

**Limited Review of Professional
Engineering Services
Public Works Department**

**Report by the
Office of County Comptroller**

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April 9, 2010

Richard T. Crotty, County Mayor
And
Board of County Commissioners

We have conducted a limited review of the professional engineering services provided to the Public Works Department under design and continuing (term) engineering contracts. The period audited was October 1, 2006 through March 31, 2009.

We conducted this audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Responses to our Recommendations for Improvement were received from the Director of Public Works and the Manager of Purchasing and are incorporated herein.

We appreciate the cooperation of the personnel of the Design Engineering, Stormwater Management, and Roads and Drainage Divisions of the Public Works Department as well as the Purchasing and Contracts Division during the course of the audit.

Martha O. Haynie, CPA
County Comptroller

c: Ajit Lalchandani, County Administrator
Warren Geltch, Assistant County Administrator
Mark Massaro, Director, Public Works Department
Robin Hammel, Manager, Design Engineering Division
Rodney Lynn, Interim Manager, Stormwater Management Division
Deodat Budhu, Manager, Roads and Drainage Division
Johnny Richardson, Manager, Purchasing and Contracts Division

EXECUTIVE SUMMARY

Executive Summary

We conducted a limited review of the professional engineering services provided to the Public Works Department under design and continuing (term) engineering contracts. The scope of the audit included a review of contract language, project management, contract compliance, and expenditures under selected project specific design and term contracts. The audit period was October 1, 2006 to March 31, 2009. In addition, certain other matters outside of this period were also reviewed because of the length of the design process for some project specific contracts. The primary objectives of this review were to determine the following:

- 1) The adequacy of professional engineering services contract language, and project management;
- 2) Whether services received were in compliance with contract requirements and applicable County regulations, and State laws; and,
- 3) Whether controls over payments to professional engineering firms were adequate to ensure engineering services were properly authorized, actually performed, and billed in compliance with contractual terms.

Based upon the testing performed, contract language was adequate, and design projects were adequately managed, except for certain contract administration issues. Contract services received materially complied with contractual requirements and applicable County regulations and State laws. In our opinion, controls were adequate to ensure payments to professional engineering firms were for engineering services that were authorized, performed, and billed in accordance with contractual terms.

We identified several opportunities within the contracting and design processes to reduce costs and more efficiently and effectively manage operations. Our recommendations for improvements are outlined in the report.

Specific issues were as noted below:

Overhead rates were overstated in six of ten contracts for one consultant. The overstatement occurred due to the inclusion of unallowable rental cost and unallowable executive compensation in the schedule of expenses used to develop the annual overhead rates. As a result of the overstatements, the County over paid the Consultant approximately \$94,000. The County reached an agreement with the Consultant for reimbursement of the full amount during the course of the audit. We commend the County for reaching this agreement.

According to the Purchasing and Contracts Division (Purchasing), the maximum multiplier of 299 percent used by the County was "based on the results of an informal survey that was done of several governmental entities in Florida" and was

established as a policy effective December 14, 2006. However, the survey did not include an analysis of overhead rates allowed in past and existing contracts. In addition, there was no documentary support for the survey or the data used to develop the multiplier.

There was inadequate documentation by the Design Engineering Division to show the review performed to determine the reasonableness of the wage rates in consultants' cost proposals.

Updated project schedules to support change orders, time extensions, and progress status meetings were not located in the files. In addition, time extensions were granted without adequate documentation or formal approval from Purchasing. We also found that two of the three design projects reviewed were significantly behind schedule; however, there was no documentation summarizing the reasons for completion delay.

Certain key contracted individuals, whose qualifications and experience played a significant role in the County's evaluation of proposals and selection of the consultants, did not perform or performed only in a limited way on design projects. In addition, substitutes who actually performed as contracted project managers and engineers were not evaluated for similar projects experience or formally approved by the County.

In one of two projects tested where the design work had reached the 100 percent submittal, the design engineer's estimated construction costs of \$27.5 million exceeded the contract estimated construction costs (East-West Rd Segment 1) of \$11.3 million by approximately \$16 million (144 percent). In addition, documentation in the project files did not show any action taken to address the increased estimated construction costs.

Certain services performed by the Consultant for the Clarcona-Ocoee Road project were not billed on a monthly basis in accordance with Section 11B of the contract but accumulated over a protracted period of time. Two invoices of \$57,601 and \$10,339 covered services provided over thirteen and five months, respectively. Such billings make invoices hard to review. In addition, the invoices did not separate the hours and amounts to reflect the funding that was provided by multiple change orders that were developed with different overhead rates.

Design work costing approximately \$40,000 for a Consultant "to revise the plans for Clarcona-Ocoee Road between Ocoee-Apopka to SR 429 and between SR 429 to east of Clarke Road" was approved with instructions given to the Consultant to start as soon as possible. However, there was no approval from Purchasing or documented justification of an emergency purchase. In addition, services were performed by the consultant prior to approval of change orders to provide funding.

In one of two projects where the estimated construction costs exceeded \$10 million, the Consultant did not prepare and submit the required schedule of potential items for direct purchases. Total construction costs were estimated at \$28 million for this project. Also, the Consultant did not provide the County with the required construction schedule for one of these two projects even though the project had achieved 100 percent design.

There was inadequate documentation that the number of hours needed to perform various activities in a cost proposal revised to \$49,954 from \$64,716 for the Bulova Pond Drainage Improvements was reviewed for reasonableness.

Based upon a review of 22 invoices and supporting information relating to five projects handled under term contracts, we noted one instance where the percentage of work billed did not match the actual work performed resulting in the following:

- an overpayment of \$5,056;
- no support was provided for subconsultants' billings totaling \$91,219 (46 percent of the total billings of \$197,624 covered by the 22 invoices); and,
- no breakdown or details were provided for reimbursable out of pocket expenses totaling \$1,774.

In certain instances construction cost estimates for projects funded under term contracts exceeded the \$1 million limit set by State Statutes (CCNA) by up to \$1.9 million without documentation to show how County staff handled the projects after they became aware of the compliance deviation. There were also no written criteria or guidelines for the evaluation of performance of consultants prior to the renewal of term contracts for the option years.

Management concurred with all 38 Recommendations for Improvement and steps to implement the recommendations are underway or completed. Responses to each of the Recommendations for Improvement are included herein.

ACTION PLAN

**LIMITED REVIEW OF PROFESSIONAL ENGINEERING SERVICES
ACTION PLAN**

NO.	RECOMMENDATIONS	MANAGEMENT RESPONSE			IMPLEMENTATION STATUS	
		CONCUR	PARTIALLY CONCUR	DO NOT CONCUR	UNDERWAY	PLANNED
1.	We recommend that the County institutes a program to periodically audit consultants' overhead rates.	✓				✓
2.	We recommend that Purchasing ensures the following:					
A)	Surveys to establish a maximum overhead and profit multiplier are adequately documented;	✓			✓	
B)	The establishing of a maximum overhead and profit multiplier include an analysis of overhead rates allowed for past and existing contracts; and,	✓			✓	
C)	Surveys are performed systematically to reflect current market conditions.	✓			✓	
3.	We recommend Design Engineering ensures the following:					
A)	The instructions and procedures for reviewing wage rates be formalized in writing and disseminated to all divisions involved in reviewing fee proposals for design engineering services including term contracts; and,	✓			✓	
B)	The guidelines for review include benchmarking of the wage rates with limited outside governmental entities (For example, FDOT, other counties or cities).	✓			✓	
4.	We recommend Design Engineering ensures the following:					
A)	Project schedules are submitted with fee proposals for final design services and updated with various submittals (30%, 60%, etc.), for project status meetings, and with fee proposals for change orders that involve additional or deletion of services or time extensions; and,	✓			✓	
B)	Project status meetings comply with contract stipulations.	✓			✓	

**LIMITED REVIEW OF PROFESSIONAL ENGINEERING SERVICES
ACTION PLAN**

NO.	RECOMMENDATIONS	MANAGEMENT RESPONSE			IMPLEMENTATION STATUS	
		CONCUR	PARTIALLY CONCUR	DO NOT CONCUR	UNDERWAY	PLANNED
5.	We recommend Design Engineering ensures the following:					
A)	Requests for completion time extensions are formally documented by change orders, supported by updated project schedules, and formally approved by Purchasing;	✓			✓	
B)	Reasons for significant delays in the completion of design projects are summarized in writing by the design project managers and routed to management for their review and approval; and,	✓			✓	
C)	Division Staff more effectively manage the change order process.	✓			✓	
6.	We recommend the PWD ensures that only evaluated and approved individuals function as project managers and project engineers. Substitution of individuals in any of these positions should have prior written approval from Purchasing.	✓			✓	
7.	We recommend the Division ensures County project managers compare engineer's estimated construction costs when received to the estimated construction cost noted in the contract for compliance and, if applicable, perform remedial action as provided by the contract.	✓			✓	
8.	We recommend Design Engineering ensures that consultants provide a certified Orange County Progress Review Submittal Checklist with each submittal.	✓			✓	
9.	We recommend Design Engineering ensures the following:					
A)	Consultants submit invoices for services performed on a monthly basis; and,	✓			✓	

**LIMITED REVIEW OF PROFESSIONAL ENGINEERING SERVICES
ACTION PLAN**

NO.	RECOMMENDATIONS	MANAGEMENT RESPONSE			IMPLEMENTATION STATUS	
		CONCUR	PARTIALLY CONCUR	DO NOT CONCUR	UNDERWAY	PLANNED
9. B)	Invoices break out amounts that are being paid under each proposal and billed under the rates noted in the applicable cost proposal where invoices are being paid from funds provided under fee proposals developed with different overhead rates.	✓			✓	
10.	We recommend Design Engineering ensures that consultants and the Division's project managers comply with standard operating procedures for the handling of invoices.	✓			✓	
11.	We recommend PWD ensures that consultants provide a narrative description of services performed during the period covered by invoices as well as the next billing period before invoices are approved for payment.	✓			✓	
12.	We recommend Design Engineering ensures their project managers do not authorize the commencement of non-emergency work prior to approval by Purchasing/Board.	✓			✓	
13.	We recommend Design Engineering ensures consistent monitoring of contract balances and the timely approval of change orders to provide funding for work being performed.	✓			✓	
14.	We recommend Design Engineering ensures funds (limiting amounts of a fee proposal) designated for post design services are not utilized for other purposes. Additional services which do not fit the contract definition of post design services, but which are needed after design is complete, should be funded through change orders.	✓			✓	

**LIMITED REVIEW OF PROFESSIONAL ENGINEERING SERVICES
ACTION PLAN**

NO.	RECOMMENDATIONS	MANAGEMENT RESPONSE			IMPLEMENTATION STATUS	
		CONCUR	PARTIALLY CONCUR	DO NOT CONCUR	UNDERWAY	PLANNED
15.	We recommend the Division ensures that consultants prepare and submit the list of potential direct purchase items, where applicable.	✓			✓	
16.	We recommend Design Engineering ensures that consultants prepare and submit construction schedules for projects that have reached 100 percent of design.	✓			✓	
17.	We recommend the following:					
A)	Stormwater Management ensures that POs are adequately supported with cover memos and fee proposals that agree in amounts;	✓			✓	
B)	Roads and Drainage ensures that rates used to develop consultant cost estimates comply with contract provisions. In the event the services required are not covered in the existing schedule of fees, efforts should be made to verify the reasonableness of the rates proposed. Such efforts should be adequately documented. In addition, if the services required are expected to recur on a regular basis, a contract amendment should be executed to incorporate the services and related fees in the schedule of fees; and,	✓			✓	
C)	Roads and Drainage complies with contract provisions by ensuring that POs are issued with completion dates that are taken from the project schedule. If the Division can justify a need for the issuance of an NTP to supersede the PO, the contract provisions should be amended to accommodate this.	✓			✓	
18.	We recommend Roads and Drainage ensures that reviews of fee proposals for reasonableness of hours needed to complete assigned tasks are adequately documented.	✓			✓	

**LIMITED REVIEW OF PROFESSIONAL ENGINEERING SERVICES
ACTION PLAN**

NO.	RECOMMENDATIONS	MANAGEMENT RESPONSE			IMPLEMENTATION STATUS	
		CONCUR	PARTIALLY CONCUR	DO NOT CONCUR	UNDERWAY	PLANNED
19.	We recommend the Roads and Drainage Division ensures study activities and design work for remedial action are separated.	✓			✓	
20.	We recommend the Stormwater Management and the Purchasing Divisions ensure reasons for significant variances in wage rates allowed consultants for the same positions are adequately documented in instances where consultants are granted term contracts in response to the same RFP for the same scope of services.	✓			✓	
21.	We recommend the Roads and Drainage and the Stormwater Management Divisions ensure the following:					
A)	Percentages of work billed are reasonable;	✓			✓	
B)	Appropriate steps are taken to recover the over payment of \$5,714;	✓			✓	
C)	Adequate details of all reimbursable out-of-pocket expenses are provided; and,	✓			✓	
D)	Billings that include work performed by subconsultants are supported by subconsultants' invoices showing the percentage of work that they perform.	✓			✓	
22.	We recommend both the PWD and Purchasing ensure the following:					
A)	All POs for final engineering design include the County's estimated construction cost within which the project is to be designed;	✓			✓	

**LIMITED REVIEW OF PROFESSIONAL ENGINEERING SERVICES
ACTION PLAN**

NO.	RECOMMENDATIONS	MANAGEMENT RESPONSE			IMPLEMENTATION STATUS	
		CONCUR	PARTIALLY CONCUR	DO NOT CONCUR	UNDERWAY	PLANNED
22. B)	Estimated construction cost of projects designed under term contracts do not exceed \$1 million (Revised to \$2 million effective July 1, 2009);	✓			✓	
C)	Scope of services for task authorization requires submission of Engineer's construction cost estimates beginning with the 60 percent submittal; and,	✓			✓	
D)	Staff at PWD document efforts to ensure the Engineer's construction cost estimates do not exceed the limit set by statute when notified by the consultant.	✓			✓	
23.	We recommend Stormwater Management develops written criteria or guidelines for the evaluation of professional engineering consultants performing services under term contracts prior to the renewal of term contracts for the option years.	✓			✓	

INTRODUCTION

Background

The Public Works Department provides for the design, construction and maintenance of roadways, pedestrian walks, and traffic control devices for the safe, efficient, and effective travel of residents of Orange County and the general public. Primary design functions are handled by Public Works Engineering Division (Design Engineering). This Division manages capital improvement projects through the utilization of professional engineering and surveying services and project management services under project specific design engineering contracts with professional engineering firms. Stormwater Management and Roads and Drainage Divisions handle smaller design projects with design fees of \$50,000 or less and construction costs not to exceed \$1 million. The Stormwater Management Division oversees a program that provides flood protection, water conservation, and water control through the design and continual improvements to primary and secondary drainage structures. The Roads and Drainage Division's program involves the maintenance of roads and drainage system for residential streets, unpaved roads, bridges, drain-wells, pump stations, ponds, and canals. Limits for these smaller projects were changed by Florida Statutes to \$200,000 for design fees and \$2 million for construction, effective July 1, 2009.

Typically, Design Engineering manages approximately 25 to 30 large design projects involving contracted fees ranging from \$1 million to \$4 million. The smaller design projects are handled under continuing professional engineering contracts (term contracts). These contracts are awarded to several engineering firms under the same Request for Proposal (RFP) and same scope of services for a three-year period renewable every year based upon performance. Individual projects are assigned under task authorizations or Purchase Orders.

**Scope, Objectives,
and Methodology**

The audit scope included a review of contract language, project management, contract compliance, and expenditures under selected project specific design and term contracts. The audit period was October 1, 2006 to March 31, 2009. In addition, certain matters outside of this period were also

reviewed because of the length of the design process for some project specific contracts.

The primary objectives of this review were to determine the following:

- 1) The adequacy of professional engineering services contract language, and project management;
- 2) Whether services received were in compliance with contract requirements and applicable County regulations, and State laws; and,
- 3) Whether internal controls over payments to professional engineering firms were adequate to ensure engineering services were authorized, performed, and billed in compliance with contractual terms.

The Methodology for our review can be found in Appendix A.

Overall Evaluation

Based upon the work performed, contract language was adequate, and design projects were adequately managed, except for certain contract administration issues. Contract services received materially complied with contractual requirements and applicable County regulations and State laws.

In our opinion, controls were adequate to ensure payments to professional engineering firms were for engineering services that were authorized, performed, and billed in accordance with contractual terms.

RECOMMENDATIONS FOR IMPROVEMENT

1. Engineering Consultants' Overhead Rates Should Be Audited Periodically

Our review of overhead rates for a design and continuing professional engineering consulting firm revealed that the overhead rates were overstated in six of its ten contracts. These overstatements occurred over a period of several years and were the result of the inclusion of unallowable rental cost and unallowable executive compensation in the schedule of expenses used to develop the annual overhead rates.

Regarding the rental cost, the Consultant's holding company rented its building to the Consultant at market value; however, since the building is owned by the holding company and the officers of both companies are the same, the rental transaction is considered a related party transaction. As such, the Federal Acquisition Regulations limit the rental expense to costs of ownership and not market value. Cost of ownership includes depreciation, insurance, taxes, maintenance, and capital costs.

With respect to the executive compensation, the Consultant paid additional year-end lump sum compensation and bonuses to executives during the year in excess of the FDOT's Reimbursement Rate Audit Guidelines.

As a result of the overstatements, we determined the Consultant billed and the County over paid approximately \$94,000 under the six contracts. During the course of the audit, the County reached an agreement with the Consultant for reimbursement of the full amount.

We Commend the County for taking appropriate action to recover the overpayments. **We Recommend** that the County institutes a program to periodically audit consultants' overhead rates.

Management's Response:

We concur. However, it is dependent on the resources available for funding of an audit.

2. Surveys to Develop Overhead and Profit Multipliers Should Be Systematic and Adequately Documented

The County has established a policy that the overhead and profit multiplier applied to professional engineering contracts cannot exceed 299 percent. In two of nine design and term contracts reviewed, we noted that the consultants' overhead and profit multiplier requested by the consultants exceeded the established limit and the Purchasing and Contracts Division (Purchasing) applied its maximum allowed overhead and profit multiplier of 299 percent. According to Purchasing, this maximum multiplier was "...based on the results of an informal survey that was done of several governmental entities in Florida" and was established as a policy effective December 14, 2006. However, this survey did not include an analysis of overhead rates allowed for past and existing contracts. We also noted that Purchasing was not able to provide documentary support for the survey and the data used to develop the multiplier. Best practices require adequate documentary support for such surveys. Without this documentation, we were not able to validate the 299 percent maximum. Further, as market conditions change (or at least every three years) this analysis should be performed. For example, current economic conditions have heightened competition and may have forced down fringe benefits and overhead rates.

We Commend Purchasing for performing the survey and establishing the maximum overhead and profit multiplier of 299 percent. However, **We Recommend** that Purchasing ensures the following:

- A) Surveys to establish a maximum overhead and profit multiplier are adequately documented;
- B) The establishing of a maximum overhead and profit multiplier include an analysis of overhead rates allowed for past and existing contracts; and,
- C) Surveys are performed systematically to reflect current market conditions.

Management's Response:

- A) We concur. A survey was completed in October 2009 and the results documented. Any future surveys will be documented.
- B) We concur. A spreadsheet has been developed to capture multiplier data on all executed professional service contracts. The data includes multipliers for the prime and all sub-consultants.
- C) We concur. A survey will be accomplished on an annual basis. The survey will include other government entities in Florida as well as a survey of the multipliers of all existing contracts.

3. Design Engineering Management's Wage Rate Review Procedures Should Be Enhanced

During the course of our review for the reasonableness of wage rates submitted and paid for professional engineering services, we noted the following:

- A) Our review of a sample of three design project files at the Design Engineering Division and Purchasing found there was inadequate documentation to show the review performed to determine the reasonableness of the wage rates used to develop the fee proposals. We did find there was significant evidence that the reasonableness of the hours to complete the various tasks was adequately addressed. Purchasing stated that both the user Division and their department are responsible for reviewing wage rates. Further discussions with Design Engineering revealed the following:
 - Prior to April 2008, Design Engineering did not perform a review of the reasonableness of wage rates used in the development of consultants' fee proposals, but left the review entirely up to Purchasing. Further, the

Division's review of the fee proposal was limited to the scope of services and the hours needed to complete each activity.

- We were informed that in April 2008, instructions were given to project managers for design projects to review the wage rates for reasonableness. The review required a comparison of the proposed wage rates with other similar projects. However, the instructions were not formalized in writing and followed up with written procedures.
- B) Our review of fee proposals for Term Contracts initiated by the Stormwater Management Division (Stormwater Management) but also used by the Roads and Drainage Division, found that Stormwater Management was not performing a review of wage rates for reasonableness and was relying entirely upon Purchasing to perform this task.

Best practices require that the user division performs an initial review of the scope of services, the hours needed to complete each activity, and reasonableness of the wage rates requested when reviewing consultants' fee proposals. Purchasing should perform a follow-up review prior to finalizing the negotiations. A review by both user division and Purchasing gives greater assurance that the wage rates and therefore, the total cost for the project, are reasonable.

We Commend management of Design Engineering for requiring their design project managers to review wage rates in fee proposals for reasonableness.

We Recommend Design Engineering ensures the following:

- A) The instructions and procedures for reviewing wage rates be formalized in writing and disseminated to all divisions involved in reviewing fee proposals for design engineering services including term contracts; and,

- B) The guidelines for review include benchmarking of the wage rates with limited outside governmental entities (for example, FDOT, other counties or cities).

Management's Response:

- A) We concur. Implementation is underway. The Engineering Division is currently preparing a Standard Operation Procedure (SOP) for negotiation of proposals that will include evaluation of proposed rates. Rates would be compared with the Florida Department of Transportation (FDOT) rates data and the latest negotiated design contracts.

We met with Purchasing and Contracts to review the rate increase procedures on April 13, 2009. We also met with all our staff to immediately address the review of rates on all projects currently under negotiation and disseminated information obtained from our meeting with the Purchasing and Contracts Division on April 20, 2009.

We have instructed all project managers and engineers to include negotiation of rates, number of hours per task and distribution of hours among the job classifications as part of proposal negotiation effective immediately.

The Engineering Division will provide the Stormwater Management Division and Roads & Drainage Division with a draft of the SOP for negotiation of proposals and request their input. Once approved, the Public Works Engineering Division will share this SOP with all other Divisions. The intent is to make the process consistent Department wide.

- B) We concur. Implementation is ongoing. The Public Works Engineering Division will use the available data from FDOT and other counties and cities as necessary as well as the latest contracts negotiated as a basis for their review of new proposals.

Benchmarking of wage rates as described above will be included in the SOP developed in 3(A).

4. Project Schedules Should Be Submitted with Initial Design Fee Proposals and Updated as Warranted

During our review of three design project files for project schedules, we noted the following:

East West Road, Segment No.1:

- Updated project schedules were not located in the files to support the three change orders that were approved. These change orders increased the contract amount by \$494,700 to \$2,091,342 and involved additional scope of services and obvious time extensions. In each instance, the change orders provided for additional time (120 days, 90 days and 60 days) for completion of the additional scope of services.
- Each progress status meeting was not identified on the initial project schedule.
- Updated project schedules were not submitted at each project status meeting.

Taft-Vineland Road:

- No project schedule was located in the project files. According to staff, none was submitted by the consultant from the inception of the project or subsequently. There was no written evidence that staff followed up on this requirement. One project schedule that was submitted with the initial fee proposal was located in the files at Purchasing.
- Updated project schedules were not located in the files to support Change Orders Nos. 1 and 3. Updated project schedules should have been

obtained for these change orders. For example, Change Order No. 3 was approved by the Board on September 9, 2008 for \$324,392 which increased the total lump sum contract amount to \$2,278,732. This Change Order covered additional final engineering design and surveying services and the resumption of the project after design work was suspended (An updated project schedule was obtained subsequent to the matter being brought to the attention of staff).

- Each progress status meeting was not identified on the initial project schedule.
- Updated project schedules were not submitted at each project status meeting.

Clarcona-Ocoee Road:

Updated project schedules were not in the files to support project status meetings.

Section 1.3 of the scope of services in contracts for final engineering design services states,

The Consultant will prepare and submit a detailed project schedule for completion of final design and plans preparation identifying major tasks, their duration and tasks relationship. All deliverables shall be identified as a milestone on the schedule. The project status meetings shall be shown on the schedule. This schedule will utilize the Orange County Standard Roadway Project Schedule format on MS Project. An updated design project schedule shall be submitted by the Consultant at each project status meeting.

The project schedule is a primary management tool to keep projects in compliance with contract stipulations such as receipt of submittals at major milestones and completion of the project on time and within budget. The absence of this management tool can render effective management of the project extremely difficult.

We Recommend Design Engineering ensures the following:

- A) Project schedules are submitted with fee proposals for final design services and updated with various submittals (30 percent, 60 percent, etc.), for project status meetings, and with fee proposals for change orders that involve addition or deletion of services or time extensions; and,
- B) Project status meetings comply with contract stipulations.

Management's Response:

- A) We concur. Implementation is ongoing. The Engineering Division will ensure that initial project schedules are submitted by the Consultants with fee proposals for final design services. Updates to the project schedule will be required when a change order for additional services is negotiated or when additional time needs to be granted due to unforeseen events not the responsibility of the Consultant. In this case, additional time will be requested through a "zero-dollar" change order to be approved by the Purchasing and Contracts Division.

The submittal of a compliance schedule at each project meeting and at 30%, 60%, and 90% submittals may be excessive and may be addressed differently in future scopes of services. For the time being project schedules will be updated in accordance with the contract and scope of services for that project.

We met with our engineering staff to immediately address the schedule issue on all projects currently under contract on March 17, 2009.

We are also researching our electronic files for the missing schedule for the Taft-Vineland Road project. A revised schedule updated to current conditions for the project has been requested from the consultant.



The revised schedule shall be copied to Purchasing and Contracts upon receipt and acceptance, reestablishing the duration of the remaining contract.

- B) We concur. Implementation is underway. For existing contracts, project status meetings shall be identified on the initial project schedule.

In future contracts, project status meetings will not be required by the contract to be identified on the project schedule. This will provide the flexibility to have project status meetings when they are most needed during the design process.

5. Design Engineering Should Ensure That Requests for Completion Time Extensions Are Formally Documented and Approved by Purchasing

Our review of three design projects indicated that as of June 25, 2009, two of the three projects were significantly behind schedule. In addition, there was no documentation in the project files that summarized the reasons for the completion delay or documenting approvals for the completion time extensions from Purchasing. The status of the three projects reviewed as of June 25, 2009 was as follows:

STATUS OF PROJECTS			
Name of Project	Date of Notice to Proceed	Scheduled Contract Completion Date*	Actual Contract Completion Date
East West Segment No. 1	April 13, 2004	April 2006	Ongoing
Clarcona-Ocoee Road	April 14, 2000	October 2001	December 2001
Taft-Vineland Road	April 11, 2000	March 2002	Ongoing

* = Including time added by Change orders

A detailed review of the two projects yet to be completed involving contract requirements, notice to proceed (NTP), project schedules, change orders, and inquiries from the Division's project managers revealed the following:

East-West Road Segment 1:

The completion date recorded on the NTP was July 13, 2005. However, based upon additional time granted in Change Order Nos. 1, 2 and 3 (270 days) to cover additional scope of services, the revised completion date was April 13, 2006. As of June 25, 2009, approximately 1,860 days after the NTP, the final sealed and certified plans were not received. Justification for this delay has not been documented in the project file. In addition, the Division did not request approval from Purchasing for the additional time granted to the Consultant to complete the project. The latest project schedule found in the project files show a revised completion date of February 5, 2007. According to staff on June 25, 2009, the Division received the final submittal, issued a comment letter to the Consultant, and was awaiting the Consultant's response. Also, in responding to our inquiries regarding the delay in completion, staff stated that the following impacted completion of the design:

- The project was very complex.
- Additional time was needed for the County to finalize its comment letters after receipt of each submittal.
- There were delays by the Consultant in responding to the County's comments.
- There were right-of-way issues.

We also noted from the project files that there were unusually voluminous County comment letters responding to the submittals as well as some design omissions by the Consultant. For example, the 100 percent submittal had to be rejected as comments made pertaining to previous submittals were not incorporated in it.

Taft-Vineland Road:

The Completion date per the NTP was July 5, 2001. However, an additional eight months were added with the

approval of Change Order No. 1 that included additional design services. This extended the completion date to March 5, 2002. However, as of June 29, 2009, design work has not been completed. According to the project files, this is due to the following:

- Delays in negotiating a joint participation agreement (JPA) with FDOT for improvements to Orange Blossom Trail. Approval for this JPA was received from the Board of County Commissioners on June 18, 2002.
- Delay in completing negotiations with CSX for the Landstreet crossing.
- The County terminated the design of the project effective October 20, 2003. No reasons were noted in the termination letter dated April 8, 2004.
- The County terminated the JPA with FDOT. The reason given was "it is in the best interest of the parties to do so."
- It took approximately 18 months to negotiate and approve Change Order No. 3 for \$324,392 to address additional services, revised wage rates, and to restart the design process. Reasons for this delay appeared to be:
 - Reluctance by Purchasing to approve escalation fees;
 - Untimely responses by the Consultant to various requests from the County;
 - Untimely responses from the Division to the Consultant's requests;
 - Inadequate follow-up by the Division; and,

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- Delayed involvement by Division Management in the negotiation and the change order process.
- We also noted that the change order for resumption of design work did not address a completion date and was not accompanied by a revised project schedule.

Project completion dates are set by contract. Any change should be approved by Purchasing. While there were some legitimate reasons for the delays in completion, a request for an extension of the completion date should be documented by change order, properly supported by an updated project schedule, and formally approved by Purchasing. A request for an extension is a request for a change in the terms of the contract and, as such, should be properly documented and approved. Standard operating practices require Purchasing's approval for all changes in the terms of a contract. Project completion times will likely lag desired results without documented completion dates.

We Recommend Design Engineering ensures the following:

- A) Requests for completion time extensions are formally documented by change orders, supported by updated project schedules, and formally approved by Purchasing;
- B) Reasons for significant delays in the completion of design projects are summarized in writing by the design project managers and routed to management for their review and approval; and,
- C) Division Staff more effectively manage the change order process.

Management's Response:

- A) We concur. Ongoing. The Engineering Division will ensure that initial project schedules submitted by the Consultants are followed in accordance with the terms of the contract. Changes to the project schedule will

be required when a change order for additional services is negotiated or when additional time needs to be granted due to unforeseen events not the responsibility of the Consultant. In this case, additional time will be requested through a “zero-dollar” change order to be approved by the Purchasing and Contracts Division. We are revising the master scope of services to further define that the contract duration ends with submittal and acceptance of 100% construction plans. The submittal of Final Construction Documents is not a valid measure of contract duration because it occurs after the right-of-way acquisition phase which is not a part of the consultant’s contract and can be commenced years later.

- B) We concur. Ongoing. Reasons for the delay of a particular project will be documented by preparing a memorandum to the Chief Engineer of the Engineering Design Section with the explanation of the delay. Either the consultant or the County Project Manager would prepare the memorandum. County Project Managers in charge of the projects will be responsible for the inclusion of this document in the file. We have met with all our staff to immediately address the schedule issue on all projects currently under negotiation. Specifically referring to the Taft-Vineland Road project, there were some factors that contributed to the delay including major right-of-way impacts that required significant alignment changes, key members in the consultant team left the firm, the procedure for reviewing the rates was not clearly established, and design parameters from the Turnpike Authority were not received on time to coordinate the design.

- C) We concur. Ongoing. Management will monitor more closely the preparation of change orders to existing contracts to minimize delays and expedite the approval of the change orders by the Purchasing and Contracts Division.

6. Only Approved Individuals Should Perform Project Manager’s and Project Engineer’s Functions

Section No. 22 of the terms and conditions of the RFP for Professional Engineering Services defines the Project Manager as “the individual who managed the administrative elements of the project, was the primary point of contact for the client, and directed the production of the work products.” It also defines the Project Engineer as “the individual who assisted a Project Manager as the lead technical supervisor of the project design activities as described in the similar projects criteria. This position also serves as the point of contact for the client in the Project Manager’s absence.”

We also noted that 40 percent of the total score under the weighted criteria utilized in the evaluation of proposals received in response to the County’s RFP related to the skills and experience of personnel as follows:

Criteria	Weight
Similar projects completed by the proposed project manager	15
Similar projects completed by the proposed project engineer	10
Skills and experience of the project team	15
Approach, understanding, scope response	30
M/WBE, location & volume of work previously awarded	30
Total	100

As such, the skills and experience of the project manager and project engineer as determined from the evaluation of the similar projects contribute significantly to the awarding of a design project to a particular firm.

Project managers and project engineers evaluated during the contract selection process are contractually required and expected to perform on the project in their respective capacities (unless the County approves a substitute). However, our review of the project manager and project engineer activities for a sample of three design projects disclosed that the individuals listed as project manager and project engineer in the responses to the RFPs did not function in these capacities. Instead, the activities were performed by unlisted and unapproved individuals.

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Substitutions for the listed and approved individuals were noted as follows:

- A) East-West Road, Segment No. 1: For this project, we noted the following:
- The contractually approved project manager, who was evaluated based upon 18 years of project management experience, charged a total of 99 hours under the labor category of principal to the project. The initial fee proposal for the project included a total of 1,317 hours to be worked by this project manager.
 - The individual listed in the response to the RFP as Project Engineer with 14 years experience appeared to have played little or no role in the conduct of the project. Based upon an analysis of payroll data, this person charged a total of 11 hours to the project under the labor category of "principal."
- B) Clarcona-Ocoee Road project: Our review revealed the following:
- Analysis of payroll data for the life of the project showed that 11 individuals charged time to the project under the project engineer position; however, only one was evaluated and approved during the RFP process.
 - During the period November 10, 2006 to January 2008, when post design services were performed, the involvement of the approved project manager appeared to be limited to fiscal matters (invoices and change orders). In addition, a substitute performed the functions of project engineer. This was brought to the attention of the Consultant by County staff after which data was submitted for similar projects so as to allow evaluation of the substitute project engineer.

- C) Taft-Vineland Road project: During the period February 6, 2007 to August 22, 2008, the individual who functioned as project manager was a replacement for the person listed in the Consultant's response to the RFP. This replacement was not evaluated and approved by the County.

Section IV.C of the contracts states,

The CONSULTANT shall not substitute any key personnel without the prior written approval of the Manager of Purchasing and Contracts. Any such requests shall be supported by comprehensive documentation outlining the reason(s) for the proposed substitution to include the specific qualifications of the proposed substitute. Approval of the request shall be at the discretion of the COUNTY. Further, the COUNTY, in lieu of approving a substitution, may initiate other actions under the contract, including termination.

The use of unapproved individuals to function in the capacities of project manager and project engineer could result in lower quality work; thus requiring closer monitoring and supervision of a consultant's performance by County employees. We noted that there were voluminous comments relating to the submittals for one project. In one instance, the 100 percent submittal was returned to the Consultant to be redone and resubmitted due to omissions. On another project, the County's project manager documented his disappointment with the level of service being provided by the Consultant during the post design phase. In addition, our review of payroll data from this Consultant showed that unapproved substitutes were paid less than the rates listed in the approved fee proposal for the project manager and project engineer positions.

We Recommend the PWD ensures that only evaluated and approved individuals function as project managers and project engineers. Substitution of individuals in any of these positions should have prior written approval from Purchasing.

Management's Response:

We concur. Ongoing. The Divisions shall ensure that the individuals identified as key personnel driving the procurement process are actively involved in the design for the project. If those individuals are to be replaced for valid reasons such as changes in employment, the Divisions will ensure that individuals replacing the original project manager and project engineer in the different approved contracts hold the same original qualifications that the former individuals held at the time the selection process occurred at the Procurement Committee meeting. The Divisions will carefully review the new proposed project manager's and/or project engineer's qualifications through the review of the five similar projects successfully completed in accordance with the Similar Project Criteria established for that particular project. The Divisions will recommend approval of the proposed new project manager and/or project engineer to the Purchasing and Contracts Division. If the Division does not find the proposed individual to be qualified, the Division will notify the design firm and request a qualified individual. The Purchasing and Contracts Division will provide written approval of the substituted individual.

7. The Division Should Ensure That County Project Managers Compare the Engineer's Estimated Construction Costs to the Estimated Construction Cost Noted in the Contract

Consultants designing roadway projects are required to submit estimated construction costs at various intervals throughout the design work. Traditionally, these intervals are at 30, 60, 90, and 100 percent of completion. If, at any one of these intervals, it appears that the cost to construct the project may exceed the estimated construction cost included in the original contract, the contract requires the County to consider either requesting design changes to reduce the cost or increase the construction budget to be in line with the design projections.

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Our review of two projects for which the design work had reached the 100 percent submittal revealed that in one instance (East-West Road Segment 1) the engineer's estimate exceeded the contract estimate by approximately \$16 million (144 percent). The engineer's estimates at the various submittals were as follows:

Design Submittal	Engineer's Estimated Construction Cost	Contract Estimate	Overrun in Estimate	Percentage Increase in Estimated Construction Cost
30%	\$12,462,000	\$11,260,000	\$1,202,000	11%
60%	14,603,000	11,260,000	3,343,000	30%
90%	18,588,000	11,260,000	7,328,000	65%
100%	\$27,511,000	\$11,260,000	\$16,251,000	144%

Section IIIA, Design Within Funding Limitations of the design contracts states:

The CONSULTANT shall accomplish the design services required under this contract, when applicable, so as to permit the award of a contract...at a price that does not exceed the estimated construction contract price as set forth in paragraph (C) below.

In addition, Section IIIB of the Contract states,

The CONSULTANT will promptly advise the COUNTY if it finds that the project being designed will exceed or is likely to exceed the funding limitations and it is unable to design a usable facility within these limitations. Upon receipt of such information, the COUNTY will review the CONSULTANT'S revised estimate of construction cost. The COUNTY may ...authorize a change in scope...to reduce the estimated cost...or the COUNTY may adjust such estimated construction contract price via amendment to this contract.

Documentation in the project files did not show any action taken by Design Engineering to address the increased estimated construction costs after the engineer's estimates were submitted. As such, a significant increase in the capital

budget will be needed prior to putting the project out to bid. In addition, because of the inadequate documentation, we could not determine whether management was informed of the increased cost in a timely manner.

We Recommend the Division ensures County project managers compare the engineer's estimated construction costs when received to the estimated construction cost noted in the contract for compliance and, if applicable, perform remedial action as provided by the contract.

Management's Response:

We concur. Ongoing. County project managers will periodically compare estimated construction costs with the estimated design contract construction cost and request a modification to the contract from the Purchasing and Contracts Division as necessary.

8. Design Engineering Should Ensure That Consultants Provide Certified Orange County Progress Review Submittal Checklists with Each Design Submittal

Certified Orange County Progress Review Submittal Checklists (checklist) were missing in many of the required instances for the project files reviewed. For example, in the East-West Road Segment 1 project, we reviewed the project files and other correspondence for submission of the checklist and found no checklist for the 60 and 100 percent design submittals. In addition, the checklists found for the 30 and 90 percent submittals were signed by a lower level employee and not the consultant's project manager. We also noted that there was no written evidence that staff followed up with the Consultant to ensure that the missing checklists were submitted.

Section 2.0 of the scope of services for each contract requires that "each submittal contain the information items listed in the appropriate Orange County Progress Review Submittal Checklist...and...a copy of the appropriate

checklist shall accompany each submittal with a certification signed by the Consultant's Project Manager certifying that the submittal completely addresses the required items as listed on the checklist." The checklist is a vital quality control tool provided by the Division to consultants. In addition, it is also a vital management review tool for the Division. Without the certified checklist, it is more difficult to obtain assurance that all applicable items were addressed by the consultant in the various design submittals.

We Recommend Design Engineering ensures that consultants provide a certified Orange County Progress Review Submittal Checklist with each submittal.

Management's Response:

We concur. Ongoing. County project managers will ensure that Consultants provide a certified Orange County Progress Review Submittal Checklist with each submittal as required in the Scope of Services. By signing the checklist, the consultant project manager assures that all items required on each submittal have been included in the plans, after a careful quality control review. The checklist after review by the county staff engineer should be placed in the project file corresponding to a particular project.

9. Invoices Should Be Submitted by Consultants on a Monthly Basis

Certain services performed by the Consultant for the Clarcona-Ocoee Road project were not billed on a monthly basis but accumulated over a protracted period. For example, we noted the following;

- Invoice No. 24 for \$57,601 covered services performed during the period May 1, 2006 to May 31, 2007 (13 months).
- Invoice No. 26 for \$10,339 covered services performed during the period July 1, 2007 to November 30, 2007 (5 months).

In addition, the invoices did not separate the hours and amounts to reflect the funding that was provided by multiple change orders that were developed with different overhead rates. As a result, overpayments could result in instances where the overhead rates are reduced. In the instances noted above, the overpayment was approximately \$1,000. Billings for protracted periods also make the invoices hard to review. Standard operating procedures require consultants to bill for services performed on a monthly basis. The County's contract (Sec. 11B) with the Consultant states, "Progress payments shall be due and payable monthly..."

We Recommend Design Engineering ensures the following:

- A) Consultants submit invoices for services performed on a monthly basis; and,
- B) Where invoices are being paid from funds provided under fee proposals developed with different overhead rates, invoices break out amounts that apply to each proposal with the different rates.

Management's Response:

- A) We concur. Ongoing. County project managers will ensure that the consultants submit invoices on a monthly basis in accordance with the terms established in the contract documents.

We will generate a memorandum to the contract file when the project reaches 100% design indicating that invoicing will be done as needed since after that stage work is done on an intermittent basis.

We have instructed all project managers and engineers to include this memorandum in the files when a project reaches the 100% completion stage.

- B) We concur. Ongoing. County project managers will ensure that all invoices are paid under the approved rates. If an invoice is submitted involving two different proposals, the County Project Manager and County

Project Engineer will verify that each task is paid under the correct proposal and rates.

10. Invoices for Design Engineering Services Should Be Processed in Accordance with Standard Operating Practices

Four of 15 invoices reviewed for three design contracts were not approved within the 14 day window allowed by the department or were not handled according to standard operating procedures. These four invoices were for contract no. Y9-820 and are as shown below:

Invoice Number	Amount of Invoice	Date of Invoice	Date Received by Division	Date Approved by Division
37	\$ 1,649	09/10/04	09/14/04	10/08/04
38	281	04/01/05	04/12/05	08/23/05
39	92,820	03/06/09	Not Determinable	08/25/09
40	\$35,697	04/10/09	Not Determinable	08/25/09

Invoice No. 37 was approved after 24 days and invoice No. 38 after 133 days. We could not determine the dates the Division received invoices No. 39 and No. 40 as they were not stamped with the date received. These two invoices were not approved for payment by Design Engineering until August 25, 2009. In addition, they were not logged into the tracking system maintained by the Fiscal section of PWD as the invoices were sent directly to the County's project manager who did not pass them on to Fiscal for recording. Further, the Consultant was not informed after receipt of invoice No. 39 that sending them directly to the project manager was a breach of policy and consequently, invoice No. 40 was also sent to the project manager. There was also no documentation in the project file to indicate why these invoices were not approved for payment within the allowable 14 days; however, upon making inquiries, we were informed by the project manager that the invoices were rejected due to errors.

Standard operating procedures require the user division approve invoices for further processing within 14 days after receipt from the Fiscal section of PWD. In addition, these procedures require all consultants to forward invoices

directly to the Fiscal section of PWD. Breakdown in compliance with standard operating procedures could lead to delays in making payments to consultants which could result in suspension of work by Consultants and delay in completing projects.

We Recommend Design Engineering ensures that consultants and the Division's project managers comply with standard operating procedures for the handling of invoices.

Management's Response:

We concur. Ongoing. The Engineering Division will require that the consultants submit invoices to the Public Works Department Fiscal Division for tracking and processing.

We will ensure that invoices are either approved or rejected within the five (5) day window allowed by the Department Fiscal Division for processing of invoices.

11. Invoices Should Be Supported by a Narrative Description of Services Performed

Narrative descriptions of services performed during the billing period and to be performed during the subsequent period were not always provided as support for invoices. We noted the Consultant did not provide narrative descriptions for 10 of the 26 invoices submitted for post design services of the design contract for Clarcona-Ocoee Road. The total amount billed for these ten invoices was \$69,340. The services performed were stated only as "post design services." Also, detailed narrative of the work performed was not provided for 14 of the 22 invoices reviewed for term contracts. The dollar value of these invoices totaled \$100,829. In addition, a detailed narrative of the work to be performed during the next billing period was not provided for 12 of 19 applicable invoices.

Section 1.6 of the scope of services section of the County's design contracts and Section IIA of their term contracts require narrative descriptions of the work performed by

consultants and subconsultants during the period covered by the invoice and the work to be performed during the next billing period to support invoices submitted for payment. Without a proper description of the work performed, it is unlikely that the Divisions could have performed an effective review of the invoices for reasonableness of the hours billed. In addition, in some instances, we could not determine whether the services performed fit the contract definition of post design services.

We Recommend PWD ensures that consultants provide a narrative description of services performed during the period covered by invoices as well as the next billing period before invoices are approved for payment.

Management's Response:

We concur. Ongoing. The Divisions will ensure that consultants provide a narrative description of the services provided with each invoice submitted that will cover the period for which the services were provided. This narrative will cover all aspects of the contract including post design services.

We have met with the consultants, all our engineers and other staff to immediately address the narrative requirement in all projects under term contract and assure that all invoices are accompanied by a detailed narrative of the services provided, including post design items.

12. Services Should Not Be Performed Prior to Authorization by Board

On January 4, 2007, the County's Project Manager approved a fee of approximately \$40,000 for the Consultant "to revise the plans for Clarcona-Ocoee Road between Ocoee-Apopka to SR 429 and between SR 429 to east of Clarke Road" with instructions for the Consultant to start as soon as possible and as well to submit a revised fee proposal. The amount was negotiated as a lump sum without conversion of the man hours into dollars based upon wage rates. There was

no approval from the Board or documented justification of an emergency purchase.

The County's Purchasing Manual, Section 1, Procedures No. 5 states the following:

It is unlawful for a County officer or employee to order the purchase of any materials, supplies, equipment and contractual services, or make any contract other than through the Manager of Purchasing and Contracts without prior written authority or as specifically delegated herein. Any purchase, order or contract that is made contrary to these provisions shall not be approved and shall not bind the County.

Approving design work without Purchasing/Board approval is a violation of County policy and standard operating procedures.

We Recommend Design Engineering ensures their project managers do not authorize the commencement of non-emergency work prior to approval by Purchasing/Board.

Management's Response:

We concur. Ongoing. The Engineering Division in accordance with Orange County's Purchasing Manual, Section 1, Procedure # 5, will ensure that a properly executed contract is in place before a Consultant starts to provide any services. Any contract that binds Orange County to a contractual obligation needs to be approved by the Board of County Commissioners and/or through the Manager of the Purchasing and Contracts Division. We have met with all our staff to immediately address the importance of this regulation. After execution of a contract or change order, the Consultant will be notified in writing that they may proceed with the work.

13. Monitoring of Contracts Should Be Improved to Ensure Adequate Funding Is Available to Cover Work Performed

We noted work was performed and, in one instance, billed prior to BCC/Purchasing approval of adequate funding. Examples are as follows:

- A) Services were performed for the Clarcona-Ocoee Road project prior to the approval of a change order to provide necessary funding. As a result, the Consultant submitted invoice No. 26 dated August 6, 2007, for the period July 1, 2007 to July 31, 2007, for \$13,285 noting an increased limiting amount of \$215,759. However, there was no approved change order to support this increase. The applicable limiting amount at the time was \$190,183. The invoice was rejected due to inadequate funding available on the contract. A revised invoice No. 26 was then submitted by the Consultant for a reduced amount of \$10,339 on December 20, 2007
- B) Services billed under invoice No. 1 for \$74,375 dated September 26, 2008 covered work performed during the period December 1, 2007 through September 26, 2008. Billings were not made in the interim on a monthly basis, in accordance with standard operating procedures, as the change order to provide the funding (Change Order No. 5 for \$216,699) was not approved until August 5, 2008 by the Board.

These examples indicate that contract balances were not being adequately monitored and necessary change orders processed in a timely manner. Contract balances should be monitored on a consistent basis and change orders written in a timely manner so as to ensure funding is available for work performed.

We Recommend Design Engineering ensures consistent monitoring of contract balances and the timely approval of change orders to provide funding for work being performed.

Management's Response:

We concur. Ongoing. The Engineering Division will ensure that more monitoring is consistently performed over contract balances and the timely approval of change orders to assure proper funding for work being performed is in place.

14. Funds Designated for Post Design Services Should Not Be Utilized for Other Purposes

Services performed for the Clarcona-Ocoee Road project did not fit the contract definition of Post Design Services in the invoices where description of services was provided. Examples of the description provided were as follows:

- Coordinate miscellaneous revisions to ROW maps (two invoices);
- Revise entrance to Forest Lakes Golf Course (two invoices);
- Revised the Adair Street intersection;
- Coordinate the replacement of an off-site ditch with a stormwater system (five invoices);
- Create a separate set of plans that showed that pipe construction only (two invoices);
- Revised plans to show the replacement of an off-site ditch with a stormwater system (three invoices);
- Assisted the County and updated plans as necessary (three invoices);
- Begin the design of Pine Hills Trail;
- Assisted the County as requested with cost estimates and design issues associated with the Pine Hills trail; and,

- Completed Final Submittal of the East Side Construction Plans including the Trail design, design changes due to ongoing development and acquisition settlements.

The contract, under section 6.0 of the scope of services, described Post Design Services as follows:

6.1 Shop Drawing Review: The Consultant will provide engineering services to complete shop drawing review for structural component submittals.

6.2 Construction Administration: The Consultant will provide engineering services during the construction of the project as requested by the County. The Consultant may be required to attend a Pre-Bid Construction Meeting and the Pre-Construction Conference.

The services described as performed described design phase activities even though they were identified as needed after the final design submittal. As such, funding for these additional services should have been provided through change orders and not from the funding designated for post design services in the initial fee proposal. Services identified as needed after the final submittals do not qualify as Post Design Services unless they fall under the description noted in Section 6 of the scope of services. Services not meeting these descriptions should be handled by change orders. Utilizing funds designated for post design services for other purposes violates the contract provisions as well as delay the preparation and approval of appropriate change orders.

We Recommend Design Engineering ensures funds (limiting amounts of a fee proposal) designated for post design services are not utilized for other purposes. Additional services which do not fit the contract definition of post design services, but which are needed after design is complete, should be funded through change orders.

Management's Response:

We concur. Ongoing. The Engineering Division will assure that funds allocated under post design services will be used only for the stated purpose in accordance with the scope of services included with the contract. We have revised the Master scope of services for the definition of post design services to include plan updates after 100% plans have been accepted. We also have met with all our staff and reminded them of the proper use for post design services funding. If the need for additional services arises, during the design of a particular project, a change order will be negotiated to address the additional work.

15. A Schedule of Potential Items for Direct Purchases Should Be Prepared and Submitted by Consultants

In the only applicable instance in our testing of three projects, the Consultant did not prepare and submit to the County a schedule of potential items for direct purchases. In addition, there was no documentation in the project files to show that the County followed up submission of the schedule with the Consultant. Section V. H of the contract states,

For projects for which construction is \$10,000,000 or more, the COUNTY may, at its discretion, use the direct purchase method for large dollar value equipment and materials. The CONSULTANT shall, for these projects meeting this criterion, identify all items to be incorporated into the work for which the estimated cost is \$100,000 or more, for potential direct purchase by the COUNTY. A separate listing of these items with quantities and estimated cost shall be provided with the 100 percent design documents.

The estimated construction cost at 100 percent design was \$28 million. A list of potential direct purchase items helps the County to make an informed decision with respect to the use of direct purchases on a project.

We Recommend the Division ensures that consultants prepare and submit the list of potential direct purchase items, where applicable.

Management's Response:

We concur. Ongoing. The Division will ensure that Consultants prepare and submit the list of potential direct purchase items where applicable.

16. Consultants Should Be Required to Submit Construction Schedules

In one of two applicable instances, the Consultant did not provide the County with a construction schedule for projects that had achieved 100 percent design. Section 1.4 of the scope of services requires the consultant to, "...provide an estimated project schedule for completion of construction services using the Construction segment of the Orange County Standard Roadway Project Schedule." A construction schedule prepared by the design engineering consultant helps the County to evaluate construction schedules proposed by construction contractors. The consultant submitted the required construction schedule on March 13, 2009, after the omission was brought to the attention of the Division. The final signed and sealed plans were submitted by the Consultant on December 20, 2001.

We Recommend Design Engineering ensures that consultants prepare and submit construction schedules for projects that have reached 100 percent of design.

Management's Response:

We concur. Ongoing. The Design Engineering Division will assure that construction schedules are submitted when projects reach 100% of design.

17. Procedures for the Review and Approval of Fee Proposals and Purchase Orders Under Term Contracts Should Be Strengthened

During our review of fee proposals, and the approval and issuance of purchase orders under term contracts for professional engineering services, we noted the following:

- A) One of the five purchase orders (PO) reviewed was issued for \$1,357 more than the final negotiated fee proposal on file. A PO for the Raeford Road Stormwater Improvements, under term contract Y4-902C, was issued for \$69,693 even though the total of the final revised fee proposal was \$68,336. As a result, payments could have been made to the Consultant that exceeded the amount agreed upon (invoices from the Consultant also showed \$69,693 as the lump sum amount and not the total from the final revision of the negotiated fee proposal). Standard operating procedures require that the purchase order be issued for the fee proposal that was agreed to by the County and the Consultant. Staff requested and obtained a revised purchase order for the correct amount after we brought the matter to their attention.

- B) There was no approved schedule of fees available to support the fees proposed and charged by a subconsultant for geotechnical services for two of the five purchase orders reviewed. As such, the rates for geotechnical field services, tests and laboratory services totaling \$6,742 and \$5,622 for the Orlo Vista Pond and Roger Williams Pond Drainage improvements, respectively, were accepted as proposed without documented verification. Section 11G of the contract states, "the CONSULTANT'S compensation shall be established and authorized for each Task Authorization on the basis of the CONSULTANT'S personnel hourly billable rates and related allowable costs as set forth in the basic contract." Without documentation supporting the Division's review for reasonableness of the rates

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used, there was no assurance that the amount paid was reasonable for the services performed.

- C) In three out of the five instances reviewed, a notice to proceed (NTP) was issued in addition to the PO. However, the completion dates noted on the NTP did not agree with the completion (Delivery) dates on the PO. Further, the completion dates on the POs did not agree with the completion dates on the project schedules. As a result, each document had a different completion date. These are shown below:

PO Number	Date of PO	Amount of PO	Completion Date Per PO	Completion Date Per NTP	Completion Date Per Project Schedule
C04092C015	10/11/06	\$49,741	09/30/07	04/06/07	03/26/07
C04902C016	10/11/06	49,995	09/30/07	04/06/07	03/26/07
C07904B005	04/24/08	49,954	09/30/08	08/29/08	08/21/08

According to the contract, the governing document is the PO. Section 1, Scope of Services, of the contract states that “task authorizations to be performed by the CONSULTANT under this Contract shall be approved and authorized by the COUNTY in writing by issuance of County approved Purchase Orders...as the CONSULTANT’S authority to proceed with the specified scope of work.” As such, the contract makes no provision for the issuance of a NTP. In addition, Section No. 1 also states, “Upon receipt of the scope of work” (that is from the County) “the Consultant will submit a cost proposal to the County depicting man hours, with hourly rates, as established in the Exhibit B, sub-contracted services, period of performance for completion of projects, and out of pocket expenses.” Accordingly, the completion date on the PO should reflect the date of completion as proposed on the project schedule that is submitted with the cost proposal to form the basis of the PO. Confusion as to when a project should be completed could result from different completion dates on three documents (PO, NTP and Project Schedule). This could in turn, negatively impact project management activities.

We Recommend the following:

- A) Stormwater Management ensures that POs are adequately supported with cover memos and fee proposals that agree in amounts;
- B) Roads and Drainage ensures that rates used to develop consultant cost estimates comply with contract provisions. In the event the services required are not covered in the existing schedule of fees, efforts should be made to verify the reasonableness of the rates proposed. Such efforts should be adequately documented. In addition, if the services required are expected to recur on a regular basis, a contract amendment should be executed to incorporate the services and related fees in the schedule of fees; and,
- C) Roads and Drainage complies with contract provisions by ensuring that POs are issued with completion dates that are taken from the project schedule. If the Division can justify a need for the issuance of an NTP to supersede the PO, the contract provisions should be amended to accommodate this.

Management's Response:

- A) We concur with the recommendations. Although identified as a recommendation for the Stormwater Management Division, the Roads & Drainage Division will continue to ensure that all PO requests are adequately supported with cover memos and cost proposals that agree in amounts. The Stormwater Management Division will continue to ensure that all PO requests are adequately supported with cover memos and cost proposals that agree in amounts.
- B) We concur with the recommendations. The Roads & Drainage Division (R&D) ensures that the rates used to develop consultant cost estimates comply with contract provision by reviewing proposal fee estimates against the approved rates in the

corresponding term contract in order to verify the rates for compliance. If, during the scope review process, rates are found to be inconsistent with the approved term contract rates, R&D requires Consultants to revise the scope. R&D also corroborates the rates for consistency with past services/ proposals for other projects as a way to verify reasonableness for the proposed rates.

Additionally, we have also requested some of our term contract consultants to amend their contract to include any additional services needed that may recur on a regular basis (i.e. On March 2009, Prime Consultants ... requested the Purchasing and Contracts Division to amend their term contracts to include additional field and laboratory testing services for "a subconsultant"). R&D will ensure that adequate documentation is kept in each project file.

- C) We concur with the recommendations. Upon discussion with the Purchasing and Contracts Division, R&D will continue to issue the NTP indicating the start and completion date expected for the project once the PO (Purchase Order) has been issued and received. Additionally, R&D is requiring Consultants to provide a formal time extension request letter if they estimate their project would not be completed by the date issued in the NTP. A memo is prepared and forwarded to our Fiscal Division for processing so the change in the schedule is reflected as a change order to the PO.

18. The Review of the Number of Hours Needed to Perform Various Activities to Complete Tasks Authorized Under Term Contracts Should Be Adequately Documented

There was no documentation to show that the number of hours needed to perform various activities in a consultant's fee proposal for an additional professional engineering study was reviewed for reasonableness. The Consultant

RECOMMENDATIONS FOR IMPROVEMENT



submitted a proposal for \$64,716 to perform the scope of services. This was approved by the Division and forwarded to Purchasing for issuance of a purchase order. However, Purchasing informed the Division that the amount could not be approved as requested, since the provisions of the contract limit the cost of such studies to \$50,000 in accordance with the State Statutes for CCNA procurements. Purchasing then recommended that “the scope of work be reduced to the level that a continuing contract can be utilized” or the Division provides “all appropriate documentation for PCD to initiate a scope specific RFP.” Subsequent to this communication, the Division accepted a revised fee proposal from the Consultant for \$49,954 to perform the study; however, there was no reduction in the written scope of work. The Consultant’s schedule of activities showed no changes except for the number of hours required to perform some of the activities. A comparison of selected activities is noted below to show some of the changes made.

Activity	Hours in Original Proposal	Hours in Revised Proposal	Reduction in Proposed Hours	Percentage Decrease
Status meetings (2) preparation and minutes	28	10	18	64%
Monthly status reports (6)	9	6	3	33%
Compile existing data and establish project template	28	22	6	21%
Field review and mapping	26	13	13	50%
Run, Tweak and rerun existing conditions model	46	35	11	24%
QA/QC review	11	5	6	55%
Run, tweak and rerun proposed conditions model	29	23	6	21%
QA/QC review	7	3	4	57%
Print and assemble draft technical memorandum into binder	12	6	6	50%
Print and assemble final technical memorandum into binder	10	6	4	40%
Prepare for and attend pre application meeting with FDOT	17	7	10	59%
Prepare for and attend pre application meeting with SJRWMD	17	7	10	59%
TOTAL	240	143	97	40%

Purchasing approved the revised proposal and issued a PO for \$49,954.

Based upon the extent of the reductions in hours only made by the Consultant in the revised proposal, there was little assurance that the original fee proposal was reasonable. As such, the original fee proposal may have been overstated. Good internal controls require adequate documentation of the Division's review of fee proposals for reasonableness of the hours needed to complete the various activities involved in a task assignment.

We Recommend Roads and Drainage ensures that reviews of fee proposals for reasonableness of hours needed to complete assigned tasks are adequately documented.

Management's Response:

We concur with the recommendation. The Roads & Drainage Division (R&D) has implemented a guideline to compare hours with similar projects completed in order to determine reasonableness of number of hours needed to perform various activities in completing engineering tasks. Guidelines to compare hours:

- R&D receives a scope from the consultant.
- R&D reviews the tasks needed to achieve alternatives or solutions to the problems.
- R&D reviews rates against the contract rates.
- R&D compares rates and tasks against other unique projects that are similar in nature in order to determine reasonableness.

Additionally, R&D has instructed our engineers to keep adequate documentation of the fee proposal reviews in each project file.

19. Task Authorizations Under Term Contracts That Include Study Activities Should Not Be Issued for Amounts in Excess of Contract Stipulation

In addition to the study activities for the Bulova Pond Drainage Improvements where the Division approved the task for \$64,716, as noted in Recommendation No. 18 above, our review of 15 POs issued for amounts in excess of \$50,000 revealed that one PO under term Contract Y4-902B, was issued for study activities at a cost of \$63,516. This PO was approved by both the Roads and Drainage and Purchasing. The PO relates to the Westlake Subdivision Retention Pond Evaluation, the scope of which is described as “to investigate various problems associated with the Westlake Subdivision stormwater pond (MSTU POND # 7512) and evaluate restoration alternatives in order to address the current erosion, maintain flood protection and improve the condition of the pond.” Section III C of the County’s contract with the consultant states that “Task Authorizations issued for study activities may not exceed \$50,000.” According to staff, even though the summarized description of the task implied study and evaluation activities, the drawings required by the scope of services for the proposed solution was more detailed than a “typical” study and allowed corrective action to be taken without further design work. As such, it was their belief that the \$50,000 limit for study activities established by Florida Statutes Section 287.005 and written into the continuing contract was not applicable. Standard Division practices and proper procurement procedures require that study, design, and construction bidding are separated.

It should be noted that the \$50,000 limit for study activities is no longer relevant since the statute has been revised to allow a limit of \$200,000 effective July 1, 2009.

We Recommend the Roads and Drainage Division ensures study activities and design work for remedial actions are separated.

Management’s Response:

We concur with the recommendation. Roads & Drainage will ensure that study activities and design work for remedial action are separated, as applicable. However, as previously explained, there are circumstances in which study activities and design work could be combined for cost effectiveness, with the understanding that we will seek Purchasing’s concurrence and that we will ensure the \$200,000 limit for studies, as revised on July 1, 2009, is not exceeded.

20. Reasons for Significant Variances in Wage Rates for Consultants Granted Term Contracts for the Same Scope of Professional Engineering Services Should Be Adequately Documented

During our review of wage rates paid to various consultants holding the term contracts, we noted wage rates paid for identical position titles (for the same RFP response to the same scope of services) varied widely for some of the term contracts. There was no documentation to explain the variances between these wage rates. These differences were as follows for five employee positions for two series of term contracts-Y4-902A-D and Y7-904A-F:

Term Contracts Y4-902A-D Comparison of Lowest with Highest rates				
Positions	Lowest Rates	Highest Rates	Difference	Percentage Difference
Principal	\$103.60	\$178.74	\$75.14	73%
Project Manager	92.40	138.68	46.28	50%
Project Engineer	75.60	106.00	30.40	40%
CADD Drafter/Technician	47.60	66.77	19.17	40%
Clerical/Admin.	\$29.40	\$54.14	\$24.74	84%

Term Contracts Y7-904A-F Comparison of Lowest with Highest rates				
Positions	Lowest Rates	Highest Rates	Difference	Percentage Difference
Principal	156.05	170.43	14.38	9%
Project Manager	135.36	170.43	35.07	26%
Project Engineer	91.92	170.43	78.51	85%
CADD Drafter/Technician	60.61	79.50	18.89	31%
Clerical/Admin.	50.51	52.50	1.99	4%

As a result, certain consultants were compensated more than others for the same scope of services. Best practices require documented justification for significant variances in wage rates in instances where consultants are granted term contracts in response to the same RFP for the same scope of services.

We Recommend the Stormwater Management and the Purchasing Divisions ensure reasons for significant variances in wage rates allowed consultants for the same positions are adequately documented in instances where consultants are granted term contracts in response to the same RFP for the same scope of services.

Management's Response:

We concur with the recommendation. In the past, the Stormwater Management Division staff has discussed wage rate variances with Purchasing staff to ensure compliance with applicable purchasing requirements. However, as indicated by the audit recommendation, we will make sure that future discussions are documented in writing.

PCD's Response: We concur. If significant variances in rates are evident during contract review, the issue will be addressed to the user division for justification or additional negotiations before the contract will be executed.

21. The Review and Approval Processes for Invoices Submitted for Term Contracts Should Be Improved

Our review of 22 invoices and supporting information for a block sample of five projects handled under term contracts revealed the following:

- A) In one of nine instances, the percentage of work billed did not match the actual work performed. This occurred on the Fern Creek Ditch Improvements project which was terminated. The Consultant's final invoice for the period July 1, 2007 to August 31, 2007,

included \$14,714 for 100 percent fees for the 60 percent design plans. According to staff, the conceptual design for which the Consultant billed \$5,056 (100 percent) was provided. However, only portions of the 60 percent plans were completed. Thus the Consultant was not due the entire \$14,714 for the 60 percent plans. Staff's position is supported by the information provided in the Active Project Status Summary provided by the Consultant. As a result, the full payment of \$14,714 should be adjusted down to \$9,000. Thus, \$5,714 should be recovered from the Consultant. Standard operating procedures require that billings should be for work actually authorized and performed.

- B) No breakdown or details were provided for reimbursable out-of-pocket expenses totaling \$1,774 that were billed and paid in eleven invoices. Details should be provided for all reimbursable out-of-pocket expenses. Without these details, we could not determine whether the expenses were valid.

- C) We also noted that the Consultant did not provide invoices from subconsultants to support billings for the work they performed. Subconsultants performed \$91,219 (46 percent) of the total billings of \$197,624 covered by the 22 invoices. As a result, there was no verification of the accuracy of the amounts billed by subconsultants. Section IIA of the contract with the County states "when an invoice includes charges from a subconsultant, the subconsultant's invoice/backup shall accompany the consultant's invoice. A separate Pay Item Breakdown sheet shall accompany the CONSULTANT and each subconsultant shall accompany each invoice." In addition, best practices require that where consultants' billings include monies for work performed by subconsultants, invoices should be obtained from the sub-consultants and submitted as support.

We Recommend the Roads and Drainage and the Stormwater Management Divisions ensure the following:

- A) Percentages of work billed are reasonable;
- B) Appropriate steps are taken to recover the over payment of \$5,714;
- C) Adequate details of all reimbursable out-of-pocket expenses are provided; and,
- D) Billings that include work performed by subconsultants are supported by subconsultants' invoices showing the percentage of work that they perform.

Management's Response:

- A) We concur with the recommendation. R&D is thoroughly checking incoming invoices for reasonableness of percentage of work billed. Documentation explaining status of the project is requested in order to make a better assessment of work completed.
- B) We concur with the recommendation. Completed.
- C) We concur with the recommendation. R&D staff is requesting documentation from Consultants with percentage of task completed to be included with invoices. Additionally, we have met with the term consultants to reiterate this contract requirement.
- D) We concur with the recommendation. R&D staff is reviewing invoices that include sub-consultants' fees to ensure they are supported by sub-consultant invoices showing the percentage of work that they performed. Additionally, we have met with the term consultants to reiterate this contract requirement.

22. Controls to Ensure Compliance of Construction Cost Estimates with Florida Statutes and Term Contract Stipulations Should Be Improved

Our testing of construction cost estimates compliance with Florida Statutes and term contract stipulations revealed the following:

- A) None of ten applicable Purchase Orders (Task Authorizations) from a sample of 31 Purchase Orders contained the County's estimated construction cost. The initial contract recital and Section 1 of the term contracts for continuing engineering services require that Task Authorizations "specifically indicate the project's estimated construction cost." This stipulation helps to ensure that consultants design projects to be constructed within the County's estimated construction costs or funding limitation.
- B) Three projects out of the applicable ten projects tested were designed to be constructed for amounts in excess of \$1 million. In these instances, the final engineer's construction cost estimates ranged from \$1.2 million to \$2.9 million

Florida Statutes Section 287.055(2)(g) states:

A 'continuing contract' (term) is a contract for professional services entered into in accordance with all the procedures of this act between an agency and a firm whereby the firm provides professional services to the agency for projects in which construction costs do not exceed \$1 million....

Further, section III C of the County's term contracts for continuing engineering services states that "the estimated construction cost for any project under this contract shall not exceed \$1,000,000."

- C) Aside from the Engineer's construction cost estimates submitted with the 90 and 100 percent submittals,

there was no specific notification in the project files to show that during the design process the Consultant informed the County the construction costs would likely exceed \$1 million. Also, there was no documentation to show how County staff handled the projects after they became aware from the submittals that the construction costs would exceed \$1 million. Section III B of the contract requires the Consultant to “promptly advise the County if it finds that the project being designed will exceed or is likely to exceed the funding limitations and it is unable to design a usable facility within these limitations.” In addition, Section III B requires the County to implement procedures such as “authorize a change in scope or materials as required to reduce the estimated construction cost to an amount within” the not-to-exceed amount of \$1 million.

- D) In all ten instances, the scope of services for the Purchase Orders did not require submission of engineer’s construction cost estimates with the 60 percent submittals even though this is required by the general scope of services of the term contracts. Scope of services for the individual task authorizations only required the submission of Engineer’s cost estimates with the 90 percent, 100 percent and final submittals. As a result, the requirements for submission of construction cost estimates were not consistent.

We Recommend both the PWD and Purchasing ensure the following:

- A) All POs for final engineering design include the County’s estimated construction cost within which the project is to be designed;
- B) Estimated construction cost of projects designed under term contracts do not exceed \$1 million (Revised to \$2 million effective July 1, 2009);

- C) Scope of services for task authorization requires submission of Engineer's construction cost estimates beginning with the 60 percent submittal; and,
- D) Staff at PWD document efforts to ensure the Engineer's construction cost estimates do not exceed the limit set by statute when notified by the consultant.

Management's Response:

- A) We concur with the recommendation. The Divisions will ensure that the scope of work for final engineering design states the County's estimated construction cost within which the project is to be designed.
PCD's Response: We concur. This will be monitored to ensure the estimates are on the purchase orders.
- B) We concur with the recommendation. Our Divisions will ensure that estimated construction cost of projects designed under term contracts do not exceed \$2 million, as revised effective July 1, 2009.
- C) We concur with the recommendation. Our Divisions will ensure that the scopes also require the submission of Engineers construction cost estimates beginning with the 60% submittal.
- D) We concur with the recommendation. Our Divisions will ensure that staff maintains proper documentation while ensuring the Engineer's construction cost estimates do not exceed \$2 million when this is brought to our attention by the Consultant.

23. Written Policies and Procedures Should Be Developed and Implemented for the Evaluation of Consultants' Performance Prior to Renewal of Term Contracts

There are no written criteria or guidelines for the evaluation of performance of consultants prior to the renewal of term contracts for the option years. Term Contracts for

professional engineering services are usually let for three years with options to renew for a second and then a third year based upon satisfactory performance. Usually, just prior to the expiration of a term, Purchasing sends an e-mail to Stormwater Management requesting their approval to renew the contract for the option year. Stormwater Management then responds with a yes or no answer. Consistent procedures to evaluate the performance of each consultant, including documentation of the review, should be used. In addition, without established criteria for evaluation, there is no evidence that all consultants are being evaluated consistently.

We Recommend Stormwater Management develops written criteria or guidelines for the evaluation of professional engineering consultants performing services under term contracts prior to the renewal of term contracts for the option years.

Management's Response:

We concur with the recommendation. Stormwater Management will ensure that prior to renewal of term contracts for the option years, there will be written criteria established for the evaluation of professional engineering consultant service performance and written performance evaluations will be transmitted to Purchasing prior to approving the term contract option.

APPENDIX A - METHODOLOGY

Appendix A- Methodology

To determine the adequacy of contract language and project management as well as compliance with contract requirements and applicable County and Florida laws and regulations, we obtained a schedule of all design projects for which design work was performed during the initial audit period. We tested to validate the completeness of the schedule and selected a sample of three projects for which design work was in progress and performed the following:

- Obtained the County's contracts with the consultants performing design work on the sampled projects and verified that the contracts were signed, approved by the Board, and the truth-in-negotiation clause, audit clause and other applicable clauses were adequate.
- Verified that a project schedule was submitted with the cost proposal and updated for time extensions, material scope revisions, and progress status meetings.
- Confirmed that project status meetings were identified on project schedules, time extensions were properly approved, projects had not fallen 15 percent or more behind schedule, and consultants prepared minutes for project status and other meetings.
- Determined that contracts included an estimated construction price which was not exceeded by consultant's estimates for construction, and if so, that the County had taken appropriate remedial action as provided by the contract.
- Obtained a list of all project managers and project engineers who worked on the projects since inception and verified that they were professional engineers licensed in the State of Florida, their licenses were current, any substitution was properly approved by PCD, and that designated project managers and project engineers functioned in their respective capacities.
- Confirmed that various milestone submittals (60 percent, 90 percent, etc.) were received. Confirmed that each submittal included the applicable appropriate quality assurance and quality control documentation, updated FDOT pay items and quantities, and estimated project construction costs. Established that each submittal was reviewed by County staff, comment letters issued, consultant's responses received and that the Orange County Progress Review Submittal Checklist included with each submittal was certified by the consultants' project managers.

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- Determined whether suspension or termination of design work was adequately documented, deliverables to the point of termination were received, and billings reflected work performed up to the point of suspension/termination.
- Verified that final plans (where received) included a signed certification that they were prepared in accordance with the State of Florida Manual of Uniform Standards for Design, Construction and Maintenance of Streets and Highways and that the Consultants submitted estimated project schedule for construction.
- Established whether Consultants' 100 percent submittals included schedules of items that may be acquired by direct purchases.
- Selected the last Change Orders approved during the audit period under each contract and tested them for accuracy, use of proper wage rates and overhead and multipliers, proper scope of services and approvals.

We selected a sample of two term contracts; one each from those issued under contract numbers Y4-902 and Y7-904 and confirmed the following:

- The contracts were signed by both the County and the Consultants, the contracts were approved by the BCC, and the truth-in-negotiation clause, audit clause and other applicable clauses were adequate;
- Schedules of wage rates and multipliers were provided by the Consultant and subconsultants and that the schedules were certified by an officer of each firm. We checked for documentation that the wage rates were reviewed for reasonableness by County staff; and,
- Consultant's performance was reviewed based upon appropriate criteria and the review documented prior to renewal of each contract for each of the three years the term was applicable.

We selected a sample of five projects and examined the contract files for the following:

- Phase 1 final report submitted by the consultant and staff comment letter;
- Minutes were prepared by the Consultant to document meetings discussing the report;

Appendix A- Methodology

- Consultant's Phase II 90 percent submittals were received and a staff comment letter was prepared; and,
- FDOT schedule of pay items and quantities, technical and special provisions and construction cost estimates were also submitted by Consultant.

To determine whether internal controls over payments to professional engineering firms were adequate to ensure engineering services were properly authorized, performed, and billed in compliance with contractual terms, we performed the following:

- A) Reviewed and evaluated the system of internal controls by obtaining and examining applicable organization charts, job descriptions, and policies and procedures. In addition, we conducted interviews and a transactional walk-through of the invoice payment process for design contracts.
- B) For the same sample of projects selected in the above, we verified the following:
- Accuracy of the price proposals;
 - Wage rates and multiplier were certified by an officer of the firm;
 - Review of number of hours and wage rates was adequately documented;
 - Correct wage rates were used in developing the cost proposal;
 - Adequate details of out-of-pocket expenses were provided;
 - The total of the cost proposal was the contract amount;
 - The overhead and profit multiplier were supported by CPA certification, schedule of eligible expenses and audited financial statements;
 - The overhead and profit multiplier did not exceed the maximum of 2.99 as set by the PCD; and,
 - Adequate supporting documentation was at PCD for the development of the 2.99 overhead and profit multiplier.
- C) For each of the sampled contracts, we obtained a print out of invoices paid as of March 31, 2009, reviewed the list for duplicates, ensured the total did not exceed the contract amount and that the total agreed with the total payments reported by the Consultants as received. In addition, we selected a sample of invoices and examined them for the following:
- Mathematical accuracy;
 - Percentage billed did not exceed the percentage noted in the supporting descriptions and documents;

Appendix A- Methodology

- The invoices were properly approved; and,
 - Post design services billed were proper and did not exceed the limiting amounts.
- D) We also selected a sample of Purchase Orders (PO) issued under term contracts and reviewed them for proper approval and that the scope of work was within the general scope of the contract, the amounts did not exceed the limit of \$50,000, and the delivery dates were consistent with the notice-to-proceed and the project schedule. We also verified that the fee proposals supporting the POs were mathematically accurate and that the wage rates, overhead, and profit multipliers used in developing the fee proposals were in accordance with the contract. In addition, we compared the engineer's estimated construction costs for the projects being designed for compliance with the limit established by the contract.
- E) We also obtained all the invoices paid under each PO and tested them for possible duplicate billings, mathematical accuracy, adequate support for percentages billed and that work performed was appropriately described and approved.
- F) In addition, we reviewed overhead rates, payroll data and use of personnel on certain projects for contract compliance.