Design-Build assigns the design and construction to one firm, and where possible, allows construction to begin before plans are complete. This reduces administrative costs and effort.

**Responsibility:** Design-Build provides a single point of responsibility for quality, cost and schedule from design through construction. This reduces change orders and claims due to errors and omissions.

**Innovation:** Design-Build allows the contractor maximum flexibility to choose innovative designs, materials and construction techniques.

## TECHNIQUE

Design-Build combines the design and construction phases of a project into a single contract. The FDOT establishes the design criteria package from which the prospective bidders then develop design proposals that optimize their construction abilities. These projects allow the contractor to participate in the design in an effort to reduce costs and expedite construction. The submitted proposals are rated by a FDOT Technical Review Committee on factors such as design quality, timeliness, warranties, coordination, aesthetics, maintainability, construction methods, management capability, environmental sensitivity, MOT, maintenance, etc.

By allowing the contractor to optimize his or her workforce, equipment, and scheduling, the Design-Build concept opens up a new degree of flexibility for innovation. However, along with the increased flexibility, the contractor must also assume greater responsibility for long-term performance through the provision of a multi-year guarantee/warranty. This method helps focus the contractor and designers on working together as a team to accomplish the project goals and provide a quality, durable product.

Once a project has been identified to advance as a Design-Build project, the Department's Project Manager is responsible for coordinating the procurement of Design-Build services and overseeing the engineering/inspection and construction of the project. It takes a multi-disciplined team to develop the RFP that includes the design and construction criteria, evaluating the letters of interest, grading the proposals, and overseeing the design, construction and CEI of the project.

After the short-listed firms for the design-build project are selected, a pre-bid meeting is held to discuss and clarify any project concerns. This provides a forum for all concerned parties to clarify the scope of service and for the Design-Build firms to ask questions.

There are two types of Design-Build bidding that are used. (1) Low Bid – for scopes that are precise and clearly defined, and (2) Adjusted Score – for scopes where the end results are well defined, but the means and methods and design options are not specified and design options are available to the bidder.

From the contracting agency's perspective, the potential time savings are a significant benefit. Since design and construction are performed through one procurement process, construction can begin before all design details are finalized. Time to complete a project can be shortened by overlapping design and construction with reduced administrative costs. Also, because both design and construction are performed under the same contract, claims for design efforts or construction delays due to redesign are not allowed, and the potential for other types of claims is greatly reduced.

## DESIGN- BUILD QUALITY

The overall quality of Design-Build projects is equal to that of design-bid-build projects. Design-Build projects are built to the same construction specifications, using the same construction and inspection methods as design-bid-build projects. If an item of work on the project is not covered by the Department's Standard Specifications and implemented modifications, an individually signed and sealed Technical Special Provision is required. These are discussed at the pre-bid meeting prior to the information cut-off date. Also, any requests for a design variance or design exception must be validated prior to the information cut-off date.

## PROJECT SELECTION GUIDELINES

Design-Build contracting should be considered for projects with the following characteristics:

1. Projects that demand an expedited schedule and can be completed earlier.
2. Projects that require minimum right-of-way acquisition and utility relocation.
3. Projects that can have a well-defined scope for all parties (design & construction).
4. Projects that have room for innovation in the design and/or construction effort.
5. Projects with low risk of unforeseen conditions.
6. Projects with low possibility of significant change during all phases of work.
7. Projects with well-defined, non-complex environmental permitting requirements.

Examples of projects that can be good Design-Build contracting candidates:

1. Major Bridges
2. Minor Bridges
3. ITS (computer signalized traffic)
4. Intersection Improvements (with known utilities)
5. Buildings, office buildings, rest areas, welcome stations, pedestrian overpasses (minor bridge), etc.
6. Interstate Widening
7. Rural Widening
8. Fencing
9. Landscaping
10. Lighting
11. Sidewalks
12. Signing
13. Signalization
14. Guardrail
15. Resurfacing

Examples of projects that may not be good Design-Build contracting candidates are listed below. Use of Design-Build contracting on these types of projects requires written approval by the State Roadway Design Engineer:

1. Major bridge rehab/repair with significant unknowns
2. Rehabilitation of movable bridges

3. Urban construction/reconstruction with major utilities, major subsoil problems, hazardous material, major right-of-way requirements, complex environmental permitting requirements, or other major unknowns

## DESIGN-BUILD MAJOR

Major Design-Build contracts are allowed under *Section 337.11(7), Florida Statutes*. The Legislature allows the use of Design-Build contracts to expedite the project implementation and completion schedule of certain construction projects. Simply stated, Design-Build major projects include bridges where the estimated cost for construction is \$10 million and over, buildings, rail corridor projects and limited access facilities.

*Section 337.11(7), Florida Statutes provides the “Department may combine the design and construction phases of a building, a major bridge, or a rail corridor project into a single contract. Such contract is referred to as a “Design-Build contract”.*

These types of Design-Build contracts are NOT included in the \$120 million statutory cap for Design-Build projects.

*Section 337.11(7), Florida Statutes further provides: “If the head of the department determines it is in the best interests of the public, the department may combine the right-of-way services and design and construction phases of any project into a single contract, except for a resurfacing or minor bridge project the right-of-way services and design and construction phases of which may be combined under s. 337.025. Such contract is referred to as a Design-Build contract.”*

## DESIGN-BUILD MINOR (Statutory Cap)

Design-Build Minor contracts are defined as any other transportation projects not previously allowed under *Section 337.11(7), Florida Statutes*. This would exclude Design-Build Major projects (buildings, major bridges, rail corridor projects and limited access facilities). Design-Build Minor contracts are allowed under *Section 337.025, Florida Statutes* and are calculated in the \$120 million cap. Therefore, Design-Build Minor contracts must be submitted to and approved by the Project Management, Research and Development Office for statutory compliance.

## DESIGN-BUILD CONTRACT FINDINGS ON ACTIVE PROJECTS:

Thirty-nine (39) Design-Build projects were active as of June 30, 2003.

### Active Projects by Work-Mix

Number of Projects	Work-Mix	Bid Amount	Bid Days
4	Add Lanes & Reconstruction	\$109,489,961	3,274
6	Add Lanes & Rehab. Pavement	\$227,495,677	4,460
2	Bike Paths	\$11,545,144	920
2	Add Thru Lanes	\$63,142,344	1,050
4	Replace High Level Bridge	\$301,248,000	5,282
2	Bridge - New	\$27,295,600	1,644
2	Bridge-Repair/ Rehabilitation	\$10,994,000	820
2	ITS	\$11,289,926	955
2	Rest Area	\$42,620,572	1,250
3	Resurfacing	\$29,376,487	4,053
2	Misc. Construction	\$3,851,900	766
1	Sidewalk	\$14,811,268	641
1	Signalization	\$1,016,599	280
1	Corridor Improvements	\$2,834,866	300
1	Drainage Improvements	\$10,977,000	260
1	Fencing	\$4,160,892	340
1	Interchange (Major)	\$62,150,000	1,095
1	Mill/Resurface	4,871,000	295
1	New Road Construction	\$31,141,600	900
<b>39</b>	<b>TOTALS</b>	<b>\$970,312,836.00</b>	<b>28,585</b>

## *DESIGN-BUILD COMPLETED PROJECTS*

### **DESIGN- BUILD MAJOR**

Design-Build Major is used throughout the Department for various phases of a construction project. This includes Utility, Railroad or Other Agency<sup>1</sup> phase types.

### **DESIGN-BUILD COST ANALYSIS**

Thirty-three (33) Design-Build projects have been completed. The work mix on these contracts varied from resurfacing projects and adding lanes to bridge replacement and ITS (Intelligent Transportation System). The Official DOT estimate for these 33 projects was \$162 million. The amount bid was \$135 million. The amount paid, was \$137 million.

Resurfacing projects are the most successful Design-Build project work-mix according to the Design-Build data in percentage of cost paid compared to the Official estimate. This type of work-mix ranged from a cost under-run from 0% to -56% under the official estimate. The average cost under-run is -35%. There were no projects over budget in this work-mix. Seven resurfacing projects were completed for a total cost of \$15 million; the Department estimate was \$22 million.

Pedestrian overpasses are another successful Design-Build project type. With five (5) completed projects, the cost over-run is 1%. The Official DOT estimate for these projects was \$8 million, with a bid amount of \$8,076,081 and a total pay-out of \$8.1 million.

Bridge Replacement was used for three (3) projects for a cost over-run of 5%. The Official estimate for these projects was \$46,507,578, with a final amount paid of \$48,215,701.

Six of the projects had a cost over-run of 10% or higher. This was due to the work being changed or modified on the projects, rework or design changes. To have a successful project, it is imperative to have a well-defined scope of services.

Every significant cost and time over-run in Design-Build contracts has been due to a change or omission in the project's scope of services. The greatest cost increase (95%) was on a project where a microwave tower had to be relocated at an I-75 interchange. This relocation was unforeseen in the original scope, resulting in a cost over-run of \$1 million.

A 93% cost over-run occurred on a project in Volusia County for traffic control devices. A supplemental agreement was executed to add a fiber-optic connection where cable was non-existent. Camera format changes were made (from still photos to video) and additional computer equipment was needed. This resulted in a time extension of 189 days.

On a Skyway Video Modification project, the cost over-run was 66%. The project scope was written prior to 9-11 and, once the project was under way, was modified to address and meet national security issues.

### **DESIGN-BUILD TIME ANALYSIS**

The total number of days (12,708) to complete Design-Build contracts was 18% greater than the total official days (10,877) estimated by the Department. Of the 33 completed Design-Build

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<sup>1</sup> Other Agency Phase type is when the Department contracts with another governmental agency for services provided. The Department is responsible for administering and oversight of the project.

projects, eleven projects were on-time or under-the-time bid. Of the projects that were on or under-time bid, five were resurfacing projects, with the greatest time savings being on bridge replacement and bridge rehabilitation projects.

The greatest time over-run was 118% on an Access Improvement Project. This was due to District specific requirements that were not included in the original scope of services. This resulted in re-work and design changes.

## **DESIGN-BUILD VS. DESIGN-BID-BUILD PROJECTS**

To compare Design-Build to Design-Bid-Build projects, seven resurfacing projects were randomly selected. The construction costs of these projects were \$12 million. After researching the design cost, these projects were calculated to be \$2 million for a combined cost of \$14 million. The construction bid days was 1,016 and actual days used was 1,256. The combined design time for each of these projects was 4,736, for a total time for the traditional design-bid-build projects of 5,992 days.

Resurfacing projects that were constructed using the Design-Build method took a total of 1,452 days to complete. It is apparent that the true savings in Design-Build is in the time savings.

Districts like using Design-Build contracting because of the savings and efficiencies it provides. In emergency situations, Design-Build affords them the flexibility to get the job done quickly.

In traditional Design-Bid-Build projects, the designer can be faced with an adversarial relationship with construction. If questions arise by construction, the designer may feel like they have to defend the design. When working in a Design-Build partnership situation, the design and construction firms have a stake in the successful outcome of the project. With a Design-Build contract, issues within the contract are not the owner's issues, which is a significant benefit of this type of contracting method. Communication lines are more open between the Design, Construction and the Department using Design-Build.

With Design-Build, it is very important to have a clearly-defined scope that encompasses all disciplines and activities. Good project selection guidelines are important too. Risk should be the contractual responsibility of the party best able to manage that risk.

## **QUALITY ASSURANCE**

To insure the Design-Build process as required by Guidelines, Specifications, etc., are being followed, the State Construction Office evaluated experiences and has initiated changes to the Design-Build process. A field review was done on the following indicators:

- a. RFP's
- b. Proposal Evaluations
- c. Selection Process
- d. Technical Specifications/Specifications
- e. Plans/Shop Drawing
- f. Testing methods/records
- g. Original Cost/Time vs. Final Cost/Time

A letter from the Review Team showing findings and corrective recommendations will be sent to FHWA/State Construction Engineer/District Construction Engineer within two weeks after the review.

Since its implementation in 1996, the use of the Design-Build concept has been used with many ideas being tried. A decrease of time over-runs are being realized and many more projects are being let thru this contracting process.

## **SIGNIFICANT FINDINGS**

Several factors are critical to the success of a Design-Build project. The most important factor is having a well-defined scope. Most cost over-runs on Design-Build projects stemmed from having to extend or change the scope of service. It is imperative that all parties share an understanding of the scope and what is expected. Communication between the Department and the Design-Build firm is essential. Collaboration between offices during scope development is critical and should be mandatory.

## **PROJECT MANAGER**

A Project Manager must be able to lead the Design-Build team and make decisions that are in the best interests of the project as well as of the owner. This individual must be the liaison between design and construction through completion of the contract and must promote a “team” approach for the project and monitor project progress. The Project Manager must stay involved, be knowledgeable about the project, perform periodic jobsite visits and be pro-active when dealing with issues that may arise. This is a key position that requires many skills that cross a broad range of disciplines.

## **LESSONS LEARNED**

The most important lesson learned, from a District perspective, is that there needs to be a single point of responsibility in charge. This person, usually the Project Manager, must be responsible and accountable, with the ability and motivation to make decisions based on what is best for the project and owner.

If the Design-Build firm has the flexibility to modify the preliminary (30%) design and still meet the scope and requirements of the RFP without sacrificing safety and life cost of the final product, the Department receives an equal or better end result. Further, if these modifications result in no additional cost or increase in time, then this is a win-win situation for all parties involved. The Design-Build firm must build what they propose in their Technical Proposal. They have the right to make adjustments if approved by the Department.

Everyone takes a more pro-active role in the success of the project, from the District Consultant Project Manager to the subcontractors. Because everyone has a stake in the success of the project, a sense of ownership prevails.

Reviews of some recent Design-Build projects indicate that an emphasis on the following issues may help ensure a successful Design-Build project:

- Pick the right project for Design-Build. Projects must be well-defined.
- Pick the right team. The selection process must be carefully structured to select the best qualified team.
- Prepare a clear and concise request for proposal. The scope must cover all desired work requirements.
- Allow for contingencies to cover unforeseen conditions.

- Submit adequate component plans sets.
- Allow adequate time for plan reviews.
- Process all information and decisions through the FDOT Project Manager.
- Recognize that communications is key. Frequent project meetings with the FDOT Project Manager, the contractor, designer, CEI and other interested parties are necessary to the success of the project.
- Document all actions and decisions.

## Problem Areas and Corrective Action Taken

1. *Who at FDOT is responsible for making sure all the conditions of the FHWA SEP-14 approval are being fulfilled? What reporting processes are in place to support this effort?*

**Corrective Action: Responsibility for making sure the FHWA requirements are fulfilled:**

The Project Management, Research & Development (PMRD) Office is responsible for policies, procedures, program oversight and reporting. The State Construction Engineer is the designated individual responsible for ensuring that the Department complies with FHWA requirements for Specifications, Scopes of Service, Request for Proposals (RFP), Guidelines, Procedures, Task Team Support, Reports, etc. The Districts are held responsible for ensuring the required procedures, documentation, etc., are followed in accordance with the FHWA requirements and established Design-Build policies. Any questions, clarifications, etc., should be sent to the State Construction Office, which will coordinate with appropriate offices to ensure that such are acted upon in a timely manner.

2. *All federal-aid Design-Build projects must meet the requirements as proposed in the draft rule published in the Federal Register on October 19, 2001. If the Design-Build firm is performing CEI or acquiring right-of-way, all projects must use the same standard scopes developed by the Central Office. The standard scopes are to be approved by the FHWA before released to the Districts for incorporation into the RFPs. What process does FDOT have in place to make sure the standard scopes are being utilized?*

**Corrective Action: Request for Proposals (RFP):** The Districts shall use the approved RFP as shown on the Construction Office web page. The address is: <http://www.dot.state.fl.us/construction/Design%20Build/Design-Build.htm>. An electronic copy of the RFP, with changes identified clearly, shall be submitted to the State Construction Office on all projects for review and approval prior to submittal to the short listed firms. The intent of the State Construction Office's review is to assure these documents are in conformance with the commitments made to FHWA. FHWA receives the electronic copy on all Federal Aid Oversight Projects for review and approval. At FHWA's request, a minimum of two weeks is scheduled for their review and approval of the RFP.

3. *Application to Oversight or Exempt Projects: These 12 Design-Build conditions apply to all federal-aid projects, not just those with the FHWA oversight. The only difference is oversight projects are reviewed and approved by the FHWA on a project-by-project basis; exempt projects are reviewed on a program basis. For projects exempt from the*

*FHWA's project level oversight, the state is required, in accordance with the approved Exemption Agreement, to assure exempt projects meet these conditions. A Design-Build project is determined to be oversight by following the criteria contained in the existing FHWA/FDOT Exemption Agreement; e.g. Interstate Federal-aid projects over \$1 million in construction costs, excluding 3R work. What process does FDOT have in place to make sure "exempt" projects abide by these conditions?*

**Corrective Action: Initial Federal Authorization Request:** On FHWA Oversight Projects the District Federal Aid Coordinators submit the initial federal authorization request to the Federal Aid Office after the RFP has been sent to FHWA for review. The Federal Aid Office then submits the authorization request to FHWA, and FHWA approves it after completion of their RFP review. On all federally funded Design-Build projects, whether exempt from federal oversight or not, the federal authorization must be approved by FHWA before the RFP and Design/Construction Criteria Package is published or mailed. It is the Project Manager's responsibility to coordinate with the District's Federal Aid Coordinator in order to comply with the Federal Aid Technical Bulletins 02-3 and 02-4 for all Federally funded (or potentially Federally funded projects) when requesting federal authorization. These technical bulletins are attached to this letter and can also be found at the following address:

[http://ombnet.dot.state.fl.us/financialplanningoffice/federal/fedtech/Federal\\_Aid\\_Technical\\_Bulletin\\_2002.pdf](http://ombnet.dot.state.fl.us/financialplanningoffice/federal/fedtech/Federal_Aid_Technical_Bulletin_2002.pdf)

4. *RFP Approval/Project Authorization /Concurrence-in-Award: For Federal-aid oversight projects, a key step in the Design-Build process is the FHWA's approval of the RFP document. Once approved by the FHWA, the RFP can be released by the State and federal-aid project funds can be authorized for project advancement. The FHWA's concurrence-in-award is required on all federal-aid oversight projects. The concurrence- in- award package shall include a summary of the adjusted scores, the results of the question and answer session by the three short listed firms, and the Department's selection committee's decision for award of the contract. No concurrence-in-award requests have been submitted for the Design-Build projects. What will FDOT do to correct this situation and what will the process be for concurrence-in-award submittals?*

**Corrective Action: Concurrence-in-Award process:** The Summary of Adjusted Scores (Technical Score, Bid Proposal Amount), Proposed Contract Time, DBE Commitment, and the Department's Selection Committee decision for award (final rankings) is posted on the Procurement Office's web page for use by FHWA. The address is:

[http://www.dot.state.fl.us/procurement/results/desnbid\\_results.htm](http://www.dot.state.fl.us/procurement/results/desnbid_results.htm). At the time of this posting the District Professional Services Unit will email FHWA to direct their attention to the website for the selection results and request concurrence in the award. FHWA shall reply via email to the District Professional Services Unit and the Project Manager indicating their concurrence in the award. Once the concurrence-in-award is obtained, the District Professional Services Unit executes the contract. The Project Manager then notifies the District Federal Aid Coordinator of the awarded amount (along with a copy of FHWA's concurrence e-mail) and requests a modification be processed to the federal authorization to adjust the federal authorization to the awarded amount.

5. *Construction Engineering Inspection (CEI): For all Federal-aid projects, if the CEI is hired by the Design-Build firm, the FDOT Central Office, in consultation with our office, has developed two scope documents that must be included in the RFPs. One is*

*referred to as the Scope for Construction CEI, which is the consultant hired by the Design-Build firm. The other is referred to as the Oversight CEI, which is the consultant hired by the Department. The use of an Oversight CEI is required to enable the Department to meet the requirements of the FHWA's quality assurance regulation 23 CFR, part 637.*

*The scope for the Oversight CEI as developed by the Central Office must be approved by the FHWA prior to release to the Districts. The Districts are allowed to make minor modifications to the standard scope (such as for sampling and testing frequency) to fit project specific conditions. In addition, for Federal-aid oversight projects the consultant agreement used to hire the Oversight Consultant (scope of services RFP and staff hour estimate) must be reviewed and approved by the FHWA per the normal consultant agreement process in the FDOT procedure 375-030-002. What process does FDOT have in place to make sure the standard scopes are being utilized with only minor revisions?*

**Corrective Action: Scope of Services:** The Districts shall use the approved Design-Build CEI and Oversight CEI Scopes as shown on the Construction web page. The address is: <http://www.dot.state.fl.us/construction/Design%20Build/Design-Build.htm>. An electronic copy of the Scope of Services, with changes identified clearly, is submitted to the State Construction Office on all projects for review and approval prior to submittal to the short listed firms. The intent of the State Construction Office's review is to assure that these documents are in general conformance with the commitments made to FHWA. FHWA also receives the electronic copy on all Federal-Aid Oversight Projects and requests a minimum of two weeks to schedule their review and approval.

**Testing:** The Department or its representative will perform verification and resolution testing services in accordance with the latest Specifications. On all Federal-Aid Projects, the Department or its representative shall perform verification sampling and testing on-site as well as off-site locations such as pre-stress plants, batch plants, structural steel fabrication plants, etc.

6. *Warranties: For projects on the National Highway System (NHS) warranties are allowed provided they meet the requirements of existing regulations in 23 CFR 635.413 (which limits the application of warranties to specific products or construction features as approved by FHWA). For non-NHS projects, the states can continue to use their own warranty procedures. Due to the reduced inspection frequency proposed in the standard Oversight CEI scope developed by the Construction Office, warranties for asphalt, concrete and other specific work items will be required by the FHWA to offset the risk associated with the reduced level of inspection.*

**Corrective Action: Warranty/Guarantee Specifications:** The Districts were issued the following directions:

The following warranty/guarantee specifications are included in all future Design-Build contracts:

Section 5-14, Contractor Guaranteed Project Features - The Districts identify the project features to be guaranteed in the RFP. The standardized RFP posted on the State Construction Office website includes the most common features. In any case, Asphalt Pavement needs to be listed as one of the project features if Section 338 is not part of the RFP and asphalt pavement is part of the contract.

Section 338, Value-Added Asphalt Pavement - This specification can only be included upon approval by the State Construction Office. FDOT is currently working with the industry on a 3-year specification which, when finalized, will be part of all future Design-Build contracts.

Section 355, Value-Added Portland Cement Concrete Pavement - This specification is included on contracts that include Portland Cement Concrete Pavement.

Section 410, Value-Added Structural Components - This specification is included on contracts that involve construction of these components.

7. *Value Engineering and Use of Value Engineering Change Proposals (VECP's): Consistent with our current regulations in 23 CFR 627, a value engineering analysis is required of all Federal-aid projects estimated to cost over \$25 million. This study can be performed by the State, its consultant, or be a requirement in the RFP for the Design-Build firm to perform. VECP clauses are allowed, but not required for Design-Build projects. A VECP submitted to the FHWA for a Federal-aid project must provide an equal or better product at less cost. What process does FDOT have in place to make sure the necessary VE Studies are being conducted and how are these studies being reported?*

**Corrective Action: Value Engineering (VE):** All projects with an estimated cost of \$20 million or more have a minimum of one VE study conducted prior to or during the development of the Design and Construction Criteria. This estimated cost shall include all costs associated with the project, including but not limited to design, right-of-way, construction, and administrative costs.

8. *Design variances are being granted which would normally not be granted on conventional projects, saving Design-Build firm money and time.*

**Corrective Action: Design Variances/Exceptions Requirements:** The Department does not consider a deviation from the design criteria or our specifications as an "innovation." Therefore, a design variance or exception is not considered innovative. If a short listed firm requests a variance or exception during the technical proposal phase, it must be discussed during the pre-bid meeting or prior to the information cut-off date as identified in the RFP. Such variance/exception must be approved or disapproved prior to the information cut-off date. Design exceptions require approval by the State Roadway Design Office and FHWA (for oversight projects). This requires extensive coordination in a short time frame. All such variances/exceptions must be shared with all short listed firms prior to the information cut-off date (final information cut-off date shown in RFP). Any design variances/exceptions submitted by the short listed firm after letting is considered as a Value Engineering Change Proposal.

It is highly encouraged that any specific design variances/exceptions be included in the RFP after the necessary approvals have been obtained. The Districts, at their option, can specifically prohibit, in the RFP, submission of such variances/exceptions after letting.

Designers may feel this change (sharing variance/exceptions during the proposal phase with all parties) limits their innovation, but as stated above, the Department does not consider this as

innovation. The Department wants to encourage innovation through the contractor's means and methods and not by deviating from Design Standards.

9. *The means by which the Schedule of Values is reviewed and approved by the Districts and the Monthly Estimates are being paid are leading to front-loading and over-payment.*

**Corrective Action: Schedule of Values:** The Districts shall adhere to the direction provided in instructions distributed via email dated 03/31/2003. An example of a typical Schedule of Values can be found at <http://www.dot.state.fl.us/construction/Design%20Build/Design-Build.htm> for the District's use and modified as necessary.

10. *Many required submittals on FHWA Oversight projects are not being submitted.*

**Corrective Action: Specifications, Shop Drawing and Plan Requirements:** The Districts shall adhere to the direction provided in the Construction Memorandum No. 21-02 dated 10-07-02. The address is: <http://www.dot.state.fl.us/construction/memos/2002/dce21-02.pdf>. The District Specifications Engineer shall be included in the development and inclusion of the D-B Division I Specifications in the RFP. Any changes to the D-B Division I Specifications shall be reviewed and approved by the State Specifications Office, the State Construction Office and FHWA prior to advertisement. Furthermore, the District Specification Engineer shall review and approve the Specification Package submitted by the D-B firm.

**Pavement Design and Typical Section:** The Design and Construction Criteria package shall include the minimum pavement design and typical section criteria. For the pavement design, it should typically include the minimum design period, minimum ESALs, minimum design reliability factors, roadbed resilient modulus, minimum structural asphalt thickness, cross slope and the need for Modified Binder. For resurfacing design, a minimum milling depth and whether an ARMI layer is required should also be included in the criteria. For the typical section design, identify the minimum lane widths, shoulder widths, median widths, cross slope, and front slope requirements. The Pavement Coring and Evaluation should be provided with the criteria.

## SUMMARY

This report documents the results of 33 completed projects and an additional 39 on-going projects. An evaluation of these projects showed time savings in project delivery. Cost comparisons between design-bid-build projects and Design-Build projects are difficult as no two projects are alike. However, seven resurfacing projects completed using Design-Build at a cost of \$14.6M was significantly less than the Official Estimate of \$21.8M.

As with any contracting process, changes in the scope of work post-award produced the most dramatic effect on time and cost increases. Clearly-defined scopes of work are essential to minimize post-award contract changes.

Quality Control/ Quality Assurance have not been a significant issue with Design-Build. As reported, the same systems are in place for material testing and acceptance as for Design-Bid-Build. In addition, warranty/guarantee provisions have been included to provide additional assurance for major project components.

Design-Build has proven to be an effective contracting methodology. It is codified as a standard procurement process at FDOT. Process improvements have been initiated since the program beginning and, like any process, will continue to be refined based on lessons learned.

## COMPLETED PROJECTS TABLE

Dist.	FM No.	Contract	Project Description	DOT	Bid	Present	Amount	% Cost	Bid	Present	Days	% Days	% Days
		No.	& Work Mix	Estimate	Amount	Amount	Paid	Overrun	Days	Days	Used	Overrun	Overrun
												(Present)	(Actual)
1	197387-2	E1B79	SR 60 Peace Creek at Bridge # 160132 & 160044-Replace Low Level Bridge	\$3,862,568	\$3,865,690	\$3,865,690	\$4,050,069	0%	281	281	205	0%	-27%
1	410918-1	E1C41	I-75 at Bee Ridge Br. 170145 & 170146-repair/rehab	\$1,577,507	\$1,494,000	\$1,558,374	\$1,577,507	4%	86	86	58	0%	-33%
3	218754-1	17121	Ochlockonee Bay Br. # 490920-Replace med level Br	\$12,210,000	\$12,210,000	\$11,729,096	\$11,729,096	-4%	509	541	536	6%	5%
3	219049-1	E3959	SR 22-Resurfacing	\$1,964,000	\$1,482,377	\$1,482,377	\$1,482,377	0%	100	100	100	0%	0%
3	218648-1	E3A48	SR 10-Weigh Station	\$3,207,000	\$2,906,170	\$2,906,170	\$2,542,042	0%	421	570	742	35%	76%
3	219371-1	E3980	SR 75-Welcome Station	\$5,876,000	\$5,865,805	\$5,910,259	\$5,910,259	1%	542	551	551	2%	2%
3	222766-1	E3720	Blackwater River Br. 580061 & 77 -Br. Replacement- Emergency Funds - Hurricane	\$30,435,010	\$30,435,010	\$33,036,536	\$33,036,536	9%	627	687	687	10%	10%
4	228843-1	E4989	SR 76-Misc Construction	\$2,500,000	\$2,181,000	\$2,407,170	\$2,407,170	10%	730	801	801	10%	10%
4	231531-1	E4A74	I-75 Interchange	\$1,095,000	\$2,047,000	\$3,983,715	\$3,983,715	95%	730	730	698	0%	-4%
5	240957-1	E5B19	Pedestrian Overpass-SR 483	\$903,743	\$1,123,506	\$1,093,031	\$1,123,506	-3%	275	302	302	10%	10%
5	404121-1	E5E56	SR 5-Resurfacing	\$5,167,035	\$3,682,564	\$3,682,564	\$3,673,344	0%	365	411	408	13%	12%
5	242345-1	E5E01	Pedestrian Overpass-I-95 North of Old Kings Rd	\$3,250,000	\$2,627,227	\$2,631,435	\$2,631,435	1%	340	452	451	33%	33%
5	239472-1	E5B22	Pedestrian Overpass-SR 15/600	\$1,619,072	\$2,132,804	\$2,147,542	\$2,147,541	1%	320	463	463	45%	45%
5	405515-1	E5F06	Add Lanes & rehab pmnt-I-4 auxiliary lanes	\$18,851,000	\$13,960,000	\$14,086,193	\$13,977,681	1%	400	490	501	23%	25%
5	410725-1	E5F41	ITS Surveillance System-SR 436	\$1,815,000	\$1,583,928	\$1,603,299	\$1,436,291	1%	270	315	295	17%	9%
5	406329-1	E5E65	I-75 Panasoffkee Br. 180039 & 180940-Widen	\$33,302,000	\$19,277,000	\$19,610,957	\$19,512,546	2%	600	617	555	3%	-8%
5	411882-1	E5F35	I-95 Safety Project	\$2,540,000	\$2,162,387	\$2,232,659	\$2,204,411	3%	230	361	367	57%	60%
5	238407-1	E5C86	SR 50 Resurfacing	\$1,167,100	\$636,186	\$804,186	\$805,606	26%	180	180	180	0%	0%
5	242301-1	E5C31	Pedestrian Overpass-Fay Blvd	\$1,272,467	\$972,000	\$978,600	\$978,600	1%	240	255	255	6%	6%
5	240948-2	E5F13	Traffic Control Devices System-Volusia Co.	\$667,677	\$667,677	\$1,287,878	\$1,287,878	93%	375	571	543	52%	45%
6	251624	BC-212	ITS Surveillance System-CCTV Cameras	\$500,000	\$695,819	\$695,819	\$695,819	0%	275	337	337	23%	23%
7	256408-1	E-7819	Resurface/Repave-US 98	\$361,404	\$361,275	\$360,275	\$360,103	0%	150	150	149	0%	-1%
7	257182-1	E7A31	SR 44 Resurfacing	\$3,666,667	\$3,666,667	\$3,666,667	\$278,585	0%	235	288	288	23%	23%
7	256353-1	E7A03	SR 52 Widen/resurface exist lanes	\$998,999	\$998,999	\$1,098,038	\$1,019,738	0%	215	215	215	0%	0%
7	405563-1	E7A34	Pedestrian Overpass-Upper Tampa Bay Trail	\$1,220,544	\$1,220,544	\$1,270,494	\$1,220,543	4%	180	281	281	56%	56%
7	406557-1	E7A11	Add right turn lane-Fletcher Ave	\$423,000	\$423,000	\$446,094	\$220,594	5%	150	150	150	0%	0%
7	408460-2	E7999	I-75 Widen/resurface exist lanes	\$2,724,204	\$2,126,447	\$2,248,784	\$2,246,792	6%	240	275	275	15%	15%
7	403266-1	20693	ITS Freeway Management System-I-275	\$1,480,810	\$1,345,600	\$1,427,681	\$1,423,421	6%	453	453	435	0%	-4%
7	410531-1	E7998	Access Improvement-US 19	\$4,925,280	\$4,925,280	\$5,377,756	\$5,306,306	9%	240	519	524	116%	118%
7	408671-1	E7A13	Skyway Video from Modification	\$770,118	\$770,118	\$1,279,777	\$1,238,148	66%	270	406	406	50%	50%
8	407950-1	E8C31	Resurfacing-Lake Co.	\$1,018,685	\$729,000	\$729,000	\$725,743	0%	98	98	98	0%	0%
8	232205-1	E8B54	Resurfacing-Broward Co.	\$8,474,400	\$3,721,723	\$3,910,773	\$3,910,773	5%	210	270	229	29%	9%
8	406709-1	E8C36	Boca Raton Toll Data Center	\$2,800,000	\$2,795,095	\$3,602,033	\$3,602,033	29%	540	623	623	15%	15%
<b>TOTALS</b>				<b>\$162,646,290</b>	<b>\$135,091,898</b>	<b>\$143,150,922</b>	<b>\$137,169,077</b>	<b>6%</b>	<b>10877</b>	<b>12829</b>	<b>12708</b>	<b>18%</b>	<b>17%</b>