
FINAL REPORT

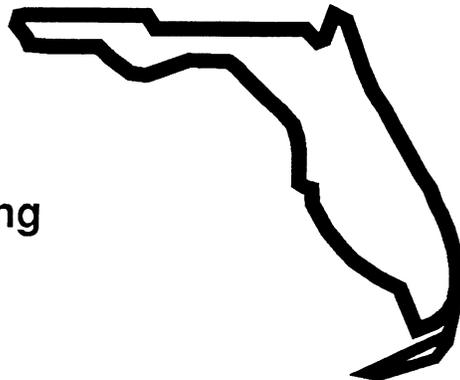
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EVALUATION OF THE FDOT DESIGN/BUILD PROGRAM

**Principal Investigator: Ralph Ellis
Co-Principal Investigator: Zohar Herbsman
Graduate Assistant: Ashish Kumar**

August 1991

**Department of Civil Engineering
College of Engineering
UNIVERSITY OF FLORIDA
Gainesville**



Engineering & Industrial Experiment Station

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Submitted to:

FLORIDA DEPARTMENT OF TRANSPORTATION

Principal Investigator: Ralph D. Ellis, Jr.
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DEPARTMENT OF CIVIL ENGINEERING
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CHAPTER 1

INTRODUCTION

1.1. General

The Florida Department of Transportation (FDOT) has undertaken as a demonstration project, a series of construction projects managed under the design/build system. In this innovative program, both design responsibility and construction are placed with a single contractor. This method differs significantly from the traditional construction contracting procedures normally used by the FDOT.

As with all systems there are advantages and disadvantages related to both the design/build process as well as conventional non-design/build process. Innovative contracting practices, savings in cost and time, improved quality of product and certain financial requirements are the major driving forces behind consideration of the design/build process. As with many new concepts, the design/build projects have not been without controversy concerning their desirability.

An objective evaluation is needed in order to judge the merit of the design/build system as opposed to the conventional non-design/build method of contracting. Design/build system should be evaluated on the basis of a quantitative assessment of project performance with regard to essential project factors such as cost, time and quality. Additionally, issues such as fairness and maintenance of a competitive bidding environment should be reviewed.

The purpose of this research is to evaluate the design/build program by comprehensive review of the project information available from the demonstration projects. Issues addressed in this research for assessment of advantages and disadvantages of the system include time, cost, bid selection criteria and opinions of design/build participants. This study summarizes the lessons learned

from the design build pilot projects and assists FDOT in judging applicability of the system for future transportation construction projects.

1.2. Background

In 1980s design/build contracting system gained increasing popularity in nearly all types of construction activities. Consequently the State of Florida also recognized the need to demonstrate the concept and its applicability in public construction works. As a result, Florida legislature passed a bill (Section 337.11(5) Fla. Statutes 1987) in June 30, 1987 authorizing Florida Department of Transportation (FDOT) to undertake such an exercise in transportation-related contracting. A copy of this statute is enclosed as Appendix A-I. It allowed FDOT to conduct a combined design and construction contract demonstration program, not to exceed a total contract amount of \$50 million. The projects were to be undertaken in the department's 5-year transportation plan in various project categories. The categories were:

- 1) resurfacing,
- 2) bridge replacement or new construction,
- 3) multi-lane new construction or reconstruction, and
- 4) fixed capital outlay and parking garages.

Eleven projects have been awarded in the design/build demonstration program consisting of six resurfacing, one major bridge replacement, one bridge widening, one multi-lane and two fixed capital outlay projects. The total dollar amount awarded was \$30,508,867. Construction on all the projects has been completed, however as-built analysis of a few is still pending. Table 1 provides a listing of the FDOT design/build pilot program projects.

Design/build combines into a single contract the design, construction, and the construction testing and acceptance requirements for a project all in accordance with Standard FDOT criteria, specifications, and contract administration

TABLE 1. List of Design/Build Pilot Program Projects

Project (1)	Location (2)	Type of Project (3)	Bid Amounts (dollars) (4)	Bid Construction Time (days) (5)
Resurfacing SR 776 01050-3519	Charlotte County	Resurfacing	1,081,776	161
Resurfacing SR 13 78070-3519	St. Johns County	Resurfacing	1,785,000	240
Resurfacing SR 71 51020-3517	Gulf County	Resurfacing	1,385,765	180
Resurfacing SR 7 86100-3587	Broward County	Resurfacing	1,413,273	239
Resurfacing SR 91 97871-3322	Dade County	Resurfacing	2,912,936	210
Resurfacing SR 15 75080-3529	Orange County	Resurfacing	992,844	150
Bay Bridge 49040-3501 & 59010-3516	Ochlockonee County	Bridge	12,210,000	609
Turnpike FEC R/R 97940-3367	St. Lucie County	Bridge	1,888,206	540
Turnpike 97931-3310	Palm Beach County	Multilane	4,044,067	450
Const/Maint Office 11000-3511	Leesburg County	Building (FCO)	446,000	270
Turnpike Tolls Data Center 97931-3315	Palm Beach County	Building (FCO)	2,349,000	337

practices (1). These projects allow the contractor to participate in design in an effort to reduce costs and expedite construction. According to a study done by Transportation Corridor Agencies (TCA) there are several potential advantages of design/build process. In addition to the "not-to-exceed" price and "guaranteed" completion dates in advance of bond issuance, the other advantages include transfer of liability (e.g., errors and omissions, cost overruns), construction cost savings because of bulk order, design construction time savings because of close design interface and reduced pre-construction cash requirements (2). However, another study done by Transportation Research Board did not find clear cut documentation to substantiate time and cost savings. Furthermore the quality was found to be closer to minimum requirement as compared to conventional methods. The major advantage of the design/build concept is the incentive for innovation that it provides (3).

The methodology of design/build procurement also varies with state. In the state of Kentucky all designs were the responsibility of the contractors. In case of Georgia and West Virginia contractor designs were allowed as alternates to the contract plans furnished by the departments. In Georgia where the design/build alternate has been used on many projects, low bids have been submitted for either contractor design or department design depending on the project (3).

Recently design/build has attained increased attention by some important organizations such as Federal Highway Administration (FHWA), the National Asphalt Pavement Association (NAPA) and the Transportation Research Board (TRB). Although the FHWA has not yet decided to sponsor design/build projects in states, they are beginning to work toward innovative contracting methods. The goal is to expand contractors' freedom to innovate and to finish the product of higher quality at a lower cost (4). A TRB task force is currently trying to encourage experimentation and demonstrations with this concept and new legislative programs (5). FHWA introduced a Special Experimental Project No. 14 with an objective to

identify for trial evaluation and documentation, innovative contracting practices which have the potential to reduce life cycle costs to State Highway Authorities while maintaining product quality and an acceptable level of contractor profitability (6).

1.3. Objective of Study

The objective of this research study is to provide the Florida Department of Transportation (FDOT) with an evaluation of the design/build pilot program. This was accomplished by analyzing available data on design/build projects and by surveying design/build teams who participated in the program.

The activities towards this objective were divided into following steps:

- 1) Review design/build literature and collect data concerning design/build program and non-design/build projects. This includes cost related information (e.g., engineer's estimate and actual cost) and time related information (e.g., designed time and actual time). Send questionnaire to all design/build program participants for their opinions on general features of the program and changes required.
- 2) Evaluate time and cost data for design/build and non-design/build projects and compare them for probable similar projects. Statistical analysis of survey responses with regard to design criteria, evaluation procedure, suitability of design/build and subsidy of design cost.
- 3) Combine results and identify important factors. Suggest changes, if any, in the existing design/build system.
- 4) Prepare a final report. The report will address all the activities followed to fulfill the tasks and will present all findings and recommendations.

Figure 1 presents a flow chart of the tasks required to accomplish this study.

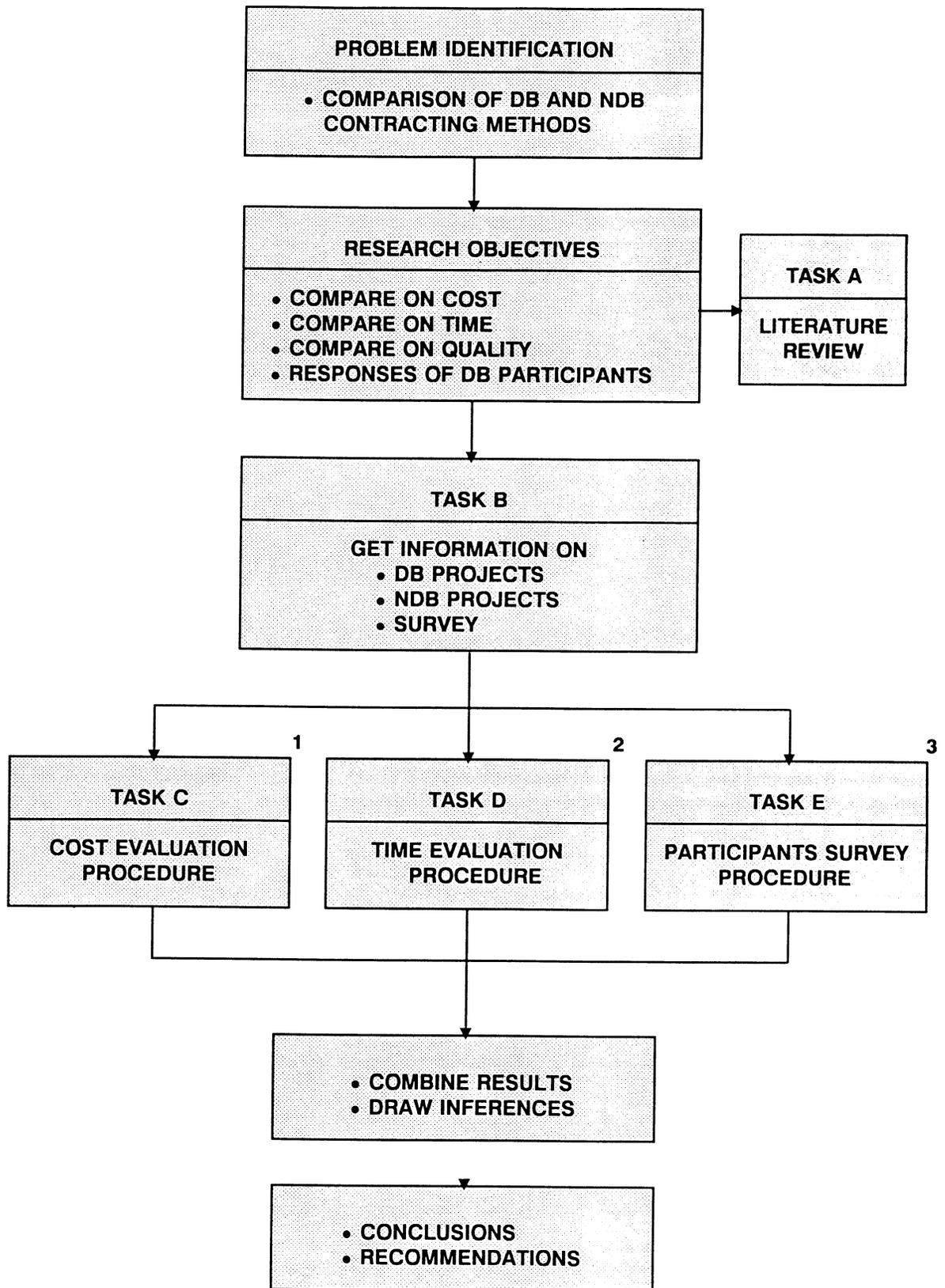


FIGURE 1. Design/Build Research Methodology

CHAPTER 2
OVERVIEW OF DESIGN/BUILD IN FLORIDA

2.1. Historical Perspective

With the rapid growth of the design/build construction process in the 1980s, Florida Legislature recognized the need of new statutes. It began selectively removing questions of the authority of particular public agencies to use the design/build concept. In 1986, the legislature provided statutory authority for both "turn key bidding" and "design and build bidding" for the construction of schools (Fla. Stat. §235.211). Similarly, (Fla. Stat. §337.11(5)(a)) Fla. Stat. added by the Florida legislature effective July 1, 1987 expressly permits combined design and construction contracts for FDOT work. The statutory procedure includes pre-qualification of applicants and evaluation of proposals on factors which include- a) capabilities of a design and construction team to perform in a timely manner, b) past performance, c) lowest cost, and d) technical content.

The use of design/build contracts for public projects was thrown into confusion by a court opinion in a Bay County case and an Attorney General's opinion in November 1988. In 1989 the Florida Legislature squarely faced the problems caused by these two actions and expanded the scope of the Consultants Competitive Negotiation Act (CCNA) exemption to cover design/build contracts involving any public agency in the State of Florida. The 1989 legislature modified the law to make it more functional in practice but retained the original concepts (7).

2.2. The New Law

The new law (refer to Appendix A) defines a "design-build contract" as a "single contract" with a partnership, corporation, or other legal entity which is certified to engage in contracting. State and local agencies are required to

award design/build contracts in accordance with procurement laws, rules, and ordinances available to them. The law recognizes that Florida Department of Transportation already has existing statutes and rules prescribing the award of design/build contracts (8). The legislature went on to set forth specific standards local agencies are required to prepare. These standards include:

1. The agency must prepare a design criteria package for review by prospective bidders. The design criteria package must be prepared by a licensed professional.
2. The agency must adopt specific rules or ordinances concerning design/build contracting. The FDOT's rules are enclosed as Appendix A-II. (Note: The latest rule allows the agency to proceed with selection if less than three proposals are received.)
3. The agency must select no fewer than three design/build firms and set forth the criteria, procedures and standards for evaluation of the design/build proposals.
4. Design/build proposals must be solicited.
5. The agency must consult with a design criteria professional concerning the evaluation of the bids, the supervision and approval of the detailed working drawings, and the evaluation of the compliance of the project construction with the design criteria. If in-house staff are available they may be used for evaluation.
6. In case of public emergencies, the agency head can be authorized to negotiate with the best qualified design/build firm (7).

The latest FDOT rules for design/build contracting are included in FDOT Chapter 14-91 Administration of Combined Design and Construction Contracts. A copy of these rules are enclosed in Appendix A-II. The FDOT rules for Design/Build provide the specific procedures for procuring design/build contracts.

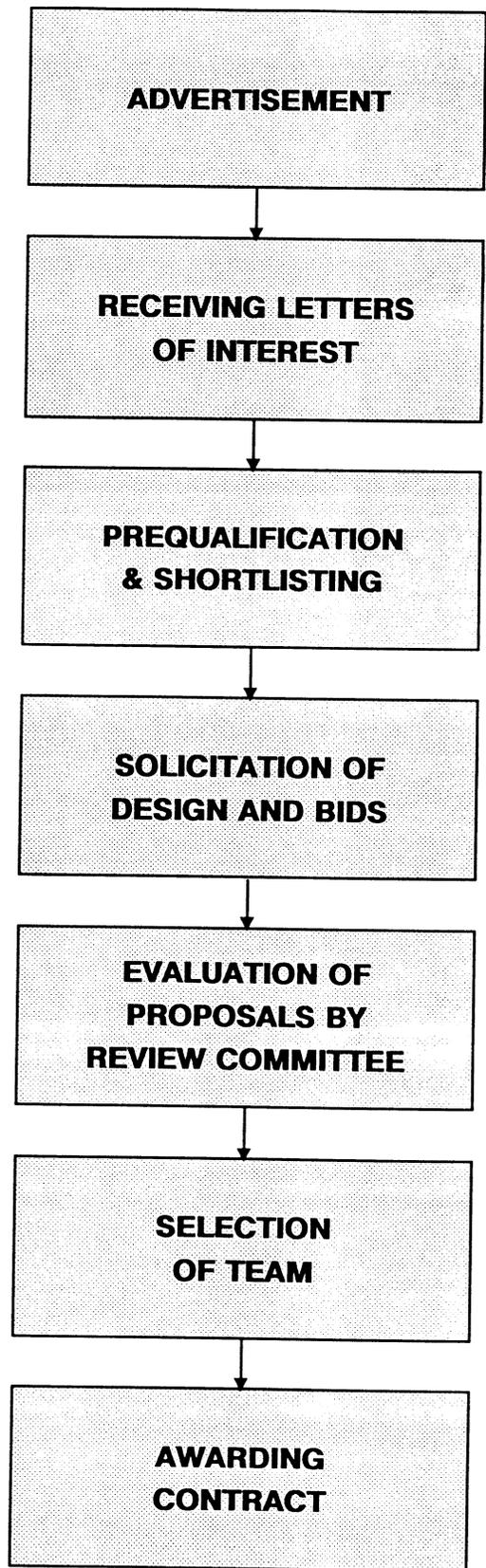


FIGURE 2. FDOT Design/Build Procurement Procedure

2.3. FDOT Design/Build Administration

The procedure followed by FDOT for design/build projects has been presented in Figure 2. The difference between design/build and non-design/build approaches is in the procurement method. Actual construction in both the cases is similar.

Procurement on a non-design/build conventional project requires a set of standard activities. They are:

1. advertisement
2. letters of interest
3. prequalification
4. selection of consultant
5. complete design & specifications
6. solicitation of contractor bids
7. selection of contractor
8. contractor award.

The complete process usually takes 300 days for a normal resurfacing project - 150 days for design consultant selection and plans preparation and 150 days for processing time for the advertisement of construction bids and contract award procedures (1). During the procurement process shortlisting and selection is done at two stages.

A typical design/build procurement procedure involves similar steps as in case of conventional contract with a difference in selection. The usual steps are:

1. advertisement
2. letters of interest
3. prequalification
4. solicitation of design and bids
5. selection of team
6. awarding contract.

Prequalification or shortlisting is done only at one stage as opposed to two in conventional non-design/build system. Teams of both contractor and consultant are selected instead of individual selection. Similarly design and bid are simultaneously solicited as a package. In other words, the two activities of conventional non-design/build contract procurement go parallel in case of design/build system.

Before advertisement, a design criteria package is prepared by the FDOT, the purpose of which is to furnish sufficient information upon which design/build firms can prepare technical and price proposals. Firms desiring to submit proposals must submit a letter of interest setting forth their qualifications and providing any other information required by the announcement of the project (9).

A Certification and Technical Review Committee (CTRC) determines the relative ability of each firm to perform the services required for each project. Grading of proposals and the use of scoring in the selection process will be discussed in subsequent sections. The CTRC selects not less than three nor more than six firms deemed to be most highly qualified to perform the required service. However, this has recently been amended (5.337.11(5)) to allow FDOT to proceed with an award even though less than three teams submit a technical proposal (1).

Technical proposal includes preliminary design plans, preliminary specifications, technical reports, calculations and other relevant data, whereas price proposal includes one lump sum cost for all design, construction engineering/inspection, and construction of proposed project. The CTRC reviews the design concepts and preliminary design proposals and establishes a rating for each firm. Usually the evaluation takes a longer time than that of non-design/build conventional system. Scores obtained are submitted to the Final Selection Committee (FSC) made up of the Assistant Secretary of Transportation, Deputy Assistant

Secretary for Technical Policy and Engineering Services, and the Deputy Assistant Secretary representing the district.

Final Selection Committee sets date for publicly opening the price proposals and all the concerned firms are notified seven days prior to the opening date. The committee approves an award to the firm with lowest adjusted score and authorize the Bureau of Contract Administration to enter into a contract for the price proposed. Within 30 days of final selection, concerned parties are informed about the results (9).

2.4. FDOT Bid Evaluation Method

The Certification and Technical Review Committee, which is responsible for evaluation of technical proposal, is comprised of the following: Director of Construction, Director of Preconstruction and Design, and the Directors of Operations and Production representing the district in which the project is located. The shortlisting and evaluation of technical proposals is done using scoring and subsequently grading the proposals. Criteria on which ratings for each firm is based are:

- 1) Technical Criteria - The assigned weight of technical criteria varies from 35-50 depending upon the type of project. The weight is lowest for resurfacing projects and highest for bridge construction projects. The aspects covered in technical criteria include: constructability and future expansion, maintenance of traffic, safety, environmental impacts, innovation of design/construction, application of design criteria and understanding of scope of services. These aspects are assigned varying weights based on the project type.
- 2) Management Criteria - To insure the capability of design/build team to complete the project successfully, firms are graded on a set of management criteria. The assigned weight varies from 30-45 based on the project type.

Lowest value corresponds to bridge construction and highest value corresponds to resurfacing type projects. The aspects considered in management criteria include: contractor's experience, adverse effects of construction on public, achieve specified level of quality, experience of firm with design/build, location of firm, previous joint contractor - consultant experience and experience of design team.

- 3) Project Schedule - Timely completion of the project has been assigned 20% of the overall score. The criteria include: contractor's and consultant's schedules and abilities to meet schedule, length of contractor's and consultant's schedule.

The scores computed by the CTRC for each shortlisted firm are submitted to Final Selection Committee (FSC). FSC publicly opens the sealed price proposals and divide each firm's price by the score given by the CTRC to obtain an adjusted score. The firm which obtains lowest adjusted score is selected. With the approval of an award to the firm, FSC authorize the Office of Contract Administration to initiate the contract.

A sample FDOT evaluation form is included as Appendix B.

CHAPTER 3

EVALUATION PROCEDURES

3.1. General

Historically a great deal of information in the form of opinion exists concerning design/build as an alternative contracting procedure. Examination of these reports reveals that most of the information is based upon anecdotal data. Very little quantitative data has been reported concerning design/build project performance.

Another troublesome point is that it is difficult if not impossible to make a direct comparison of design/build to non-design/build project performance. If for example a certain project is accomplished under the design/build method, we can certainly measure project performance in terms of cost, time and other quantitative measures. However, what would have been the project performance if the project had been accomplished under a non-design/build method? Identical projects simply do not exist. Direct comparisons although desirable are in most cases not possible.

How then can we compare the results of a trial design/build program to the results obtained using traditional non-design/build methods? The approach used in this research study has been to compare the mean performance measures of the design/build projects to the mean performance measures of the non-design/build projects. As far as possible, comparison were made using similar project categories such as size, type and performance period.

In other words, this study has attempted to determine whether or not the average results on the design/build projects was different from the average results on non-design/build projects. If a difference exists, a quantifiable measure of that difference should be obtained.

3.2. Data Collection

The FDOT maintains a data base of historical project information including both originally estimated and actual values for times and costs. Actual time and cost data is available for design, construction and inspection tasks.

Access to this project data for the purposes of this study was provided by the FDOT. Project data was collected for the eleven design/build projects. As a basis of comparison, project data was also obtained for all non-design/build projects performed during the period of the Design/Build Pilot Program. This amounted to project records on approximately 400 projects performed during the 1988-89 and 1989-90 fiscal years. Results of the engineer's estimate versus actual low bid are tracked by the FDOT and reported monthly. The data from 1990 was used for this evaluation.

Input from the actual design/build participants was obtained by surveying both the design consultant and the contractor team members for all businesses that had participated in the FDOT design/build pilot program. This included offerers who were not successful as well as those who were awarded contracts. Samples of the FDOT's design/build procurement documentation and evaluation summaries were also obtained for review.

3.3. Evaluation of Cost Performance

3.3.1 Developing a Comparable Non-Design/Build Cost

The FDOT utilizes a highly standardized estimating system to develop pre-bid engineer's estimates of cost. This estimating procedure utilizes a data base of previously bid work activity unit prices. Estimates are prepared using quantities taken off the final design drawings and appropriate unit prices. Costs are adjusted for a variety of factors including project location, time frame and size.

Using the same estimating procedures used for traditional non-design/build projects the FDOT's estimating section prepared engineer's estimates of construction cost for the design/build projects. This type of estimate is normally prepared after the design is completed. However, with the design/build projects, final quantities could not be determined until the projects were awarded and the designs had been completed. Final quantities were generally not available until after project completion. At the close of this study, quantities were only available for seven of the design/build projects. Consequently, an FDOT engineer's estimate of cost was generated for seven of the eleven design/build projects. Budget figures were available for the projects which did not have an engineer's estimate. However, since the budgets were developed prior to design they were not considered comparable with actual costs. Column (2) in Table 2 lists the engineer's cost estimates and budget amounts.

A review of the historical data concerning the engineer's estimates as compared to the actual low bids revealed, as expected, a variance between the two. A summary of the statistics of the FDOT engineer's estimates compared to the low bids is presented in Table 3. The mean difference for projects bid in 1990 is listed by project size category. The results indicate that the FDOT engineer's estimate is on average somewhat higher than the low bids received. The categorical mean of this difference was used to adjust the engineer's estimate of construction cost of the design/build projects to a probable low bid price for each project. Column (3) in Table 2 gives the adjustment percentage. Column (4) in Table 2 provides the probable low bid costs for the design/build projects.

This probable low bid cost includes only construction costs. Therefore, an estimated cost for design and construction engineering/inspection was added to the low bid cost to obtain an estimated non-design/build total costs. Estimates of design costs were developed from an analysis of 306 projects designed during the 1988-89 and 1989-90 fiscal years. Design costs averaged from 14% for

TABLE 2. Adjustment of Engineer's Estimated Design/Build Project Cost to Probable Non-Design/Build Low Bid Cost

Project (1)	Engineer's Estimate (Construction Cost Only) (dollars) (2)	NDB Probable Low Bid		Design and Inspection Adjustment Factor (%) (5)	Probable NDB Low Bid Total Cost (including design and inspection costs) (dollars) (6)
		Adjustment Factor (%) (3)	Construction Cost (dollars) (4)		
Resurfacing SR 776 01050-3519	979,786	-14.9	833,798	+25.38	1,045,416
Resurfacing SR 13 78070-3519	--	--	--	--	--
Resurfacing SR 71 51020-3517	1,112,454	-9.1	1,011,221	+25.38	1,267,869
Resurfacing SR 7 86100-3587	1,332,729	-9.1	1,211,451	+25.38	1,518,917
Resurfacing SR 91 97871-3322	2,935,278	-9.1	2,668,168	+21.3	3,236,488
Resurfacing SR 15 75080-3529	620,105	-14.9	563,675	+25.38	706,736
Bay Bridge 49040-3501 & 59010-3516	11,452,183	-10.3	10,272,608	+15.3	11,844,317
Turnpike FEC R/R 97940-3367	--	--	--	--	--
Turnpike 97931-3310	--	--	--	--	--
Const/Maint Office 11000-3511	390,729	-6.1	366,894	+31.04	480,778
Trunpike Tolls Data Center 97931-3315	--	--	--	--	--

TABLE 3. Difference Between Low Bid and Engineer Estimated Costs of FDOT Projects

Statistics (1)	Project Size Categories					
	Less than \$100,000 (%) (2)	\$100,000 to \$250,000 (%) (3)	\$250,000 to \$500,000 (%) (4)	\$500,000 to \$1,000,000 (%) (5)	\$1,000,000 to \$3,000,000 (%) (6)	Greater than \$3,000,000 (%) (7)
Mean	-14.7	- 4.0	- 6.1	-14.9	- 9.1	-10.3
Minimum	-46.3	-39.7	-27.6	-44.5	-38.1	-30.6
Maximum	26.3	23.1	16.9	28.0	26.4	15.9
Average Above	8.9	8.5	9.4	29.1	9.0	7.0
Average Below	-17.8	-13.0	-12.9	-17.7	-13.2	-14.4
Total Observa- tions	52	33	36	34	59	53

NOTE: Based on the summary of FDOT statistics for 1990.

projects with construction cost less than \$1 million to 6% for projects with construction cost between \$1 million to \$10 million. Column (2) in Table 4 listed the calculated average design costs as a percentage of construction costs. The same procedure was followed in calculating the average construction engineering/inspection costs. Construction engineering/inspection costs were derived from an analysis of 395 projects performed during the 1988-89 and 1989-90 fiscal years. Column (3) in Table 4 gives the average construction engineering/inspection costs as a percentage of construction costs.

Adding the estimated design and construction engineering/inspection cost to the predicted low bid costs results in a probable non-design build total cost. Column 6 in Table 2 gives the estimated non-design/build total costs for each of the projects. A summary of the cost evaluation procedure is presented in Figure 3.

3.3.2. Comparison of Design/Build to Non-Design/Build Cost

A comparison of the actual design/build total cost to the estimated non-design/build total cost is presented in Table 5. Three of the seven projects had a design/build cost greater than the estimated non-design/build cost. Four of the projects had a design/build cost less than the estimated non-design/build cost. The mean difference for all seven projects was a design/build cost 4.59% greater than an estimated non-design build costs. However, one of the projects appears to be an outlier in the data set. Resurfacing SR-15 resulted in a design/build cost 40.5% greater than the estimated non-design/build costs. Additional discussions with the estimators and the project participants have failed to resolve this difference. The source of this variation remains unexplained. Figure 4 presents the results of a statistical hypothesis test to test the hypothesis that the mean difference between the design/build costs and the probable non-design/build cost is equal to 0. At the 95% significance level the hypothesis could not be rejected.

TABLE 4. Design, Construction Engineering and Inspection Costs as Percentage of Total Project Costs for FDOT Projects

Project Size Categories (dollars) (1)	Design Cost (%) (2)	Construction Engineering and Inspection Cost (%) (3)
\$250,000 to \$500,000	17.04	14.0
\$500,000 to \$2,500,000	11.88	13.5
\$2,500,000 to \$10,000,000	12.0	9.3
\$10,000,000 to \$15,000,000	9.3	6.0

NOTE: 1) CEI costs (3) based on job charges for projects completed in fiscal years 88/89 & 89/90.

2) Design costs (2) based on database sample of projects completed in fiscal years 88/89 & 89/90.

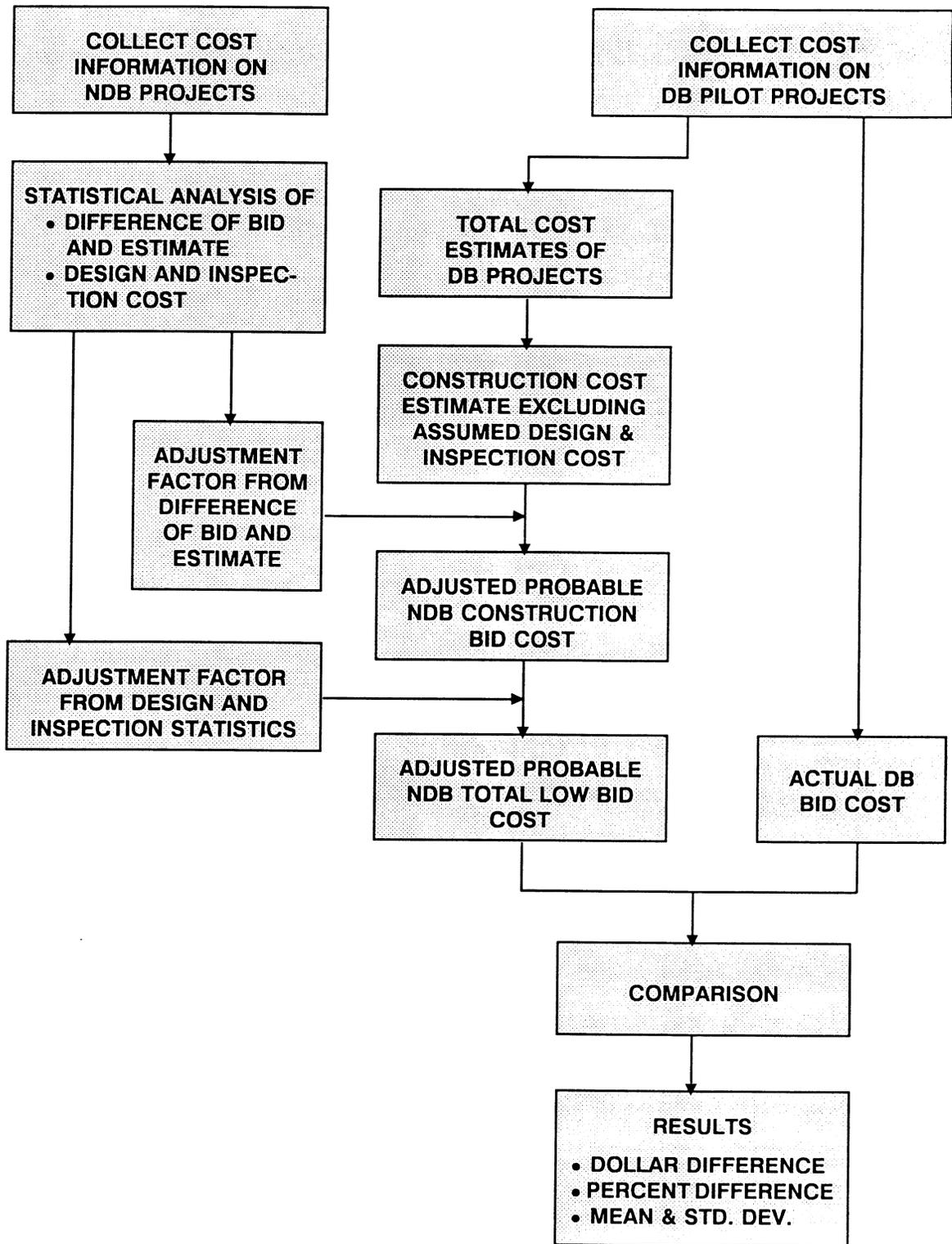


FIGURE 3. Design/Build Cost Evaluation Procedure

TABLE 5. Comparison of Design/Build Costs to Probable Non-Design/Build Costs

Project (1)	DB Bid Amount (dollars) (2)	Probable NDB Total Amount (dollars) (3)	Difference of DB & NDB		Mean Difference (%) (6)
			Amount (dollars) (4)	Percent (%) (5)	
Resurfacing SR 776 01050-3519	1,081,776	1,045,416	36,360	3.48	
Resurfacing SR 13 78070-3519	1,785,000	--	--	--	
Resurfacing SR 71 51020-3517	1,385,765	1,267,869	117,896	9.3	
Resurfacing SR 7 86100-3587	1,413,273	1,518,917	-105,644	-6.95	
Resurfacing SR 91 97871-3322	2,912,936	3,236,488	-323,552	-10.0	4.59
Resurfacing SR 51 75080-3529	992,844	706,736	286,108	40.5	
Bay Bridge 49040-3501 & 59010-3516	12,210,000	11,844,317	365,683	3.08	
Turnpike FEC R/R 97940-3367	1,888,206	--	--	--	
Turnpike 97931-3310	4,044,067	--	--	--	
Const/Maint Office 11000-3511	446,000	480,778	-34,778	-7.23	
Turnpike Tolls Data Center 97931-3315	2,349,000	--	--	--	
TOTAL DIFFERENCE			342,073	32.18	

OBJECTIVE: To test if the mean percentage difference of Design/Build low bid and probable Non-Design/Build total cost is zero.	
STATISTICAL	$\bar{y} = 4.59$
DATA:	$n = 7$
	$s = 17.32$
	$df = 6$ (degrees of freedom = 7-1)
TEST:	$H_o: \mu = 0$
	$H_a: \mu \neq 0$
TS:	$t = \frac{\bar{y} - \mu_o}{s/\sqrt{n}} = 0.7$
RR:	$t_{\alpha/2} = 2.447$ (for $\alpha = 0.05$ & $df = 6$)
RESULT:	Since $0.7 < 2.447$, therefore do not reject null hypothesis.
CONCLUSION:	At 95% confidence level it can not be concluded that mean percentage difference is not zero.
CONFIDENCE INTERVAL:	At 95% level Min = -11.43, Max = 20.61.

FIGURE 4. Hypothesis Testing for Design/Build Costs.

3.3.3. Results of Cost Evaluation

Results of the cost evaluation for the seven design/build projects indicated an average design/build/cost which was 4.59% greater than an estimated comparable non-design/build cost. However, if the project which had a difference of 40.5% is omitted the average design/build cost is 1.39% less than the estimated non-design build cost. Considering the data variability and the one outlying project, the results do not indicate a significant difference in total project cost between design/build and non-design/build projects. This analysis includes only design, construction and construction engineer/inspection costs. Road user costs have not been considered.

3.4. Evaluation of Time Performance

3.4.1. Comparison of Actual Construction Times

The FDOT develops a normal construction time for each non-design/build project. This normal time is determined by applying normal production rates to the project activity quantities. For the traditional non-design/build projects, this normal time typically becomes the specified contract duration.

However, as might be expected, actual performance times vary somewhat from the specified original normal times. An analysis of 823 non-design/build projects performed during the design/build program indicated that the mean difference between the original time and the actual time was 14.7%. That is, on the average, the actual construction time required was 14.7% longer than originally allocated. However, it should be noted that the original times do not include allowances for weather delays and time extensions resulting from supplemental agreements.

An FDOT normal construction time was developed for each of the design/build projects. This normal time was adjusted by the 14.7% mean difference found for

non-design/build projects. Table 6 gives the adjustment of the normal construction time to probable actual non-design/build construction time. Column 4 in Table 6 list the estimated non-design/build construction times.

Table 7 presents a comparison of the design/build actual of the design/build actual construction times to the estimated non-design/build construction times. Nine of the eleven design/build projects produced actual construction times which were less than the estimated time required to perform the project as a non-design/build project. Two of the design/build projects required more time than estimated for performing the projects as non-design/build projects. The mean of the design/build comparison was -21.1%. That is, on the average, the design/build construction time was 21.1% shorter than the predicted non-design/build construction time.

3.4.2. Comparison of Actual Design Times

With regard to design time, a comparison was made between the design/build actual design procurement time and the normal time allocated by the FDOT for non-design/build design procurement. Data was not available concerning variances in actual non-design/build design procurement time and the normal time allotted by the FDOT for non-design/build design procurement. However, officials at the FDOT believe that the actual design times vary very little from the normal times.

Table 8 presents a comparison of the actual design/build design procurement times to the times normally required for non-design/build design procurement. The design/build designs were procured in considerably less time than would have been required under the normal non-design/build system. On the average, the design/build designs were acquired in 54.0% less time than required for normal non-design/build projects.

A summary of the time evaluation procedure is presented in Figure 5.

TABLE 6. Adjustment of Normal Construction Time to Probable Non-Design/Build Actual Construction Time

Project (1)	Normal Construction Time (days) (2)	NDB Adjustment Factor (%) (3)	Probable NDB Actual Construction Time (days) (4)
Resurfacing SR 776 01050-3519	270	14.7	310
Resurfacing SR 13 78070-3519	270	14.7	310
Resurfacing SR 71 51020-3517	270	14.7	310
Resurfacing SR 7 86100-3587	270	14.7	310
Resurfacing SR 91 97871-3322	365	14.7	419
Resurfacing SR 15 75080-3529	270	14.7	310
Bay Bridge 49040-3501 & 59010-3516	1,000	14.7	1,147
Turnpike FEC R/R 97940-3367	365	14.7	419
Turnpike 97931-3310	365	14.7	419
Const/Maint Office 11000-3511	365	14.7	419
Turnpike Tolls Data Center 97931-3315	420	14.7	482

TABLE 7. Comparison of Design/Build Actual Construction Time to Probable Non-Design/Build Actual Construction Time

Project (1)	DB Actual Construction Time (days) (2)	Probable NDB Actual Construction Time (days) (3)	DB and NDB Time		Mean Difference (%) (6)
			Difference (days) (4)	Difference (%) (5)	
Resurfacing SR 776 01050-3519	154	310	-156	-50.3	
Resurfacing SR 13 78070-3519	279	310	-31	-10.0	
Resurfacing SR 71 51020-3517	200	310	-110	-35.5	
Resurfacing SR 7 86100-3587	225	310	-85	-27.4	
Resurfacing SR 91 97871-3322	218	419	-201	-47.9	-21.1
Resurfacing SR 15 75080-3529	229	310	-81	-26.1	
Bay Bridge 49040-3501 & 59010-3516	536	1,147	-611	-53.3	
Turnpike FEC R/R 97940-3367	570	419	151	36.0	
Turnpike 97931-3310	527	419	108	25.8	
Const/Maint Office 11000-3511	253	419	-166	-39.6	
Turnpike Tolls Data Center 97931-3315	462	482	-20	-4.1	
TOTAL DIFFERENCE			-1,202	-232.4	

TABLE 8. Comparison of Normal Design/Procurement Time to Design/Build Design/Procurement Time

Project (1)	DB Design/ Procurement Time (days) (2)	Normal Design/ Procurement Time (days) (3)	Design/Procurement Time		Mean Difference (%) (6)
			Difference (days) (4)	Difference (%) (5)	
Resurfacing SR 776 01050-3519	134	300	-166	-55.3	
Resurfacing SR 13 78070-3519	133	300	-167	-55.7	
Resurfacing SR 71 51020-3517	132	300	-168	-56.0	
Resurfacing SR 7 86100-3587	138	300	-162	-54.0	
Resurfacing SR 91 97871-3322	134	300	-166	-55.3	-54.0
Resurfacing SR 15 75080-3529	132	300	-168	-56.0	
Bay Bridge 49040-3501 & 59010-3516	229	420	-191	-45.5	
Turnpike FEC R/R 97940-3367	139	300	-161	-53.7	
Turnpike 97931-3310	146	300	-154	-51.3	
Const/Maint Office 11000-3511	127	300	-173	-57.7	
Turnpike Tolls Data Center 97931-3315	138	300	-162	-54.0	
TOTAL DIFFERENCE			-1,838	-594.5	

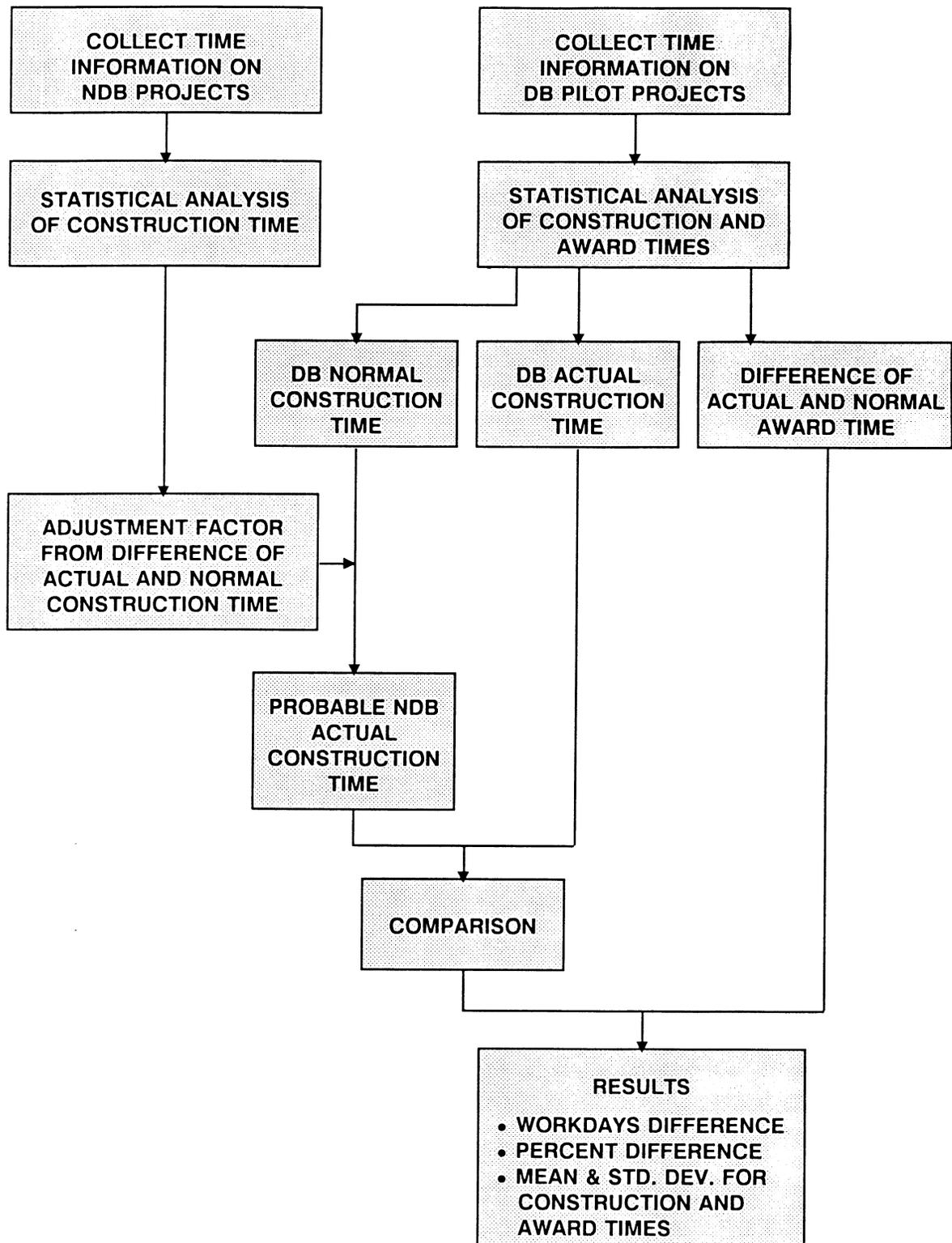


FIGURE 5. Design/Build Time Evaluation Procedure

3.4.3. Results of Time Evaluation

Table 9 gives a comparison of total project time for the design/build projects and predicted time for non-design/build projects. On a total time comparison, all of the design/build projects performed better than the expected non-design/build results. On the average, the total design/build project time was 35.7% less than predicted for performing the projects as traditional non-design/build projects.

A small sample t-test was performed to verify the existence of a statistically significant difference in means between the construction time results on the design/build projects and the non-design/build projects. The results of this statistical analysis are presented in Figure 6. The design/build construction time results were confirmed to be statistically greater than the non-design/build results at a 95% significance level. The lower bound of the 95% confidence interval is calculated to be at 18.0%. In other words, the statistical analysis indicates that at a 95% level of significance the design/build construction time results were at least 18.0% better than the average non-design/build results.

3.5. Evaluation of Supplemental Agreement Performance

3.5.1. General

Supplemental agreements or changes to the contract result from a variety of causes. The following list includes a few of the most common reasons for after bid contract changes:

1. Differing Site Conditions
2. Owner Requested Modifications
3. Design Errors and Omissions
4. Excusable Delays

TABLE 9. Comparison of Total Design/Build Time to Probable Total Non-Design/Build Time

Project (1)	Total DB Time (days) (2)	Total Probable NDB Time (days) (3)	Total Project Time		Mean Difference (%) (6)
			Difference (days) (4)	Difference (%) (5)	
Resurfacing SR 776 01050-3519	288	610	-322	-52.8	-35.7
Resurfacing SR 13 78070-3519	412	610	-198	-32.5	
Resurfacing SR 71 51020-3517	332	610	-278	-45.6	
Resurfacing SR 7 86100-3587	363	610	-247	-40.5	
Resurfacing SR 91 97871-3322	352	719	-367	-51.0	
Resurfacing SR 15 75080-3529	361	610	-249	-40.8	
Bay Bridge 49040-3501 & 59010-3516	765	1,567	-802	-51.2	
Turnpike FEC R/R 97940-3367	709	719	-10	-1.4	
Turnpike 97931-3310	673	719	-46	-6.4	
Const/Maint Office 11000-3511	380	719	-339	-47.1	
Turnpike Tolls Data Center 97931-3315	600	782	-182	-23.3	
TOTAL DIFFERENCE			-3,040	-392.6	

OBJECTIVE: To test if the mean percentage difference of original construction time and actual construction time for Design/Build (DB) Projects is significantly greater than Non-Design/Build (NDB) Projects.	
STATISTICAL DATA:	$\mu_o = 14.77$ (population mean difference of NDB) $y = 9.47$ (sample mean of 11 DB projects) $n = 11$ (number of DB projects) $s = 33.02$ (standard deviation of difference) $df = 10$ (degrees of freedom = 11-1)
TEST:	$H_o: \mu = 14.77$ $H_a: \mu < 14.77$ TS: $t = \frac{\bar{y} - \mu_o}{s/\sqrt{n}} = -2.43$ RR: $t_\alpha = 1.812$ (for $\alpha = 0.05$ & $df = 10$)
RESULT:	Since $ -2.43 > 1.812$, therefore reject null hypothesis.
CONCLUSION:	At 95% confidence level it can be concluded that sample mean is significantly greater than the population mean.
LOWER BOUND:	Minimum = $t_\alpha s/\sqrt{n} = 18.04$

FIGURE 6. Hypothesis Testing for Design/Build Construction Time

Given the complexity of construction projects, it would seem that some level of supplemental agreements is inevitable. However, minimizing the amount of change is a worthwhile goal. Changes frequently mean an extension of the completion date and increased construction cost.

The level of change is therefore an indicator of efficiency of the construction process. Lower levels of change suggest enhanced design constructability and improved communication among the project participants (owner, designer and builder).

3.5.2. Comparison of Actual Supplemental Agreements Required

Table 10 provides a summary of the supplemental agreements incurred on the eleven design/build projects. The design/build projects averaged 1.54 supplemental agreements per project. The design/build projects had a total cost change due to supplemental agreements of -1.99%. The time change due to supplemental agreements was +5.14%.

As a basis of comparison, the FDOT's non-design/build supplemental agreements records for the 1990 calendar year were reviewed. During that year the cost change from supplemental agreements was +8.78%. The design/build projects performed considerably better with regard to supplemental agreements.

3.6. Survey of Design/Build Participants

3.6.1. Quantitative Results

It was felt that quantitative evaluations may not tell the complete story. Therefore, a survey of the participants in the FDOT design/build pilot program was conducted to obtain additional input. The participant list included both design consultant partners and road builder contractor partners of all design/build teams that had submitted letters of interest in response to FDOT design/build advertisement. This includes both successful and unsuccessful proposers. A total of 74 participants were surveyed and 32 responses were obtained.

TABLE 10. Summary of Supplemental Agreements on the Design/Build Projects

Project (1)	Number of Agreements (2)	Bid Amount (dollars) (3)	Amount Change (dollars) (4)	Bid Time (days) (3)	Time Change (days) (4)
Resurfacing SR 776 01050-3519	1	1,081,776	0	161	0
Resurfacing SR 13 78070-3519	1	1,785,000	0	240	0
Resurfacing SR 71 51020-3517	1	1,385,765	-6,936	180	0
Resurfacing SR 7 86100-3587	2	1,413,273	-7,533	239	0
Resurfacing SR 91 97871-3322	1	2,912,936	-1,488	210	+35
Resurfacing SR 15 75080-3529	1	992,844	0	150	+79
Bay Bridge 49040-3501 & 59010-516	3	12,210,000	-812,694	609	-110
Turnpike FEC R/R 97940-3367	1	1,888,206	+98,668	540	+2
Turnpike 97931-3310	2	4,044,067	192,466	450	+58
Const/Maint Office 11000-3511	1	446,000	4,455	270	+12
Turnpike Tolls-Data Center 97931-3315	3	2,349,000	-75,147	337	+98
Total Amount	17	30,508,867	-608,209	3386	174
Average Change	1.54	--	-1.99%	-	+5.14%

A summary of the survey data is presented in Figure 7. The results of questions covering the most significant issues are as follows:

- 1) 53.0% of the respondents found the design criteria furnished by the FDOT to be satisfactory. 37% found it to be not sufficient. 10% thought it was overly restrictive.
- 2) 75.0% of the respondents found the FDOT's evaluation and scoring procedure to be appropriate.
- 3) The respondents ranked the project categories in terms of suitability for the design/build method:
 1. Building Structures Highest Suitability
 2. Bridges
 3. Resurfacing
 4. Multi-Lane Lowest Suitability
- 4) 94% of the respondents felt that the FDOT should subsidize a portion of the design cost for the unsuccessful short list participants.
- 5) 66% of the respondents found that the design/build system resulted in reduced construction time.
- 6) 72% of the respondents found setting their own construction time to be beneficial.
- 7) 74% of the respondents indicated that the FDOT's design build program should be continued with changes. 10% indicated that it should be continued as is and 16% felt it should be discontinued.

This input from the design/build participants appears to indicate a generally favorable response to the program. It is interesting to note that very little differences in responses could be detected between design consultant and contractor participants. For example, 73% of the contractors, who are usually uncomfortable with subject award procedures, found the evaluation method appropriate. 77% of the designers answered the same question positively.

1) The design criteria given to the DB Team was --				
	<u>Satisfactory</u>	<u>Not Sufficient</u>	<u>Overly Restrictive</u>	
	53%	37%	10%	
	(16)	(11)	(3)	
2) The proposal evaluation procedures and scoring were --				
	<u>Appropriate</u>		<u>Not Appropriate</u>	
	75%		25%	
	(21)		(7)	
3) Rate the various projects with regard to their suitability for the Design/Build Program --				
	<u>Building Structure</u>	<u>Bridges</u>	<u>Resurfacing</u>	<u>Multi-lane</u>
Highly Suitable	48%	34%	29%	3%
	(14)	(11)	(9)	(1)
Suitable	34%	44%	29%	52%
	(10)	(14)	(9)	(16)
Not Suitable	18%	22%	42%	45%
	(5)	(7)	(13)	(14)
4) Should the FDOT subsidize a portion of the proposal preparation cost for those bidders who are short listed and submit technical proposals --				
	<u>Yes</u>	<u>No</u>		
	94%	6%		
	(30)	(2)		
5) Did the Design/Build System give you added ability to reduce construction time --				
	<u>Yes</u>	<u>No</u>		
	66%	34%		
	(21)	(11)		
6) Was setting your own project time a beneficial feature of the Design/Build System --				
	<u>Yes</u>	<u>No</u>		
	72%	28%		
	(23)	(9)		
7) The Design/Build Program should be --				
	<u>Continued as is</u>	<u>Continued with changes</u>	<u>Not continued</u>	
	10%	74%	16%	
	(3)	(23)	(4)	

FIGURE 7. Summary of Survey of Design/Build Participants

3.6.2. Participant Comments

In addition to the quantitative questions the survey of participants also requested comments. Although varied, these comments provide some valuable suggestions for improvement and an interesting insight into the feelings of the participants. These comments are summarized here under the various subjects.

Best Feature of the Design/Build Program

1. Reduced Performance Time
2. Potential for Design Innovation and Contractor Input into Design

Worst Feature of the Design/Build Program

1. Evaluation subjectivity
2. Cost of preparing a non-successful proposal
3. Possible conflict of interest caused by having the inspection consultant work for the contractor

Suggestions for Improvement

1. Remove or at least minimize subjectivity in evaluation procedures.
2. Throw out proposals which do not meet design standards rather than just reduce the score.
3. Compensate unsuccessful short list proposers for a portion of the design expense.
4. Give the design/build team more freedom to solve problems.
5. Administer the design/build projects with FDOT personnel who understand and are knowledgeable about the design/build process.
6. Construction engineering and inspection function should remain an owner responsibility.
7. Provide a consistent design/build market.

A complete listing of the participants' comments is enclosed in Appendix B.

CHAPTER 4
SUMMARY AND CONCLUSIONS

The Florida Department of Transportation has completed a trial design/build program consisting of eleven projects with a total contract value of \$30,508,867. The project performance results for these trial design/build projects have been measured and compared to the average performance obtained on the FDOT's non-design/build projects during the same period of time.

An analysis of the cost performance information indicated that the average design/build direct cost was 4.59% greater than the average non-design/build cost. However, statistical analysis of the data failed to confirm this difference in means. There may or may not be a difference between the two averages. Because of the small sample size of seven and the data variability, the result of the direct cost comparison is inconclusive.

Comparison of the project time performance results provided a more definite indication. The average design/build construction time performance result was 21.1% shorter than the average for non-design/build projects. Statistical analysis indicated with a 95% degree of certainty that the design/build average construction time was at least 18.0% shorter than the non-design/build average construction time. Actual design/build design procurement times were also considerably shorter than the normal design procurement time for non-design/build projects. The average design/build design time was 54% less than the normal time allocated for non-design/build design procurement. This savings in project performance time means that for the eleven design/build projects an additional 3040 project days are likely to have been required if the projects were accomplished under the traditional non-design/build method.

The design/build projects also produced a significant reduction in after bid changes to the contract. The design/build program projects had an average

change amount of -1.99%. The FDOT's non-design/build projects for 1990 had an average change amount of 8.78%. This improvement suggests enhanced constructability and designer-constructor interaction.

A survey of the participants suggested that the program was generally well received. The majority of the respondents including contractors indicated that the design/build program should be continued. In spite of the subjective nature of the award evaluation procedure, a majority of respondents including contractors felt that the evaluation method was appropriate. However, several of the participants did indicate their misgivings concerning the evaluation system. Some of the participants advocated a low bid award system.

The design/build program project results can be summarized as follows:

1. Average design/build Costs was 4.59% greater than the average non-design build costs.
2. Average design/build total project time was 35.7% less than the average non-design/build time.
3. Average design/build contract change amount was -1.99%. Average non-design/build contract change amount was +8.78%.
4. 74% of the surveyed participants indicated that the design/build program should be continued with changes.

These results suggest significant improvements over the traditional non-design build contracting system.

A variety of factors appear to have contributed to the success of the design/build program. Certainly combining the construction and design functions within a single entity enhances project efficiency. The maintenance of high qualification standards also means that the project team was composed of exceptional designers and builders. The inclusion of project time as a major award scoring criteria certainly establishes an incentive for reducing project time. The type of projects selected for design/build may also have been a factor.

CHAPTER 5 RECOMMENDATIONS

Continuation of the Program

The pilot program results show significant project performance improvements. These improvements are a direct benefit to the people of the state of Florida. For this reason, design/build should remain a contracting alternative available to the FDOT.

However, design/build by its very nature is somewhat restrictive of competition. It is an elite program not suitable for all contractors or designers. It's use should therefore be limited. All projects should not be design/build projects.

Award Evaluation Procedures

Clearly many of the participants in the program were uncomfortable with the subject nature of the evaluation procedure. However, subjectivity seems to be an inevitable part of this type of evaluation.

Two possible changes might be considered. First, it may be more appropriate to establish a minimum pre-qualification standard. Once qualification is determined, each bidder would then be evaluated solely with regard to their design, cost and proposed time. This would provide a more level playing field for the competitors and allow room for the newer and less experienced participant.

Secondly, several of the participants suggested including a non-FDOT third party in the evaluation review. This presumably would counter any possible bias. The practicality of this depends upon whether or not qualified, objective third parties could be found and brought into the review process. However, this may be worth further consideration.

Finally, prompt disclosure of evaluation results should be a matter of policy.

Compensation for Unsuccessful Short List Proposers

Some compensation should be considered for the non-successful participants to cover at least part of their design cost. Without this subsidy the smaller designer may be unable to risk losing the investment in design cost. Therefore, competition might eventually be limited to only a few larger participants. A reduction in competition may lead to higher costs.

Design/Build Project Management

Several of the participants indicated that the design/build projects should be managed by a design/build project manager. This FDOT manager should be someone who has a complete understanding of the design/build process and can assist in its implementation. Participants also asked for more autonomy for the design/build team in solving project problems. This requires carefully balancing the FDOT's need for project control with their confidence in the design/build team selected. It is also important that the amount of design/build work be relatively constant. This will allow participants and competitors the opportunity to build upon their experiences and develop their design/build team skills.

Selection of Design/Build Projects

More study should be given to the question of which project categories are most suitable for design/build. Projects which provide an opportunity for design innovation and contractor input into design would seem to be good candidates. Projects where there is little design flexibility probably are not the best design/build projects. Since reduced project time is one of the benefits of design/build, projects which have a more urgent completion requirement might be considered for design/build.

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APPENDIX A

A-I Design/Build Contract: Florida Statute

1 A bill to be entitled
2 An act relating to the Consultants' Competitive
3 Negotiation Act; amending s. 287.055, F.S.;
4 defining the term "design-build contract" and
5 related terms; providing that the act does not
6 apply to the procurement of design-build
7 contracts by an agency; requiring preparation
8 of a design criteria package by specified
9 persons; requiring each agency to adopt rules
10 or ordinances for the award of design-build
11 contracts; specifying minimum procedures for
12 municipalities, political subdivisions, school
13 districts, and school boards; providing an
14 effective date.

15
16 Be It Enacted by the Legislature of the State of Florida:

17
18 Section 1. Paragraphs (h), (i), (j), and (k) are added
19 to subsection (2) of section 287.055, Florida Statutes, 1988
20 Supplement, and subsection (10) of said section is amended to
21 read:

22 287.055 Acquisition of professional architectural,
23 engineering, landscape architectural, or land-surveying
24 services; definitions; procedures; contingent fees prohibited;
25 penalties.--

26 (2) DEFINITIONS.--For purposes of this section:

27 (h) A "design-build firm" means a partnership,
28 corporation, or other legal entity which:

29 1. Is certified under s. 489.119 to engage in
30 contracting through a certified or registered general
31

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1 contractor or a certified or registered building contractor as
2 the qualifying agent; and

3 2. Is certified under s. 471.023 to practice or to
4 offer to practice engineering; certified under s. 481.219 to
5 practice or to offer to practice architecture; or certified
6 under s. 481.319 to practice or to offer to practice landscape
7 architecture.

8 (i) A "design-build contract" means a single contract
9 with a design-build firm for the design and construction of a
10 public construction project.

11 (j) A "design criteria package" means concise,
12 performance-oriented drawings or specifications of the public
13 construction project. The purpose of the design criteria
14 package is to furnish sufficient information so as to permit
15 design-build firms to prepare a bid or a response to an
16 agency's request for proposal, or to permit an agency to enter
17 into a negotiated design-build contract. The design criteria
18 package shall specify such performance-based criteria for the
19 public construction project, including, but not limited to,
20 the legal description of the site, survey information
21 concerning the site, interior space requirements, material
22 quality standards, schematic layouts and conceptual design
23 criteria of the project, cost or budget estimates, design and
24 construction schedules, site development requirements,
25 provisions for utilities, storm water retention and disposal,
26 and parking requirements, as may be applicable to the project.

27 (k) A "design criteria professional" means a firm who
28 holds a current certificate of registration under ch. 481 to
29 practice architecture or landscape architecture or a firm who
30 holds a current certificate as a registered engineer under ch.
31 471 to practice engineering and who is employed by or under

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CODING: Words ~~stricken~~ are deletions; words underlined are additions.

1 contract to the agency for the providing of professional
2 architect services, landscape architect services, or
3 engineering services in connection with the preparation of the
4 design criteria package.

5 (10) APPLICABILITY TO DESIGN-BUILD CONTRACTS
6 CONTRACTED-PERFORMANCE.--

7 (a) Except as provided in this subsection, this
8 section is not applicable to the procurement of design-build
9 performance-based-on contracts by any agency, and any such
10 agency shall award design-build contracts in accordance with
11 the procurement laws, rules, and ordinances applicable to the
12 agency.

13 (b) The design criteria package shall be prepared and
14 sealed by a design criteria professional employed by or
15 retained by the agency. If the agency elects to enter into a
16 professional services contract for the preparation of the
17 design criteria package, then the design criteria professional
18 shall be selected and contracted with in accordance with the
19 requirements of subsections (4) and (5). A design criteria
20 professional who has been selected to prepare the design
21 criteria package shall not be eligible to render services
22 under a design-build contract executed pursuant to the design
23 criteria package.

24 (c) Each agency shall adopt rules or ordinances for
25 the award of design-build contracts. For municipalities,
26 political subdivisions, school districts, and school boards,
27 such procedures shall include as a minimum the following:

28 1. The preparation of a design criteria package for
29 the design and construction of the public construction
30 project.

31

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CODING: Words setoken are deletions; words underlined are additions.

1 2. The qualification and selection of no fewer than
2 three design-build firms as the most qualified, based on the
3 qualifications, availability, and past work of the firms,
4 including the partners or members thereof.

5 3. The criteria, procedures, and standards for the
6 evaluation of design-build contract proposals or bids, based
7 on price, technical, and design aspects of the public
8 construction project, weighted for the project.

9 4. The solicitation of competitive proposals, pursuant
10 to a design criteria package, from those qualified design-
11 build firms and the evaluation of the responses or bids
12 submitted by those firms based on the evaluation criteria and
13 procedures established prior to the solicitation of
14 competitive proposals.

15 5. For consultation with the employed or retained
16 design criteria professional concerning the evaluation of the
17 responses or bids submitted by the design-build firms, the
18 supervision or approval by the agency of the detailed working
19 drawings of the project; and for evaluation of the compliance
20 of the project construction with the design criteria package by
21 the design criteria professional.

22 6. In the case of public emergencies, for the agency
23 head to declare an emergency and authorize negotiations with
24 the best qualified design-build firm available at that time.

25 Section 2. This act shall take effect upon becoming a
26 law.

31

--1068

CODING: Words stricken are deletions; words underlined are additions.

1 A bill to be entitled

2 An act relating to transportation-related

3 contracts; amending s. 337.11, F.S.; allowing

4 the Department of Transportation to enter into

5 contracts which combine the design and

6 construction of a road, structure, or a

7 building and appurtenant facilities or

8 equipment; providing factors for determining

9 the best interest of the public; providing

10 procedures for administering design and

11 construction contracts; providing criteria for

12 evaluating contract proposals; requiring

13 certain projects to be in the 5-year

14 transportation plan; authorizing a

15 demonstration program; setting limit on total

16 contract amount; requiring certain information

17 in an annual report; providing an effective

18 date.

19

20 Be It Enacted by the Legislature of the State of Florida:

21

22 Section 1. Present subsections (5), (6), and (7) of

23 section 337.11, Florida Statutes, 1986 Supplement, are

24 renumbered as subsections (6), (7), and (8), respectively, and

25 a new subsection (5) is added to said section to read:

26 337.11 Authority of department to contract; advertise

27 for bids; make emergency repairs, supplemental agreements, and

28 change orders; combined design and construction contracts

29 periodic payment; preservation of records.--

30 (5)(a) If the head of the department determines that

31 it is in the best interest of the public to combine the design

1 and construction of a road, structure, or building and

2 appurtenant facilities or equipment into a single contract,

3 the department may secure such work through a request for

4 proposals. Factors including, but not limited to, time

5 savings, cost reduction, expertise to be gained, or use of

6 state-of-the-art methods shall be considered when determining

7 the best interest of the public.

8 (b) The department shall adopt by rule procedures for

9 administering combined design and construction contracts.

10 Such procedures shall include, but not be limited to:

11 1. Prequalification of applicants.

12 2. Announcement of occasions when a design and

13 construction contract is desired.

14 3. Criteria to be used in developing requests for

15 proposals.

16 4. Criteria and personnel to be used for evaluating

17 proposals and awarding contracts.

18 (c) If at least three reasonable proposals are

19 submitted pursuant to a request for proposals, the department

20 may proceed to evaluate the proposals as provided herein. In

21 evaluating proposals, the department shall consider the cost,

22 safety, and long-term durability of the project, the

23 feasibility of implementing the project as proposed, the

24 ability of the design and construction teams to complete the

25 work in a timely and satisfactory manner, and such other

26 factors as the department deems appropriate. In evaluating

27 the capabilities of the design and construction teams to

28 perform in a timely and satisfactory manner, the department

29 shall also consider such factors as the abilities of the

30 professional personnel, past performance, capacity to meet

31 time and budget requirements, location, recent, current, and

1 projected workload of the firms, and the volume of work
2 previously awarded to the firms by the department.
3 (c) The department may conduct a combined design and
4 construction contract demonstration program, not to exceed a
5 total contract amount of \$50 million. Pursuant to this
6 program, the department may award, to the qualified firm or
7 joint venture with the lowest cost and best technical
8 proposal, combined design and construction contracts for
9 projects in the department's current 5-year transportation
10 plan in each of the following project categories:
11 1. Resurfacing;
12 2. Bridges, replacement, or new bridge construction;
13 3. Multi-lane new construction or reconstruction; and
14 4. Fixed signal, signal and parking garages.
15
16 Annually, the department shall submit to the transportation
17 committees of the Senate and House of Representatives a report
18 outlining the results obtained from completed combined design
19 and construction contracts awarded to that time.
20
21 Section 2. This act shall take effect July 1, 1987, or
22 upon becoming a law, whichever occurs later.

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READ REVERSE

A-II Design/Build Contract: Rules of the State of Florida

RULES OF THE
STATE OF FLORIDA
DEPARTMENT OF GENERAL SERVICES
DIVISION OF BUILDING CONSTRUCTION
CHAPTER 13D-23
PROCEDURES FOR CONTRACTING FOR DESIGN-BUILD SERVICES

13D-23.001 Purpose. In order to comply fully with the requirements of Section 255.29(4), Florida Statutes, the following procedures shall be followed in selecting firms to provide design-build services, and in bidding or negotiating contracts for design-build services for construction projects. These rules shall apply solely to those projects within the jurisdiction of the Department of General Services. This jurisdiction is dictated by Section 20.22, F.S., and the Fixed Capital Outlay Section of the Legislative Appropriations Act of any given year, for example, Chapter 86-167, Sections 2 and 5 Laws of Florida.

Specific Authority 255.29(4) FS. Law Implemented 255.29 FS.

History - New

13D-23.002 Definitions.

(1) "Design-Build" means providing one single administrative entity (a "firm" as defined herein) responsible for design and construction under one contract where services within the scope of practice of architecture, or professional engineering as defined by the laws of the State of Florida are performed by a registered architect or professional engineer and where those services within the scope of construction contracting as defined by the laws of the State of Florida for construction are performed by a certified or registered contractor as applicable according to Florida Statutes.

(2) "Department" means the Department of General Services.

(3) "Division" means the Division of Building Construction.

(4) "Firm" means any individual, partnership, corporation, association or other legal entity permitted by law to practice architecture or engineering and to engage in construction contracting in the State of Florida.

(5) "Project" means that fixed capital outlay project described in the public announcement including:

(a) Individual facilities;

(b) Grouping of facilities, rehabilitation and/or renovation activities;

(6) "Design Criteria Package" means a clear, concise, performance oriented outline specification of the requirements of the project which defines the design constraints and the time and budgetary constraints to be achieved. This may include graphics indicating the site plan, survey dimensions, contours, access roads, setbacks and preferred massing of the building elements.

(7) "Design Criteria Professional" means the architect or professional engineer under contract to the Division for providing professional services in the preparation of the design criteria package.

Specific Authority 255.29(4) FS. Law Implemented 255.29 FS.

History - New

13D-23.003 Selection of the Design Criteria Professional. The design criteria professional shall be selected and contracted with in accordance with the requirements of Chapter 13D-3, F.A.C. He will not be eligible to render services under the design-build contract. Specific Authority 255.29(4) FS. Law Implemented 255.29 FS.

History - New

13D-23.004 Design Criteria Package Requirements. A design criteria package shall be prepared for the Division by the Design Criteria Professional. It shall specify performance criteria for the building including, but not limited to, size, net interior space provisions, location, material quality standards, cost, construction schedule, site development requirements, landscaping, grading, utility provisions for water, power, telephone, storm water disposal and parking provisions. The purpose of the package is to furnish sufficient information upon which firms may prepare bid proposals or upon which negotiations may be based. The

firm to whom the design-build contract is awarded will be responsible for creation of the project design based on the criteria in the design criteria package.

Specific Authority 255.29(4) FS. Law Implemented 255.29 FS.

History - New

13D-23.005 Minimum Qualification Requirements for Firms Providing Design-Build Services. Before submitting a proposal, firms providing design-build services under Rule 13D-23.008 shall satisfy the qualification requirements set forth in Rule 13D-11.004(1)(a) and (2)(a), F.A.C., and applicable Florida Statutes.

Specific Authority 255.29(4) FS. Law Implemented 255.29 FS.

History - New

13D-23.006 Public Announcement Procedures. Except in emergency situations declared in accordance with Rule 13D-11.008, at such times when deemed necessary by the Division, the Division shall publish an announcement in the "Florida Administrative Weekly" published by the Department of State, Division of Elections, Tallahassee, Florida 32399, available by subscription through the Division of Elections, providing a general description of projects requiring design-build services and defining procedures on how interested qualified firms may apply for consideration.

Specific Authority 255.29(4) FS. Law Implemented 255.29 FS.

History - New

13D-23.007 Certification and Competitive Selection.

(1) There shall be a Certification and Selection Committee comprised of the following: Director of the Division or his designated alternate and/or Assistant Director of the Division or his designated alternate; the Division's Project Director for the project; a Representative of the User Agency for which the project will be constructed; and other members as may be agreed upon by the members listed above. Once the Certification and Selection Committee is established, it shall serve throughout the selection process for a project until completed. The committee may be assisted by the Design Criteria Professional in an advisory capacity.

(2) The Certification and Selection Committee shall determine the relative ability of each firm to perform the services required for each project. Determination of ability shall be based on staff training and experience, firm experience, location, volume of past contracts with the Division, financial capacity, past performance, and current and projected work load. In making its determination the committee may interview no less than three firms to determine the firms' ability to provide services, and commitment to meet time and budget requirements.

(3) The Certification and Selection Committee shall select no less than three nor more than six firms deemed to be most highly qualified to perform the required services, after considering the factors in (2) above. Each of these firms will be eligible for consideration in accordance with Rule 13D-23.008 or Rule 13D-23.009. The Committee will report its selections of finalists to the Executive Director of the Department for his review and approval.

(4) The Executive Director may direct that the competitive bidding approach be followed under Rule 13D-23.008 or he may determine it is in the best interest of the state to negotiate the contract for design-build services under Rule 13D-23.009. The Executive Director may determine that it is in the best interest of the state to negotiate instead of inviting bids when:

- (a) the project is one with standard requirements such as an office building or a storage warehouse; or
- (b) the project requires special expertise; or
- (c) there is a need to complete the project on an accelerated schedule.

Authority is hereby delegated to the Executive Director to determine in writing that a danger to the public health, safety or welfare, or a danger of other substantial loss to the state requires emergency action, whereupon a firm shall be selected by competitive negotiation under Rule 13D-23.009. Specific Authority 255.29(4) FS. Law Implemented 255.29 FS.

History - New

13D-23.008 Competitive Bidding for Design-Build Services.

(1) In the event competitive bidding is directed by the Executive Director, bid proposals will be received from those qualified firms determined eligible by the Certification and Selection Committee under Rule 13D-23.007(3). Bid proposals shall include proposed price and a conceptual design in response to the Design Criteria Package. The Certification and Selection Committee shall review the design concept proposed by each firm and shall establish a relative weighting factor for each proposed building system component based on the following criteria:

<u>Component</u>	<u>Worst</u>	<u>Best</u>
(a) Structural System	0	7.5%
(b) Exterior Skin Material	0	10%
(c) Mechanical System Components	0	10%
(d) Mechanical System Operational Characteristics & Operating Costs	0	15%
(e) Plumbing System Materials	0	5%
(f) Interior Finish Materials	0	7.5%
(g) Landscaping Provisions	0	5%
(h) Interior Hardware & Fixtures	0	5%
(i) Interior Door Units/Wall Systems	0	5%
(j) Floor & Ceiling Systems	0	7.5%
(k) Lighting Systems	0	7.5%
(l) Roof	0	10%
(m) Development Time	0	5%

(2) The Committee will then total the score given for each proposed component and divide that score into the price proposed. The low qualified bidder will then be that bidder whose adjusted price is lowest. The Executive Director shall approve an award to the firm with the lowest adjusted price that is not in dispute and authorize the Division to enter into a contract for the proposed price if the price is within the project budget.

Specific Authority 255.29(4) FS. Law Implemented 255.29, 257.055(10) FS.

History - New

13D-23.009 Competitive Negotiation for Design-Build Services.

In the event negotiation of a contract is authorized by the Executive Director:

(1) The Certification and Selection Committee shall select no less than three firms in order of preference from those deemed to be most qualified to perform the required services under Rule 13D-23.007. In making its determination the Certification and Selection Committee shall interview no less than three firms to determine their relative ability to meet time and budget requirements and to identify and establish the relative merits of each firm's approach to managing and scheduling the project. The Committee will report its selections to the Executive Director of the Department for his review and approval. The Executive Director of the Department will then authorize the Division to negotiate a contract in full accordance with Rule 13D-11.008.

(2) When authorized, the Division shall negotiate and enter into a contract for design-build services for the project with the firm authorized at compensation determined to be fair, competitive and reasonable. In making the determination, the Division shall analyze the cost of the design-build services required, giving full consideration to the scope and complexity of the project. The compensation shall be on a guaranteed maximum price basis for all costs which shall include reimbursable costs plus fixed lump sum fees for design, project management, overhead and profit.

(3) Should the Division be unable to negotiate a satisfactory contract with the firm considered to be the most qualified, at a price the Division determines to be fair, competitive and reasonable, negotiations with that firm shall be formally terminated. The Division shall then undertake negotiations with the second most qualified firm. Failing accord with the second most qualified firm, the Division shall then undertake negotiations with the third most qualified firm.

(4) Should the Division be unable to negotiate a satisfactory contract with any of the selected firms, additional firms shall be selected.

in accordance with the provisions of Rule 13D-23.009. Negotiations shall continue in accordance with this section until an agreement is reached.

(5) The award of a negotiated contract shall be approved by the Governor and Cabinet as department head except when an emergency is determined.

Specific Authority 255.29(4) FS. Law Implemented 255.29, 287.055(10) FS.

History - New

**CHAPTER 14-91
ADMINISTRATION OF COMBINED DESIGN
AND CONSTRUCTION CONTRACTS**

14-91.001	Purpose.
14-91.002	Definitions.
14-91.003	Design Criteria Package Requirements.
14-91.004	Minimum Qualification Requirements for Firms Providing Design/Build Services.
14-91.005	Public Announcement Procedures.
14-91.006	Certification and Competitive Selection.
14-91.007	Competitive Selection of Design/Build Services.
14-91.008	Final Selection for Design/Build Services.

14-91.001 Purpose. In order to comply fully with the requirements of Section 337.11(5), Florida Statutes, the following procedures shall be followed in selecting design/build firms to provide combined design and construction services for demonstration projects.

Specific Authority 334.044(2), 337.11(5)(b) FS. Law Implemented 337.11(5) FS. History—New 3-13-88.

14-91.002 Definitions. For purposes of this rule chapter the following definitions apply:

(1) "Design/Build" means providing responsibility within a single contract for design and construction where services within the scope of practice of professional engineering or architecture, as defined by the laws of the State of Florida, are performed by an engineer or architect duly registered in the State of Florida; and where services within the scope of construction contracting, as defined by the laws of the State of Florida, are performed by a contractor qualified and licensed under the applicable Florida Statutes.

(2) "Department" means the Florida Department of Transportation.

(3) "Firm" means any individual, firm, partnership, corporation, association, joint venture, or other legal entity permitted by law to practice engineering, architecture and/or construction contracting in the State of Florida.

(4) "Project" means that project described in the public announcement.

Specific Authority 334.044(2), 337.11(5)(b) FS. Law Implemented 337.11(5) FS. History—New 3-13-88, Amended 6-13-90.

14-91.003 Design Criteria Package Requirements.

(1) A design criteria package shall be prepared by the Department.

(a) Roadway packages may include: limits of project, project schedule, prescribed typical section elements, traffic data, existing right of way maps, permitting status, requirements for maintenance of traffic, and design standards.

(b) Bridge packages may include: alignment, prescribed typical section elements, design criteria, design guidelines, aesthetic requirements, project schedule, standard detail drawings, available

subsurface soil data, existing right of way maps, permitting status, and minimum vertical and horizontal clearance requirements of channel and approach spans.

(c) Capital outlay packages may specify performance criteria for the building including: size, net interior space provisions, location, material quality standards, allowed budget amount, project schedule, site development requirements, landscaping, storm water disposal, and parking provisions.

(2) The purpose of the design criteria package is to furnish sufficient information upon which firms may prepare technical proposals and price proposals. The firm to whom the design/build contract is awarded will be responsible for creation of the project design based on the criteria in the design criteria package and the construction of the facility in compliance with the approved plans and specifications.

Specific Authority 334.044(2), 337.11(5)(b) FS. Law Implemented 337.11(5) FS. History—New 3-13-88.

14-91.004 Minimum Qualification Requirements for Firms Providing Design/Build Services. Firms providing services within the scope of practice of professional engineering for road and bridge projects shall have satisfied the qualification requirements set forth in Rule Chapter 14-75 for qualification prior to the closing date for submittal of letters of interest. Firms providing construction management services shall have satisfied the qualification requirements set forth in Rule Chapter 14-75 for qualification prior to the closing date for submittal of letters of interest. Contractors for road and bridge projects shall be prequalified by the Department in accordance with Rule Chapter 14-22 prior to the closing date for submittal of letters of interest. Contractors, engineers, and architects for fixed capital outlay projects shall satisfy qualification requirements as defined by the laws of the State of Florida, based on the applicable category of the specific project prior to the closing date for submittal of letters of interest.

Specific Authority 334.044(2), 337.11(5)(b) FS. Law Implemented 337.11(5) FS. History—New 3-13-88.

14-91.005 Public Announcement Procedures.

Except in emergency situations, the Department shall publish an announcement in a newspaper having a general circulation in the county where the proposed work is located in accordance with 337.11, Florida Statutes, and in the Florida Administrative Weekly, setting forth a general description of the project requiring design/build services and defining procedures for interested qualified firms to apply for consideration. The Florida Administrative Weekly is published by the Department of State, Division of Elections, Bureau of Administrative Code, Tallahassee, Florida 32399-0250, and is available by subscription through the Bureau of Administrative Code. The notice shall contain time frames for submittal of a letter of interest, a general description of the project, a description of the areas of qualification required for performance of the work, and any

other requirements of the submittal of letter of interest.

Specific Authority 334.044(2), 337.11(5)(b) FS. Law Implemented 337.11(5) FS. History—New 3-13-88.

ANNOTATIONS

Shortlisting

Rules 14-91.005 and 14-91.006, F. A. C., insofar as they provide for "shortlisting," do not exceed DOT's rulemaking authority. Although neither F. S. A. § 337.11(5) nor F. S. A. § 287.057(3), by their express terms, provide for, or direct DOT to provide for, "shortlisting" procedure, neither does either statute prohibit use of "shortlisting" as part of procedures implementing design-build program. F. S. A. § 337.11(5)(b) specifically authorizes procedures for "prequalification of applicants." It is not outside range of possible interpretations to conclude that Legislature was authorizing DOT to "prequalify applicants" through "shortlisting," either instead of or, as Chapter 14-91, F. A. C., does, in addition to procedures already in place for prequalification of contractors to do work under F. S. A. § 337.11(2) and (3) and of design consultants to do work under F. S. A. § 287.055. Ajax Paving Industries, Inc. v. Department of Transportation, Bureau of Contract Administration (DOAH 88-1963R), 10 FALR 3966 (1988).

14-91.006 Certification and Competitive Selection.

(1) Firms desiring to submit proposals on the design/build project must submit a letter of interest setting forth the qualifications of the entities involved in the firm and providing any other information required by the announcement of the project.

(2) There shall be a Certification and Technical Review Committee comprised of the following: Director of Construction; Director of Design; District Directors of Operations and Production; or their designees representing the District in which the project is located; and other members as agreed upon by the previously listed members. For Florida Turnpike projects, the Turnpike Directors for Production and Operations will serve instead of the District Directors.

(3) The Certification and Technical Review Committee shall determine the relative ability of each firm to perform the services required for each project. Determination of ability shall be based upon the abilities of the professional personnel; utilization of socially and economically disadvantaged enterprises; past performance; capacity to meet time and budget requirements; location; recent, current, and projected workload of the firms; and the ability of the design and construction teams to complete the work in a timely and satisfactory manner.

(4) The Certification and Technical Review Committee shall select not less than three firms deemed to be most highly qualified to perform the required services, after considering the factors in 14-91.006(3) above. Each of the firms will be eligible for consideration in accordance with Rule 14-91.007. The Committee will report its selection of finalists to the State Transportation Engineer and the District Secretary for the District in which the project is located for their review and approval.

For Turnpike projects, the Director of Florida's Turnpike will represent the District Office.

Specific Authority 334.044(2), 337.11(5)(b) FS. Law Implemented 337.11(5) FS. History—New 3-13-88. Amended 6-13-90.

ANNOTATIONS

Shortlisting

Rules 14-91.005 and 14-91.006, F. A. C., insofar as they provide for "shortlisting," do not exceed DOT's rulemaking authority. Although neither F. S. A. § 337.11(5) nor F. S. A. § 287.057(3), by their express terms, provide for, or direct DOT to provide for, "shortlisting" procedure, neither does either statute prohibit use of "shortlisting" as part of procedures implementing design-build program. F. S. A. § 337.11(5)(b) specifically authorizes procedures for "prequalification of applicants." It is not outside range of possible interpretations to conclude that Legislature was authorizing DOT to "prequalify applicants" through "shortlisting," either instead of or, as Chapter 14-91, F. A. C., does, in addition to procedures already in place for prequalification of contractors to do work under F. S. A. § 337.11(2) and (3) and of design consultants to do work under F. S. A. § 287.055. Ajax Paving Industries, Inc. v. Department of Transportation, Bureau of Contract Administration (DOAH 88-1963R), 10 FALR 3966 (1988).

Library Reference: An Update on Public Sector Competitive Bidding in Florida. John H. Rains, III and Jennifer A. Phelan, 19 Stetson L. R. 771, 774 (Summer 1990).

14-91.007 Competitive Selection of Design/Build Services.

(1) Technical and Price proposals will be received from those firms deemed to be the most highly qualified by the Certification and Technical Review Committee and approved under Rule 14-91.006(4). For all bridge and multi-lane construction projects, a prebid conference will be held shortly after selection of the final firms. Price proposals shall include one lump sum cost for all design, construction management, and construction of the proposed project, preliminary design submittal reports and other data requested in response to the Design Criteria Package. Proposals shall be segmented into two packages:

(a) Technical Proposal. A technical proposal shall include preliminary design plans, preliminary specifications, technical reports, calculations, permit requirements, and other data requested in response to the Design Criteria Package.

(b) Price Proposal. The price proposal shall be submitted in a separate sealed package. The package shall indicate clearly that it is the price proposal and shall identify clearly the firm's name, project description, or any other information required by submission of proposals. The price proposal shall be secured by the Contracts Administration Office until such time as the Final Selection Committee meets to select the design/build proposal.

(2) The Certification and Technical Review Committee shall review the design concepts or preliminary designs proposed by each firm and shall establish a rating for each firm based on the

APPENDIX B
Sample Evaluation Form

DESIGN/BUILD TECHNICAL PROPOSAL EVALUATION SUMMARY
 State Proj. No. 75080-3529 SR 15 from SR 520 to SR 436 MPI No. 5114618 ORANGE COUNTY

EVALUATION CRITERIA	A			B			C		
	C.O.	Dist	Avg.	C.O.	Dist	Avg.	C.O.	Dist	Avg.
Points	Maximum								
8	7	5.7	6.35	5.5	5.3	5.4	6.5	4.3	5.4
9	5	8.4	6.7	7	5.7	6.35	5	4.7	4.85
5	3.5	5	4.25	3.5	5	4.25	3.5	4.7	4.1
4	2	3.3	2.65	0	3	1.5	0	3	1.5
5	2	4	3	3	4.7	3.85	2	3.3	2.65
4	2	4	3	2	3	2.5	2	2	2
35	21.5	30.4	25.95	21	26.7	23.85	19	22	20.5
5	4	5	4.5	2.5	5	3.75	2.5	5	3.75
8	6	5	5.5	4	4.7	4.35	6	5.3	5.65
13	11	11.7	11.35	11	8.3	9.65	8	11.7	9.85
5	0	3.3	1.65	0	1	0.5	4	3.3	3.65
4	3	3.3	3.15	4	3.3	3.65	4	3	3.5
5	4	4	4	0	1.7	0.85	5	4.4	4.7
5	3	5	4	3	4.7	3.85	3	4.3	3.65
45	31	37.3	34.15	24.5	28.7	26.6	32.5	37	34.75
8	8	7.3	7.65	7	6.3	6.65	8	5.4	6.7
4	0	0	0	0	0	0	0	0	0
8	2	3.7	2.85	2	3	2.5	-2	2.3	0.15
20	10	11	10.5	9	9.3	9.15	6	7.7	6.85
100	62.5	78.7	70.6	54.5	64.7	59.6	57.5	66.7	62.1

APPENDIX C

C-I Sample Questionnaire

FINAL EVALUATION SURVEY
FDOT Design/Build Program

1. Was your Design/Build Team successful in obtaining an award of a Design/Build Contract?

Yes

Type of Project? Resurf Bridge

No

Building Structure

NA (FDOT)

Multilane

2. The design criteria given to the Design/Build Team was

Satisfactory

Not Sufficient (more detail should be provided)

Overly Restrictive (more flexibility should be given)

3. What improvements, if any, would you suggest with regard to the design criteria provided?

4. The proposal evaluation procedures and scoring were -

Appropriate

Not Appropriate

5. What improvements, if any, would you suggest with regard to the Proposal Evaluation Procedures and scoring of the Technical Proposals?

13. What is the worst feature of the Design/Build Program?

14. If the Design/Build Program is continued, what one change would you like to see made?

15. If the Design/Build Program is continued, what is the second most important change that should be made?

C-II Summary of Participant Survey

Summary of Participant Survey: 1. Design Criteria

The design criteria given to the Design/Build Team was – 1) Satisfactory, 2) Not Sufficient (more detail should be provided), 3) Overly Restrictive (more flexibility should be given).

Category (1)	Satisfactory (%) (2)	Not Sufficient (%) (3)	Overly Restrictive (%) (4)
All	50.0	34.4	9.4
(a) Type of Respondent			
Contractors	21.9	21.9	9.4
Designers	28.1	12.5	0
(b) Contract Award			
Awarded	37.5	9.4	0
Not Awarded	12.5	25.0	9.4
(c) Type of Project			
Resurfacing	18.8	18.8	3.1
Bridge	15.6	6.3	3.1
Building Street	6.3	6.3	3.1
Multilane	3.1	0	0

Summary of Participant Survey: 2. Evaluation Procedures

The proposal evaluation procedures and scoring were – 1) Appropriate, 2) Not Appropriate

Category (1)	Appropriate (%) (2)	Not Appropriate (%) (3)
All	65.6	21.9
(a) Type of Respondent		
Contractors	34.4	12.5
Designers	31.2	9.4
(b) Contract Award		
Awarded	43.7	0
Not Awarded	21.9	21.9
(c) Type of Project		
Resurfacing	25.0	12.5
Bridge	18.8	3.1
Building Street	12.5	3.1
Multilane	3.1	0

Summary of Participant Survey: 3. Resurfacing Suitability

Rate the Resurfacing projects with regard to their suitability for the Design/Build Program – 1) Not Suitable, 2) Suitable, 3) Highly Suitable

Category (1)	Not Suitable (%) (2)	Suitable (%) (3)	Highly Suitable (%) (4)
All	40.6	28.1	28.1
(a) Type of Respondent			
Contractors	25.0	12.5	15.6
Designers	15.6	15.6	12.5
(b) Contract Award			
Awarded	18.7	12.5	15.6
Not Awarded	21.8	15.6	12.5
(c) Type of Project			
Resurfacing	9.4	12.5	18.7
Bridge	9.4	6.3	6.3
Building Street	9.4	6.3	0
Multilane	9.4	0	0

Summary of Participant Survey: 4. Bridges Suitability

Rate the Bridge projects with regard to their suitability for the Design/Build Program – 1) Not Suitable, 2) Suitable, 3) Highly Suitable

Category (1)	Not Suitable (%) (2)	Suitable (%) (3)	Highly Suitable (%) (4)
All	21.9	43.7	34.4
(a) Type of Respondent			
Contractors	12.5	25.0	18.7
Designers	9.4	18.7	15.6
(b) Contract Award			
Awarded	12.5	15.6	18.7
Not Awarded	9.4	28.1	15.6
(c) Type of Project			
Resurfacing	9.4	15.6	15.6
Bridge	3.1	9.4	12.5
Building Street	6.3	6.3	3.1
Multilane	0	6.3	3.1

Summary of Participant Survey: 5. Multilane Suitability

Rate the Multilane Projects with regard to their suitability for the Design/Build Program – 1) Not Suitable, 2) Suitable, 3) Highly Suitable.

Category (1)	Not Suitable (%) (2)	Suitable (%) (3)	Highly Suitable (%) (4)
All	43.7	50.0	3.1
(a) Type of Respondent			
Contractors	18.7	31.3	3.1
Designers	25.0	18.7	0
(b) Contract Award			
Awarded	15.6	28.1	3.1
Not Awarded	28.1	21.9	0
(c) Type of Project			
Resurfacing	9.4	31.3	0
Bridge	12.5	9.4	0
Building Street	15.6	0	0
Multilane	0	6.3	3.1

Summary of Participant Survey: 6. Building Structure Suitability

Rate the Building Structure Projects with regard to their suitability for the Design/Build Program – 1) Not Suitable, 2) Suitable, 3) Highly Suitable.

Category (1)	Satisfactory (%) (2)	Not Sufficient (%) (3)	Overly Restrictive (%) (4)
All	15.6	31.3	43.7
(a) Type of Respondent			
Contractors	9.4	12.5	25.0
Designers	6.3	18.7	18.7
(b) Contract Award			
Awarded	9.4	15.6	18.7
Not Awarded	6.3	15.6	25.0
(c) Type of Project			
Resurfacing	12.5	15.6	9.4
Bridge	0	6.3	15.6
Building Street	0	6.3	9.4
Multilane	0	0	9.4

Summary of Participant Survey: 7. Design Subsidy

Should the FDOT Subsidize a portion of the proposal preparation cost for those bidders who are short listed and submit technical proposals? – 1) Yes, 2) No

Category (1)	Yes (%) (2)	No (%) (3)
All	93.7	6.2
(a) Type of Respondent		
Contractors	53.1	3.1
Designers	40.6	3.1
(b) Contract Award		
Awarded	43.7	3.1
Not Awarded	50.0	3.1
(c) Type of Project		
Resurfacing	37.5	3.1
Bridge	25.0	0
Building Street	15.6	0
Multilane	6.3	3.1

Summary of Participant Survey: 8. Reducing Construction Time

Did the Design/Build System give you added ability to reduce construction time? – 1) Yes, 2) No.

Category (1)	Yes (%) (2)	No (%) (3)
All	65.6	34.4
(a) Type of Respondent		
Contractors	31.2	25.0
Designers	34.4	9.4
(b) Contract Award		
Awarded	43.7	3.1
Not Awarded	21.9	31.3
(c) Type of Project		
Resurfacing	25.0	15.6
Bridge	21.9	3.1
Building Street	9.4	6.3
Multilane	6.3	3.1

Summary of Participant Survey: 9. Setting Own Time Beneficial

Was setting your own project time a beneficial feature of the Design/Build System? – 1) Yes, 2) No		
Category (1)	Yes (%) (2)	No (%) (3)
All	71.9	28.1
(a) Type of Respondent		
Contractors	37.5	18.7
Designers	34.4	9.4
(b) Contract Award		
Awarded	46.9	0
Not Awarded	25.0	28.1
(c) Type of Project		
Resurfacing	31.3	9.4
Bridge	15.6	9.4
Building Street	12.5	3.1
Multilane	9.4	0

Summary of Participant Survey: 10. Continue DB Program

The Design/Build Program should be – 1) Continued As Is, 2) Continued With Changes, 3) Not Continued.

Category (1)	Continued As Is (%) (2)	Continued With Changes (%) (3)	Not Continued (%) (4)
All	9.4	71.9	12.5
(a) Type of Respondent			
Contractors	3.1	37.5	12.5
Designers	6.3	34.4	0
(b) Contract Award			
Awarded	9.4	34.4	0
Not Awarded	0	37.5	12.5
(c) Type of Project			
Resurfacing	6.3	28.1	3.1
Bridge	0	25.0	0
Building Street	3.1	12.5	0
Multilane	0	3.1	3.1

C-III Comments of Participants: Designers

3. What improvements, if any, would you suggest with regard to the design criteria provided?

- The design criteria provided in the past has been adequate; however, some proposals did not meet minimum standards because they did not address certain existing problems.
- References to Standard of Speed (i.e., use metallic (???), use chilled water system (vs. dx refrigerated system), use of plenum a/c return system ok, or not ok.).
- Minimum quality standards, for instance air conditioning.
- Be concise, present final product desired. State limitations to design variance. State criteria for selection.
- More detail of the Individual Design Elements should be provided by the Department. There was often widely varying interpretations as to what was actually required.
- Improvements should be made with specific regards to variability in substructure quantities in regards to compensation. Piling should be paid on a basis consistent with normal FDOT practice (separate unit price for piling furnished and piling furnished/driven).
- Satisfaction.

5. What improvements, if any, would you suggest with regard to the Proposal Evaluation Procedures and scoring of the Technical Proposals?

- More emphasis should be given to the proposals response to meet technical standards. For example, if existing vertical geometry does not meet the design speed requirements, the proposal should clearly define the problem and the construction cost should include the cost to correct. If the proposal does not propose improvements to meet "Minimum Technical Standards", the proposal should be thrown out.
- Inconsistent Bonding/Professional Liability requirements.
- Use persons to evaluate who are not interested parties that desire a skewed(??) evaluation.
- It has been almost three years since we last pursued an FDOT Design/Build project. We are not prepared to pull out old files and re-review the scope, criteria, evaluation procedures, etc. at this time. Therefore, we are only able to answer a few questions.
- More emphasis should be given to the Architect/Engineer's qualifications.
- State criteria in RFP.
- The design/build team should be made aware of the exact requirements at the various stages of the process. From pre-bid proposal through post construction services. The requirements were unclear and the District and Tallahassee personnel did not interpret the same way. Some consistency is necessary to allow a smooth process and a more objective evaluation of the proposals.
- The proposed evaluation procedures and scoring of the technical proposal was equitable to all parties. The largest inequity is that there is no compensation for a design/build firm that is not the recipient of the contract.
- Satisfactory.

12. What is the best feature of the Design/Build Program?

- The fact that the product is finished construction forces the contractor and consultant to work as a team to reduce construction cost and reduce construction time. This results in a huge savings to the FDOT by accelerating both the design and construction time frame and reducing cost. This can also produce creative design/innovative construction solutions that can be utilized by the department on other (i.e. non-design/build) projects.
- The owner gets a chance to see what he is "buying" ahead of contract times. Shortens building delivery time. Eliminator builder - architect antagonism - they work together as a team (the European way).
- The fact that you did it at all.
- Optimizes the architect/contractor coordinator, and should produce low cost product.
- Cost savings.
- Allows design build team to be innovative with methods and materials.
- The obvious advantage is the time saved by the "fast track" nature of the process. However, the best feature of the design/build approach is having the input of a contractor as the design is developed. This method in fact provides a constructability review and value engineering as the design is developed.
- Rapid construction of limited scope projects.
- The best feature of the program is the benefit to the Owner. The Owner has a single-point of responsibility, thereby freeing the Owner from much of the traditional burden of administration and liability management. Side benefits to the Owner is a reduced timeframe for completion of the project and reduced claims and extras. In return, the Owner benefits from an improved use of materials and design.
- Time saving and room for innovation.

13. What is the worst feature of the Design/Build Program?

- The consultant should be the single point of contact with the Client after the actual construction begins. Payment to the consultant should be directly from the Client.
- If architect does not carry his weight, one subordinates his professionalism to the contractor (who submitted the Board Bond).
- FDOT is still a conservative, stick-in-the-mud, self-perpetuating, clannistt bunch of technical bureaucrats, two-thirds of whom need is fired but could never make a living in the real world.
- Can be a conflict of interest since the CEI-Consultants is working directly from the contractor.
- Loss of quality control by owner, unless specifications from owner are exceptionally good.
- Owner does not always get what he thinks he is getting.
- The requirement for three proposals from three short-listed bidders makes the proposer depend on the other short-listed teams to not drop-out for the project to move ahead to award.
- If the design firm also provides CEI services, then the vulnerability of the consultant is the worst feature. One cannot serve two masters at the same time. The engineer is a subcontractor to the prime contractor, but in fact is a representative of the Department. The conflict is obvious. The engineer is particularly vulnerable to experience non-reimbursed expenses when the contractor, for any reason, does not complete the work within the contract time.
- Pressure put on professional team members to cut corners up front. Inability of professionals to recover fees for preliminary design.
- Perceived disadvantages of any design/build project is the quality of inspection. There is a perception that the contractor would leverage his position over the designer to force him to accept substandard construction.
- P.E. working for G.C.

14. If the Design/Build Program is continued, what one change would you like to see made?

- The technical evaluation should throw out proposals that do not meet minimum technical standards, rather than giving them a lower rating.
- Put out more projects to the "stream" of work; makes the bidders more adapt and more responsible.
- FDOT requires that any firm doing business with them have a "special FDOT audit". This costs \$6,000± for even the smallest firm. Regular audits (required by law) don't count. We can't afford that kind of prequalification to be allowed to even submit.
- FDOT should have more control on CEI-staff with a minimum staff and minimum cost for staffing, and an add-on to the consultant if contractor exceeds his time paid by the contractor.
- Tighter performance criteria.
- More clarity in RFP.
- Some subsidy to the unsuccessful proposers.
- Ideally, the engineering firm should have the lead in the Design/Build Team with the contractor the sub. Control of the whole process would be much better defined. I recognize that bonding is a problem, but if this could be worked out, it would be a tremendous advantage to the Department and a much cleaner process.
- Pay for professional fees in preliminary design.
- It should be recognized that the costs involved on the part of the design entity of the design/build team will be much larger in the design/build method of delivery than the traditional approach. Compensation should be made to the design entity to prevent the possibility of some design entities choosing not to pursue design/build work because of the cost of the proposal preparation.
- More time for technical proposal and subsidy.

15. If the Design/Build Program is continued, what is the second most important change that should be made?

- The RFP should be more specific in providing clear guidelines and should include some discussion on existing utilities, preliminary discussion with water management agencies and other matters that may influence the design. This will improve uniformity of the proposals, and reduce the number of non-responsive proposals.
- Issue DGS specs requirements with the bid documents.
- Make the evaluation meaningful - on our bid project (??) they picked the highest priced bid who then submitted a change order for extra work the day the contract was awarded. A good job, eh?
- FDOT and CEI consultant have more authority over the contractor.
- Subsidizing design.
- Short-list four or five with only two proposals required.
- More direct lines of communications with Tallahassee and a clearer and more detailed scope of services, including design details wanted by the Department would be a great assistance.
- Changes in the bonding and professional liability insurance program are needed. Although the insurance industry is beginning to recognize the special circumstances of design/build contracts, standardized processes have not yet been accepted.
- Consultant paid by FDOT.

C-III Comments of Participants: Contractors

3. What improvements, if any, would you suggest with regard to the design criteria provided?

- All permitting requirements obtained by the department or agency.
- DOT be totally responsible for all permits.
- The department required too much design review and oversight authority by the department's designers. The department should specify the end product and the design specifications, and then should let the design/build team do its job. The department should only select design build teams in whom it has confidence to both design and build. Once a designer is selected, the department should have confidence in, expect and require the designer to do his job. Inserting review by department's designers into the project has two effects:
 - (1) It opens the door to liability for the department as having "approved" plans containing errors and omissions.
 - (2) It slows the construction process by forcing the inclusion of steps in the criteria job of plan preparation.
- As marked in #2, (overly restrictive), more flexibility should be given in the design criteria. This will allow each design team to be more creative (allowing for more value engineering) and this, in turn, will allow for more input from each team's building segment.
- I don't think "resurfacing" projects should be "design build" candidates. Ecological problems were outlined in our proposal with no consideration being given by the evaluation team.
- Time was confusing. How to deal with changes in quantity caused problems.
- Clarification regarding liability after project completed and accepted.
- Be more specific regarding typical section, finished grades, etc., so completing design teams will be on equal footing.
- The answer is obviously the more information the FDOT can provide, the better; however, in the case of the project we were involved in, the information was adequate.
- Do not use design build on resurfacing projects.

5. What improvements, if any, would you suggest with regard to the Proposal Evaluation Procedures and scoring of the Technical Proposals?

- Any company that is short-listed should be able to bid on a competitive basis. Presently, the evaluation is subject to personalities between the FDOT and the design/build team.

- Evaluation seemed to be made on who had the prettiest proposal and who was the biggest horn blower rather than technical evaluation of proposal.

- The department obviously wanted to show that design/construction produced a faster end product. The department forced the contractor to submit a schedule with the technical proposal. This permitted contractors the opportunity to gain favorable technical ratings by promising "overly optimistic" construction schedules. The department does not have people or time to fully evaluate a construction schedule, and therefore had to rely on what the contractor said as being correct. A better method would be to allow contractors to set his own completion date and then force a very stiff "penalty" for failure to complete on time. This should be combined with a specified bonus if the contractor tells the department it can get through areas or departments' desired schedule. The contractor should face two penalties the first time if he does not complete in his own time-frame, the second if he does not complete in the department's time-frame. The ability to tell the department what it wants to hear should be removed from the technical proposal. The ability to gain technical points by telling the department what it wants to hear should be particularly avoided.

- If the design criteria is licensed, then a new evaluation system will need to be devised.

- The FDOT system appears to be good.

- The evaluation procedure is much too subjective, and I feel the scores are not equitable with past experience and performance. We believe engineering firms are favored because of DOT personnel who retire from a particular district and then go to work for engineers residing in that district.

- The potential problem addressed by our team became a reality costing the department more money and additional time to complete, negating any advantage gained by the program.

- These were not a problem in my opinion.

- Include at least one professional team evaluator, not a DOT employee.

12. What is the best feature of the Design/Build Program?

- The fact that the appropriation will ??? soon.
- Could possibly speed up design and actual construction on certain type projects - primarily buildings and bridges.
- It gives the construction industry an opportunity to be more innovative and to better utilize its abilities. This will ultimately pay tremendous dividends for the owner. This was an excellent first attempt as far as the project I participated in. Florida is to be commended.
- If done properly, it should utilize the knowledge and experience of design/construction personnel to provide the most cost-effective product, which will adequately serve its intended purpose.
- Reduction of overall project cost; provides innovation; allows for true competition.
- I don't know of a good feature of a design/build program.
- None that was visible to us.
- Speed; cuts time from concept to completion by 50%.
- Private industry considers more than price in determining the best bid. Somehow, government should be able to and still be fair to all.
- Fast turn-around from concept to completion; more economical.
- Promotes efficiencies and cost-saving innovations.
- The time from project conception to completion is shortened considerably, because portions of the project can be under construction before plans are finished.
- A good way to fast track a project.
- The DOT can finally consider something other than price when considering contractors. Also, contractors can save the DOT considerable money utilizing value engineering.

13. What is the worst feature of the Design/Build Program?

- Waste of taxpayers money. Permitting requirements that require bureaucracy cooperation that design/build teams will not receive.
- The subjectivity of the people grading the design and construction ability.
- Very time consuming with no benefit to losing design/build teams; bids are not equal.
- The department still retained too much oversight and control of plans, design and construction. The department should turn loose and let design/build teams do its job. The department should rely on and expect the team to do its job. End product warranty should be substituted for progress monitoring by the department.
- Not as popular as the standard design and then bidding of a project. Limited number of design/build proposals.
- In our specific case, there was a lack of understanding and acceptance of the Design/Build Program by those reviewing our work. There are numerous differences in contract administration of design/build project and the standard "low bid" project. Yet, we were reviewed with the Standard Project in mind.
- The inequity in choosing the design/build team.
- Broad interpretation of submitted proposal.
- Overkill on reviews.
- It has the possibility of allowing personal favoritism rather than sound business judgement.
- Liability question; no compensation for short-list teams.
- The bidding process is very expensive.
- The worst feature of the program is the inability to deal with utility companies from a position of authority.
- The amount of time necessary to prepare a proposal.
- Limits participation to large contractors with staffs large enough to handle the additional work load.
- Non-objective evaluation design standards imposed on projects for none but traditional reasons.

14. If the Design/Build Program is continued, what one change would you like to see made?

- That all of the short-listed companies bid competitively.
- Pay for preparation of proposal.
- The department should place more emphasis on the people that will do the work of designing and construction. The department should go to oral presentations and interviews during technical proposal phase. The people who will do the work should be evaluated not just a company who may have ability, but the people available to do the particular project. After all, a company's technical ability truly rests with its people, not in a financial balance sheet or a brochure showing past history. Many times, a company's technical ability is valuable depending on many things. People available and their abilities are best indicators of company's abilities. In summary, oral presentations and interviews of team members should be required.
- Allow for more creative design and build by easing restrictions.
- Procedures need to be written and distributed to all concerned which would address the problem noted in question 13.
- I would like to see the design/build program discontinued.
- The deletion of resurfacing projects.
- More aggressive, positive attitudes by FDOT towards design/build.
- Solve the problem stated in question 13. (has the possibility of allowing personal favoritism rather than sound business judgement).
- Liability question, no compensation for short-list teams.
- The state should pay a portion of the cost for proposal preparation.
- Find a way to give the design/build contractors some clout in dealing with utilities and public agencies.
- More design/build projects.
- Limit program to buildings and major bridges.
- No resurfacing or widening projects.

15. If the Design/Build Program is continued, what is the second most important change that should be made?

- Reimburse the losing teams for their efforts.
- More comprehensive technical evaluation of proposal.
- A defined commitment to the program by the state so that teams can be built based on a continuing market. "Hit or miss", "hot and cold programs" produce similar design/build teams. To get the best out of program, Florida must commit to program first so that industry can commit to a market.
- Revising the evaluation system to fit changes in the program.
- The design/build program should be separated from the standard low bid procedures in all respects. This would eliminate much of the confusion of trying to gauge a design/build project in terms of Standard Procedures.
- I would like to see the Design/Build Program discontinued.
- Provide more detail and basic information.
- Liability question, compensation for short-list teams.
- The relationship between engineering consultant and contractor needs to be better defined. In the design/build contract, the consultant inspecting the work is the subcontractor for the contractor. He is working for and receives payment from the contractor. This places the consultant in a compromising position. Does he work in the best interest of FDOT or the person from whom he receives payment.
- Evaluation team with non-DOT professionals on it.