

MIAMI-DADE COUNTY
OFFICE OF THE INSPECTOR GENERAL

FINAL AUDIT REPORT

**Performing Arts Center Construction Manager's
Quality Control Program**

November 13, 2003

OIG FINAL AUDIT REPORT

Performing Arts Center Construction Manager's Quality Control Program

November 13, 2003

Table of Contents

	Page
INTRODUCTION	1
<i>Results Summary</i>	
GOVERNING AUTHORITY	1
BACKGROUND	2
EVOLUTION OF THE QC PROGRAM	3
<i>Observations and Recent Developments</i>	5
AUDIT SCOPE, OBJECTIVE AND METHODOLOGY	5
CONSTRUCTION MANAGER QC PROGRAM REQUIREMENTS	7
FINDINGS AND RECOMMENDATIONS	8
Section I. QC Program Organizational Structure	8
Findings nos. 1-5	
Section II. Documentation of the Testing/Inspection Process	18
Notifications: Findings nos. 6-8 and Table 1	18
Daily Inspection Reports (DIRs): Findings nos. 10-14 and Table 2	22
Notices of Deficiency: Table 3	31
Daily Test Reports (DTRs): no exceptions noted	31
Section III. Inspection Testing Results	32
Threshold Inspection Reports & Comparison of Inspection Failure Rates: Findings nos. 15 & 16, Tables 4 – 7	
OIG LIST OF EXHIBITS & OIG APPENDIX	39

Table of Audit Findings

OIG Recommendation(s), PACB's Response and OIG Rejoinder follow each finding

		Page
SECTION 1	A. QC Program Organizational Structure	8
Finding No. 1	QCORG and subcontractor organizational charts and related documentation do not include the required staffing information	8
Finding No. 2	The QCORG has not fulfilled its role of implementing and monitoring the QC Program	11
Finding No. 3	The QCORG has not provided adequate support to the subcontractors to implement their QC Program as part of the Construction Manager QC Program	13
Finding No. 4	There is an insufficient number of qualified QCORG technicians to monitor the work activity at the project	15
Finding No. 5	QCORG funding will lapse before project completion date	16
SECTION 2	I. Documentation of the Testing/ Inspection Process	18
Finding No. 6	Incomplete QCORG files of PACB Operation's inspection notifications indicate that the QCORG may not have been aware of some subcontractor work activities that it would have wanted to inspect but for the lack of notices may not have inspected	19
Finding No. 7	Premature inspection notifications leads to inefficient use of Threshold Inspectors	21
Finding No. 8	Subcontractor requests for inspections fail to identify whether requested inspection is due to previously failed inspections	22
Finding No. 9	PACB has not provided the Owner and A/E with QCORG inspection documentation in accordance with the QC Program DIR reporting format, completeness and frequency requirements	23
Finding No. 10	All subcontractor self-inspections were undocumented prior to February 19, 2003	24
Finding No. 11	Subcontractor self-inspection reporting does not contain the required information called for in Article 1.08 <i>Documentation</i>	25
Finding No. 12	PACB has not forwarded the substituted DIR Summaries to the A/E in a timely manner, as required by the QC Program	26
Finding No. 13	Subcontractor self-inspection reports are not signed by the QC Program Administrator	29
Finding No. 14	DIRs prepared by the QCORG Technicians and the subcontractors' designated Quality Control representatives do not contain the required remedial or corrective action proposed or taken	30
SECTION 3	<i>Inspection Testing Process</i>	32
Finding No. 15	Deviation from the approved QC Program by the QCORG Technicians may have resulted in a higher failure rate when the Threshold Inspector conducted the same inspection	32
Finding No. 16	Threshold inspection failures continue at a high rate of failure, even after subcontractors started performing their own self-inspections	36

INTRODUCTION

The Miami-Dade Office of the Inspector General (OIG) has completed an audit of selected aspects of the Performing Arts Center Builders' (PACB) Construction Manager Quality Control Program (QC Program). This program is required of PACB under its contract with the Miami-Dade County to provide construction management services during the building of the Performing Arts Center of Greater Miami (PAC).

This Final Audit Report incorporates PACB's responses to each enumerated audit finding. PACB's complete response to the draft version of this report is found in Appendix A. As new to this final version, the OIG provides a rejoinder to each of PACB's responses, where warranted. Additionally, the Performing Arts Center Management Office's (PACMO) response is attached as Appendix B. PACMO's response includes the comments of Cesar Pelli & Associates (the Owner's Architect). A supplemental response tendered by PACMO, on behalf of Cesar Pelli & Associates (CPA), is attached as Appendix C. Neither PACMO nor CPA provided comments specific to each finding and are therefore not directly incorporated into the body of this Final Report.

The OIG thanks and appreciates the courtesies, cooperation, and patience extended by PACB, its subcontractors, The Architects Hall Designers, Inc., Cesar Pelli & Associates, and County staff to the OIG in the course of this audit.

Results Summary

In general, PACB has unsatisfactory QC Program documentation and record keeping. In part, this is due to PACB having not provided adequate financial and logistical support to The Architects Hall Designers, Inc., which is the designated Construction Manager Quality Control Organization (QCORG). This condition adversely impacts the QCORG's ability to implement effective QC Program record keeping, inspections and subcontractor oversight. PACB cannot document that its QCORG and subcontractors have complied with approved QC Program requirements, such as conducting and reporting inspections of work performed. PACB's efforts, to date, have resulted in an undermanned quality control organization and one that relies on individuals that may not be qualified to perform their QC Program responsibilities.

GOVERNING AUTHORITY

In accordance with Section 2-1076 of the Code of Miami-Dade County, the OIG has the authority to review past, present, and proposed County programs, accounts, records, contracts and transactions.

BACKGROUND

In an effort to nurture and enrich the County's arts and cultural community, the Miami-Dade Board of County Commissioners passed Resolution No. 1073-01, on September 25, 2001, approving a \$254,650,000 Amended At-Risk Construction Management Guaranteed Maximum Price Contract (the Contract) between PACB (a joint venture)¹ and Miami-Dade County (the County) to construct the Performing Arts Center of Greater Miami. The County's representative, the Performing Arts Center Management Office (PACMO), issued the Notice to Proceed for this project on October 15, 2001.

Article 3.6.1(1), of the Construction Services section of the Contract between PACB and Miami-Dade County states that PACB shall "Provide sufficient organization and personnel to perform all administrative, management, supervision and related Services, as required, to coordinate the Work of the Subcontractors with each other and with the activities and responsibilities of the Construction Manager, the Owner, the Architect, the Consultants and the Separate Contractors to complete the Project in accordance with the Project's objectives, for cost, time and **quality**." (Emphasis added)

Section 01440 the Contract's Project Manual, entitled *Construction Manager Quality Control Program*, details project specifications establishing the requirements for a Construction Manager QC Program. This section requires PACB to establish a QC Program that details both the methods and procedures to ensure that all items are either inspected or tested when required by the contract's technical specifications. Other Project Manual sections describe all of the project's technical specifications.

Section 01440 also states that the QC Program should be implemented by establishing a separate quality control organization. To that end, PACB entered into a consulting agreement with The Architects Hall Designers, Inc. (TAH) to develop a written QC Program. In February 2002, PACB signed a change order to its consulting agreement with TAH authorizing it to implement and manage the QC Program, to assist the subcontractors to implement their QC Programs, and to monitor the subcontractors' work to ensure that it meets contract requirements for quality control inspections and tests.

¹ The Joint Venture is made up of Odebrecht Construction, Inc., The Haskell Company and Ellis-Don Construction, Inc.

EVOLUTION OF THE QC PROGRAM

The following chronology documents the series of events, from the inception of the QC Program to its current form, to illustrate the many changes that have taken place:

- **May 7, 2001**: PACB and TAH, PACB's designated QCORG, entered into a consulting agreement for TAH to design a QC Program and to write a quality control manual. In conjunction with the development of the QC Program, TAH was to review the quality control, testing and inspection requirements of the project's technical specifications and identify, among other items, which on-site quality control test and inspection requirements would be provided by PACB's subcontractors.
- **October 15, 2001**: PACMO issues the project "Notice to Proceed" to PACB.
- **October 23, 2001**: PACB initiated its first contact with some of its subcontractors requesting that they provide QC organizational charts identifying "the name and function, experience, qualifications, certifications and the total staff required to implement all elements of the QC Program, including inspection and testing for each item of work".²
- **December 27, 2001**: The QCORG sent the same request, via mail, to twenty-five (25) other subcontractors to submit their QC organizational charts and related information about their QC staff.
- **February 2002**: The QCORG Program Administrator left the employment of TAH and on February 11, 2002, TAH brought in a second Program Administrator as a replacement. This individual continued working on the implementation of the QC Program.
- **February 26, 2002**: PACB issued Change Order No. 1 to TAH, amending its contract Exhibit A, Statement of Services, to add a "Construction Manager QC Program" article, which requires TAH to:
 - "...perform all services, tasks and activities necessary for the successful implementation of the CONSTRUCTION MANAGER QC PROGRAM (CMQCPRG) to ensure compliance with the Plans, Technical Specifications and other requirements set forth in the Contract Documents."
 - "...assist the Subcontractors to implement their [quality] control programs ... as defined in the Subcontract Agreement between the Construction Manager and each Subcontractor."
 - "...follow the guidelines and certain minimum requirements established in Section 01440 - Construction Manager Quality Control Program, and elsewhere in the

² For sample copy of this letter, see Exhibit 2.

Technical Specifications and other Contract Documents, which are part of this Consultant Agreement.”

Another section of Change Order No. 1 described the QCORG’s staffing and QC program experience requirements:

- One (1) Program Administrator position that will be charged primarily with the responsibility to successfully implement and manage the QC Program to ensure compliance with the plans, technical specifications and other requirements in the contract documents, and
- Two (2) Quality Control technicians who will be charged primarily with the responsibility to monitor the work to ensure that subcontractors meet their contract requirements for quality control inspections and tests.

PACB agreed to compensate TAH in an amount not to exceed \$900,000 for performing these additional services.

Another section of Change Order No. 1 was titled *Construction Phase Services*. This section establishes the terms and conditions for compensation and payment for services performed after the Change Order became effective.

- **March 8, 2002**: The first Quality Control Technician was added to the QCORG staff.
- **June 17, 2002**: The second Quality Control Technician was added to the QCORG staff.
- **October 10, 2002**: The second Program Administrator resigned.
- **November 7, 2002**: In response to an OIG request for information about the QC Program, the QCORG prepared a document entitled “Genesis” memorializing events leading to the current QC Program practices (Exhibit 1).
 - In this document, the QCORG acknowledges that during the tenure of the second QC Program Administrator, “...**the official, approved, QC Program and Manual were discarded** and a different method and forms was implemented.” (Emphasis added)
 - The QCORG also admits that: “The new forms **do not** record **the contract documents** used by The Architects Hall Designers (QCORG) Quality Control Technicians as **the basis for their surveillance work**. As such, there is no documented evidence that the work surveyed **conforms to the contract**.” (Emphasis added).
- **November 25, 2002**: The original Program Administrator returned to work on the QC Program. The QCORG had no Program Administrator for over a month and a half.

- **February 3, 2003**: A QCORG Field Manager was added to the QCORG staff, bringing the total number of personnel to four (4).
- **February 19, 2003**: The first documented subcontractor self-inspection was completed.
- **March 24, 2003**: Other subcontractors began conducting and documenting self-inspections.

Observations and Recent Developments

During our review we noted that the QCORG has reverted to the original QC Program, under the direction of the Quality Control Field Manager, who was hired by TAH in February 2003. QCORG Technicians have begun to use, with minor variations, the inspection reporting forms, checklists and other attachments originally presented as an integral part of the QC Program. The current forms provide a unique numbering system that allows for tracking of inspections, re-inspections, and the three (3) types of notices: a) notices of deviation, b) nonconformance and c) notices of conformance.

The Field Manager has redirected the QCORG's efforts to implement the originally approved QC Program. OIG auditors observed the QCORG meeting with two (2) subcontractors during the recent months explaining the mechanics of the QC Program, and the reports required to be submitted by subcontractors. This is a step in the right direction for the QCORG as far as compliance with contractual obligations and implementing program requirements.

AUDIT SCOPE, OBJECTIVES AND METHODOLOGY

The scope of the audit is the Construction Manager QC Program and encompasses the period beginning on May 7, 2001, when the initial consulting agreement was signed between PACB and TAH, through May 31, 2003, the end of the OIG auditors' field work. The objectives of the audit are:

1. To determine if the results of QC Program work and materials testing and inspection activities were documented and that such documents could be used as a reliable indicator of QCORG and subcontractor compliance with QC Program specifications.
2. To observe PACB, QCORG and subcontractors' QC-related field practices.
3. To evaluate PACB and its subcontractors' responses to quality control issues in the performance of their daily work, in particular, their efforts to document found defects, causes for rejection, and any remedial or corrective actions taken.

4. To assess PACB's methods and procedures of reporting QC Program results to the Owner (PACMO) and to review completed QC reports in order to determine whether they conformed to QC Program requirements.

The OIG selected two (2) one-month sample periods, September 2002 and January 2003. The OIG sample consisted of documentation resulting from work performed at both structures being erected on the site: the Sanford and Dolores Ziff Ballet Opera House (BOH) and the Carnival Symphony Concert Hall (CH). The OIG tested records supporting 100% of the documented inspections performed during these months, as well as selected records from other months. The documentation reviewed included:

- a. Notifications of Inspections
- b. Daily Inspection Reports (DIRs) prepared by QCORG
- c. Daily Inspection Reports (DIRs) prepared by the subcontractors
- d. Threshold Inspection reports
- e. Jurisdictional Inspection Reports (i.e. City of Miami)
- f. Daily Inspection Report Summaries
- g. Daily Test Reports
- h. Notices of Nonconformance
- i. Deficiency Notices
- j. Correspondence

In addition, OIG auditors interviewed personnel from TAH, PACB, PACMO and the Owner's Architect (Cesar Pelli & Associates) to gain an understanding of the contract requirements, QCORG records and reports, and QC Program activities.

CONSTRUCTION MANAGER QC PROGRAM REQUIREMENTS

Section 01440 of the Contract's Project Manual prescribes the QC Program to be used when required by the Contract's technical specifications. The following Section articles specify, in part, the steps for PACB to implement the QC Program:

- Article 1.01A states that “when the Technical Specifications require a Construction Manager QC Program, the CM shall establish, provide, and maintain an effective QCP that details the methods and procedures that will be taken to assure that all materials and completed construction required by the Contract conform to the Plans, Technical Specifications and other requirements...”^{3 4}
- Article 1.02A states that “the Construction Manager shall establish a QC Program to perform inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors and vendors.”⁵
- Article 1.03A states that PACB shall implement a Construction Manager QC Program by establishing a separate quality control organization. The QCORG is that organization.⁶

Article 1.08 *Documentation*, in conjunction with PACB's QC Program Manual procedures, Attachment B of the contracts between PACB and the subcontractors, and the Consulting Agreement between PACB and TAH, collectively lay out the process by which PACB has chosen to implement the QC Program. PACB has delegated to subcontractors the primary responsibility of conducting and documenting required inspections when the technical specifications require such inspections. QCORG's role is to conduct secondary, or “oversight” inspections and to ensure adequate record keeping.

³ Hereinafter, all “Article” references refer to those shown in Section 01440 of the Contract's Project Manual.

⁴ Article 1.01 *Scope*

⁵ Article 1.02 *Description of Program*

⁶ Article 1.03 *Quality Control Organization*

FINDINGS AND RECOMMENDATIONS

Section I. QC Program Organizational Structure

Article 1.03 *Quality Control Organization* specifies the organizational structure of the QCORG. The following paragraphs describe some of the information to be included on or submitted with the quality control organizational charts. The collective information should show the interaction between PACB, the QCORG and the subcontractors to deliver a quality work product conforming to specifications:

- Article 1.03A states that an organizational chart shall be developed for the QCORG to show all Quality Control personnel and how these personnel integrate with other management/production and construction functions and personnel.
- Article 1.03B specifies the Quality Control personnel information that must be provided by the QCORG and the subcontractors when submitting their organizational charts. The required information includes professional experiences, certifications and educational qualifications of the staff, as well as the number of Quality Control personnel to implement the QC Program.
- Article 1.03C spells out minimum experience and educational qualifications for the QC Program Administrator and QC Technician positions.
- Article 1.03C.3 also discusses staffing levels stating that: “The Construction Manager shall provide sufficient qualified quality control personnel to monitor each work activity at all times. . .” and “The scheduling and coordinating of all inspection and testing must match the type and pace of work activity.”

Finding No. 1 QCORG and subcontractor organizational charts and related documentation do not include the required staffing information.

PACB does not have an organizational chart for the project’s QC Program that meets the requirements of Article 1.03 *Quality Control Organization*. Such an organizational chart would depict the intended interaction and personnel integration between and among the parties involved to coordinate quality control work activities. This organizational chart would enable any party to readily ascertain the various functions and responsibilities of QC Program participants, including the QCORG and subcontractors’ staff.

Furthermore, the QCORG and the subcontractors’ organizational charts are not supported by documentation showing the experience, qualifications and certifications of staff, as required by Article 1.03C.2. Without this information, the effectiveness of the QC Program may be questioned, as the qualifications of the subcontractors’ QC-designated representative(s),

whose role is to monitor the QC Program, have not been verified by either PACB or the QCORG.

Another qualifications-related issue pertains to the QCORG's staffing and its lack of qualified Quality Control Mechanical, Electrical and Plumbing (MEP) Technicians on staff to perform QC inspections for these trades. Electrical, air conditioning and plumbing work has been performed on the project, but the QCORG does not have any qualified individual(s) on staff nor has it subcontracted with other parties to perform these types of specialized inspections.

Also, the organizational charts do not indicate the total staff required to implement all elements of the QC program. Although the type and pace of work at the project continues to increase, the QCORG has not added staff to comply with the requirement specified in Article 1.03C.3, which calls for "...sufficient qualified quality control personnel to monitor each work activity at all times."

PACB/QCORG sent letters (Exhibit 2) dated October 23, 2001, to seven (7) of its subcontractors requesting that they provide QC-related information. On December 27, 2001, PACB/QCORG sent letters to twenty-five (25) subcontractors requesting them to provide QC-related information. However, PACB has not followed-up with additional request(s) or other corrective action(s) to obtain this information. The subcontractors had not submitted the information by the end of the audit fieldwork.

Without accurate organizational charts and supporting documentation that show the number of personnel needed by the QCORG and the subcontractors, as well as the required qualifications to adequately perform the inspections, some of the work activity performed by the subcontractors or work to be performed by the subcontractors has not or will not be adequately inspected by an adequate number of qualified quality control personnel.

OIG Recommendation

1. PACB should prepare an organizational chart and submit it to the Owner and A/E. The chart should include, at a minimum:
 - a. All parties/individuals involved in the QC Program,
 - b. The intended interaction and personnel integration between the parties involved to coordinate quality control work activities,
 - c. Experience, qualifications and certifications of QCORG and subcontractor quality control personnel, and
 - d. The total number of staff required at present, and the projected number of

personnel necessary through the remaining construction phase, to implement all elements of the QC Program.

PACB's Response

“The organizational chart for the existing Quality Control Organization (QCORG) is appropriate. Nonetheless, the CM has included a revised organizational chart depicting the Revised QCORG that provides an expanded organizational chart that further addresses any concerns of the OIG.

The current staff of the QCORG is qualified and meets all of the requirements of Section 01440. Furthermore, we are adding a Sr. QC Manager to the organization, Robert Laramie, to bridge and provide leadership over all of the QC functions, which interrelate with the Architect's and Owner's responsibilities. The revised quality control program depicts Mr. Laramie's role and resume, along with the rest of the QC personnel. The current QC Program Administrator is a Certified General Contractor in the State of Florida with over 20 years of experience in construction management. The Document Control & Record-keeping Administrator is an engineer with over 30 years of experience in construction, including quality assurance and quality control, and is also a Certified Uniform Building Code Inspector. Each of the field Technicians has many years of experience. Similarly, the designated Quality Control Representatives for the subcontractors are experienced craftsmen, who more than meet the requirements of Section 01440. The specification section 1440 refers to NICET Level II or equivalent... This reference appears to be a mistake and is not relevant since these requirements deal solely with Quality Assurance personnel involved in asphalt, concrete and soils testing on the project, an Owner responsibility, not QCORG staff.

In summary, the prior program met the organizational requirements of Section 01440. To provide further assurance of appropriate quality control, the Construction Manager has provided an additional level of detail in the Revised QCORG that should resolve any further questions that the OIG may have.”

OIG Rejoinder

- *While PACB does not agree with this finding, it is providing a revised organizational chart.*
- *Notwithstanding, an important aspect not adequately addressed by PACB relates to its documenting the qualifications of all PACB and subcontractor QC-related personnel. PACB's assertion that “the designated Quality Control Representatives for the subcontractors are*

experienced craftsman . . .” is not responsive and PACB should be able to do more to substantiate the claim that its subcontractor’s QC staff is qualified.

- *The OIG reaffirms both its finding and recommendation.*

Finding No. 2 The QCORG has not fulfilled its role of implementing and monitoring the QC Program.

The QCORG may not have been proactively monitoring the subcontractors’ performance and documentation of their self-inspections, as evidenced by the lack of documented subcontractors’ self-inspections conducted prior to February 19, 2003. As early as December 27, 2001, the QCORG had communicated to the subcontractors about their contractual responsibilities and inspection requirements, according to their respective scope of work. However, it appears that no follow up was implemented to ensure compliance.

Since the project’s Notice to Proceed date (October 15, 2001) through the date that the first subcontractor’s self-inspection was conducted (February 19, 2003), **more than sixteen (16) months elapsed before any subcontractors documented inspections of their work.** Notwithstanding the fact that QCORG technicians performed some inspections during this period, much of the work activity performed by all other subcontractors may not have been subjected to the required QC inspections. At a minimum, there is no documentation supporting the fact that subcontractors completed any QC self-inspection of their work.

Furthermore, subcontractors’ self-inspections, conducted between February 19, 2003 and May 31, 2003, still fail to meet the reporting requirements specified in Section 01440. There is no documentation to indicate that the QCORG followed up with these subcontractors about their reporting responsibilities.

OIG Recommendation

2. The QCORG should fulfill its contractual obligation with PACB to monitor the subcontractors, and assist them to implement their requirements under the QC Program. The QCORG needs to be vigilant to ensure that subcontractors continue to perform and document their self-inspections according to QC Program requirements.

PACB’s Response

“The subcontractors’ self-inspections took place but the transmission of the documentation of these inspections has not kept pace. The documentation is available for review. The suggestion of the OIG that “more than sixteen (16) months lapsed before any subcontractors documented inspections of their work” is incorrect. Documentation of subcontractor’s self-inspections began with the start

of foundations on January 29, 2002, and has proceeded since then. By way of example, the Concrete Placement Inspection Card process was implemented that required all subcontractors to sign-off on completion of their work. An example of one of the hundreds of such Concrete Placement Inspections Cards is included here as Exhibit A. Various other inspection performances have been utilized on the project. The construction manager's Revised QC Program provides an improved method of collecting, summarizing and reporting on daily inspections that will expedite any oversight of the process."

OIG Rejoinder

- *PACB appears to disagree with the finding but then states that its revised QC Program "provides an improved method of collecting, summarizing and reporting daily inspections . . ."*
- *The OIG examined the Concrete Placement Inspection Cards referred to by PACB as Exhibit A and determined that such cards*
 - *Do not meet the requirements set forth in Section 01440, Article 1.08, regarding the information required to be included in a DIR;*
 - *Have no relevance to the QCORG's responsibility for implementing and monitoring the QC program; and*
 - *Are not required QC documents per Article 1.08, Section 01440 and were not mentioned in the Quality Control Implementation Process prepared by the QCORG.*
- *PACB states in its response that "various other inspection performances have been utilized on the project." Unfortunately, PACB did not explain or provide examples in its response of what other "inspection performances" are. OIG auditors had requested all documentation from PACB that it prepared or had accumulated related to QC inspection and record keeping activities. Should any other documentation exist of "inspection performances," it was simply not provided to the auditors.*
- *The OIG reaffirms both its finding and recommendation.*

Finding No. 3 The QCORG has not provided adequate support to the subcontractors to implement their QC Program as part of the Construction Manager QC Program.

The QCORG’s *QC Program Implementation Process* dated January 27, 2003 states that indoctrination meetings will take place with subcontractors to inform them of their responsibilities pursuant to the QC Program. However, documentation reviewed by the OIG auditors reveals that these meetings have not been conducted regularly.

The QCORG staff stated to the OIG auditors that they conducted some “face-to-face” meetings with the subcontractors as they commenced work at the project. The purpose of the meetings was to discuss the subcontractors’ responsibilities and requirements under TAH’s QC Program, as well as to go over the subcontractors’ own program. However, there are no records that these one-on-one meetings took place.

The QCORG did provide documentation to demonstrate that it had conducted a total of four (4) meetings with the subcontractors since October 15, 2001. The following schedule shows a list of meeting dates and attendees.

QC Meeting Dates	July 9, 2002	July 23, 2002	August 20, 2002	September 17, 2002	Total Meetings Attended
Subcontractor A					0
Subcontractor B	x	x	x	x	4
Subcontractor C	x		x	x	3
Subcontractor D					0
Subcontractor E					0
Subcontractor F	x	x	x	x	4
Subcontractor G					0
Subcontractor H	x				1
Subcontractor I	x	x	x	x	4
Subcontractor J	x	x			2
Subcontractor K		x	x		2
Subcontractor L		x	x	x	3
Subcontractor M			x		1

x: Meeting Attendee

As shown above, four (4) on-site subcontractors have yet to attend a QC-sponsored meeting. Moreover, the other eight (8) subcontractors all started working on-site prior to attending a QC-sponsored meeting.

Subcontractors apparently are allowed to begin working on the construction site without receiving guidance from the QCORG regarding the implementation of the QC Program and the subcontractors' role and responsibilities in the QC Program.

OIG Recommendations

3. As new subcontractors start to work on the project, the QCORG should conduct pre-construction meetings with subcontractors to address all quality control issues pertaining to their specific work.
4. The QCORG should develop follow-up procedures to ensure that subcontractors are periodically reminded of or re-educated about their responsibilities in complying with the QC Program.

PACB's Response

“The analysis of the OIG overlooked records of over 50 quality control related meetings such as those for prefabrication, mock-ups and pre-installation. A matrix indicating those meetings is included here as Exhibit B. Most of these meetings included representatives of the Owner, the Architect/Engineer and its various consultants. In addition, numerous informal meetings and discussions were held directly between the QCORG and the subcontractors. If appropriate consideration is given to these additional meetings, the Construction Manager is confident that the concerns of the OIG will be eliminated.”

OIG Rejoinder

- *The OIG refers specifically to the formal indoctrination meetings between the QCORG and the subcontractors where the subcontractors were to be informed of their responsibilities regarding the QC Program. QCORG records do not support PACB's statement that there were “numerous informal meetings and discussions.”*
- *PACB's listing of 54 “quality control” related meetings (PACB Attachment B) were not “overlooked” by the OIG auditors. In fact, the OIG auditors reviewed PACB meeting minutes for most of the listed meetings. These meetings appear to be either “pre-construction” or PACB's weekly subcontractor meetings wherein quality may have been an agenda item but not an item that rated any special attention. PACB's QC Program and all of its inspection, record keeping and reporting requirements was not a significant discussion item at these meetings. Also, some of these “meetings” were actually site or “plant” visits to subcontractor facilities.*

- *The OIG believes that PACB's lack of concern regarding its QC Program is clearly indicated on its Exhibit B (included in PACB's response, see Appendix A of this report). This document shows that TAH (PACB's QC consultant) attended only 15 or 28% of the meetings and that the date of the first meeting attended by TAH was July 11, 2002, or nine months after work commenced on the project.*
- *The OIG reaffirms both its finding and recommendations.*

Finding No. 4 There is an insufficient number of qualified QCORG technicians to monitor the work activity at the project.

Inadequate staffing precludes the QCORG from adequately monitoring the work activities at the project. Without additional resources from PACB, the QCORG is at risk of not having enough of the right people with the right skills to manage the workload as the project progresses.

For example, Divisions fifteen (15) and sixteen (16) require skilled inspectors proficient in both mechanical and electrical inspections, respectively; however, a review of QCORG staff biographies and work histories reveals that TAH's two (2) QC technicians do not have documented experience in either of these fields. The OIG questions whether the QCORG can adequately monitor and assist subcontractors to implement the QC Program if the QCORG is not staffed with individuals knowledgeable in the specific areas requiring inspections.

QCORG acknowledged this in a memorandum dated September 20, 2002 to PACB, where it stated: "We are also in need of an additional inspector to assist with the monitoring of the MEP trades." Again, the current QC Program Field Manager recognized the current QCORG staffing limitations in a draft analysis submitted to PACB, dated April 23, 2003, in which he projects the need to hire mechanical technicians, electrical technicians and a sound and communication technician. As of the end of audit fieldwork, PACB has not responded to the QCORG's staffing concerns.

OIG Recommendation

5. PACB should provide the QCORG with adequate resources so that the QCORG can augment its staff to sufficiently monitor each work activity at all times, as required by Article 1.03C.3.

PACB's Response

“The construction manager agrees with the OIG that given the additional burdens placed upon the construction manager and subcontractors by the defective and deficient design of the project that supplementing the existing QCORG staff may be appropriate. The original staffing complied in all regards with Section 01440 and ought to be adequate. The construction manager's Revised QCORG takes into consideration some of the current realities of the project by adding additional staff, which should provide additional support in addressing field issues that arise from the inadequacies in the design documents.”

OIG Rejoinder

- *Notwithstanding that it agreed with the finding, PACB makes an erroneous implication that the OIG's recommendation for supplementing the existing QC staff is premised on the “additional burdens placed upon the construction manager and subcontractors by the defective and deficient design of the project ...” To suggest that PACB “agrees with the OIG” is to mislead the reader that the OIG has somehow given legitimacy to PACB's claim of design deficiencies. The OIG finding clearly states that there are documented deficiencies in the experience and technical qualifications of PACB QC staff to handle proficiently the required mechanical and electrical inspections. There was nothing in the draft version of this finding, as there is not now, that attributes the deficiencies in the QC Program to the claim of design deficiency raised by PACB.*
- *The OIG reaffirms both its finding and recommendation.*

Finding No. 5 QCORG funding will lapse before project completion date.

The original consulting agreement between PACB and TAH, dated May 7, 2001, required TAH to develop a written QC Program and provide other QC Program related services to PACB by July 31, 2001, for which it would be paid an amount not to exceed \$15,000. Change Order No. 1, dated February 26, 2002, assigned additional responsibilities to TAH and lengthened the period of performance through the duration of the project. The amount of the change order was not to exceed \$900,000. PACB accounting records show that a total of \$442,872.11 has been paid to TAH through June 9, 2003, which is 49% of the total amount allowed by the change order.

Per PACB's Construction Progress Report dated April 15 to May 15, 2003, 40.75% of time has lapsed as measured against PACB's current scheduled substantial completion date of August 31, 2005 (as of May 31, 2003).⁷ If the QCORG continues to spend at the current rate,

⁷ PACMO has not formally accepted PACB's current scheduled substantial completion date.

it will have fully expended its lump sum amount of \$900,000 in early July 2004. This date is three (3) months before the project's original schedule completion date of October 15, 2004, and about thirteen (13) months before PACB's current scheduled substantial completion date.

Per PACB's *Construction Progress Report* for the period April 15 to May 15, 2003, the project is currently 294 calendar days behind schedule in the Sanford and Dolores Ziff Ballet Opera House, and 264 calendar days behind schedule in the Carnival Concert Hall. Therefore, in order to maintain a functioning QC Program throughout the duration of the project, PACB will incur additional costs above the amount originally provided for in the Change Order, which was based on the original schedule completion date.

OIG Recommendation

6. In order for PACB to comply with Section 01440, PACB should provide for the continued presence of the QCORG through the duration of the project.

PACB's Response

"The OIG's concern appears to be based on the misperception that the agreement between the construction manager and The Architects Hall Designers, Inc. (THAD) is a lump sum agreement. The agreement is not a lump sum basis. It was, however, based on an estimated cost of services anticipated in the original schedule. Since design deficiencies and the inability to have those deficiencies resolved in a timely manner has resulted in a significant increase in the construction schedule, the construction manager will be required to adjust the agreement to provide additional funding as necessary to fulfill all required QC functions. The construction manager has already notified the Owner of liability for any such costs."

OIG Rejoinder

- *PACB agrees with the finding and recommendation but places the financial burden for increased QC services on the Owner. PACB states that it is seeking additional compensation from the Owner for this project's extended duration due to Owner-caused delays, i.e., alleged design deficiencies and the Owner's lack of timely responses to correct such deficiencies. PACB is reminded that it must provide the required QC Program services throughout the entire project duration regardless of which party may end up being determined responsible for any costs associated with an extended construction period. PACMO has stated that it will forcefully challenge PACB's contention that the Owner bears sole financial liability for PACB's additional services and extended costs.*

- *At no time did the OIG auditors state that the agreement between PACB and TAH for services was a lump-sum agreement. Change Order No. 1 places a not-to-exceed ceiling of \$900,000 on the amount available to pay for TAH services. Any additional funds for increased service levels or longer durations will require approval from PACB.*
- *The OIG reaffirms both its finding and recommendation.*

Section II. Documentation Of The Testing/Inspection Process

Based on review of Section 01440, Attachment B to the contracts between PACB and its subcontractors, the Consulting Agreement between PACB and the QCORG, the QC Program Manual, available correspondence and discussions with the QCORG staff, the following briefly describes the approved inspection process:

- Step 1: When work is ready for inspection, the subcontractor self-inspects its work and prepares a subcontractor Daily Inspection Report (DIR).
- Step 2: The subcontractor then notifies PACB Operations, a unit of the joint venture, who in turn schedules an inspection by the Threshold Inspector, usually to occur within 48 hours.⁸
- Step 3: Before the Threshold Inspector arrives to perform its inspection, the QCORG technicians may also conduct an inspection of the work performed and prepare a QC DIR.
- Step 4: The Threshold Inspector conducts its inspection.

The records used to document the inspection process include: Notifications, Daily Inspection Reports, Daily Test Reports and Threshold Inspection Reports.

Notifications

A subcontractor contacts PACB Operations to schedule a threshold inspection after the subcontractor has self-inspected its work. PACB Operations then issues a dated and numbered "Notification for Inspection/Testing," which is distributed to PACMO, A/E of record, Cesar Pelli and Associates, the QCORG and the Threshold Inspector. It is based upon this notification that the QCORG is apprised of the upcoming inspection and may

⁸ The owner, PACMO, hires the Threshold Inspector to observe and document that the placement of the work's structural components conform to the permitted construction documents and any subsequent revisions. The Threshold Inspector can fail work if not up to specifications and may require corrections or that the nonconforming work be redone.

elect to conduct its QC inspection, as discussed in Step 3 above. There are no specifications for the format and the information that must be included in the notifications issued by PACB Operations.

Finding No. 6 Incomplete QCORG files of PACB Operation’s inspection notifications indicate that the QCORG may not have been aware of some subcontractor work activities that it would have wanted to inspect but for the lack of notices may not have inspected.

PACB Operations issued 197 notifications for inspection during the two-month sample period. For the same period, the OIG tabulated the number of notifications for inspection not found in the QCORG files to be 38, or 19% of the total number issued by PACB Operations. The lack of notices may have resulted in a reduced number of inspections performed by QCORG. See the following table for details.

TABLE 1

SAMPLE PERIOD	PACB’s NOTIFICATIONS	BOH/ST	CH	TOTAL
September 2002	Notifications issued by PACB	85	47	132
	Notifications missing in QCORG files	15	12	27
January 2003	Notifications issued by PACB	44	21	65
	Notifications missing in QCORG files	11	0	11
Total Notifications Issued		129	68	197
Total Notifications Missing		26	12	38
Total % of Notifications Missing from QCORG files		20%	18%	19%

The incomplete files could have resulted from shoddy record keeping by the QCORG or by the failure of PACB Operations to forward such notices to QCORG.

OIG Recommendation

- QCORG should improve its records management system and/or PACB should ensure that the QCORG receives a copy of all such notifications so that QCORG is always aware of upcoming inspections, enabling it to more efficiently assign its resources to the highest priority needs.

PACB's Response

“A review of the process confirmed that the Notification for Inspection/Testing had properly been provided to the QCORG. QC technicians pick up their copy of the inspections each morning from the Operations field office. A copy of the Notice for Inspection/Testing provided to them is maintained in the construction manager's Operations field office. That file is complete. Missing notifications in the separate QC file may result from the technicians handling them during the day when working in the field making the inspections. The construction manager has confirmed with the QC staff that no inspections have been missed as a result of any perceived lack of notification.”

OIG Rejoinder

- *This finding relates to QCORG record keeping practices. Inspection notices were not always present in QCORG files. There is no way to tell whether QCORG ever had these notices and then misplaced them or whether it never had them in the first place. The issue is that QCORG should have complete files of such notices. That PACB Operations personnel have them on file is not an adequate response.*
- *The lack of QCORG-prepared inspection reports indicates that many activities subject to QC inspection were not inspected. Also, the fact that many inspection notices are not present in QCORG files raises the issues about QCORG knowledge of scheduled inspections. There is no authoritative schedule showing inspection notices and corresponding QCORG inspections. Accordingly, any reassurance intended by PACB's statement that it has “confirmed with the QC staff that no inspections have been missed as a result of any perceived lack of notification” is without basis. QC staff has no organized records, such as a daily inspections log, showing what were its actual inspections versus what inspections that it could have made.*
- *The OIG reaffirms its finding and recommendation.*

Finding No. 7 Premature inspection notifications leads to inefficient use of Threshold Inspectors.

The specifications do not require PACB Operations to maintain documentation to record the source or cause for initiating the notification. At issue is the fact that some of subcontractors may have called for inspections before their work activity at a certain location was ready for inspection.

QC inspection reports reviewed by the OIG indicate that the QCORG Technicians and the Threshold Inspector noted on their respective inspection forms that occasionally certain locations were not ready for inspection (Exhibit 3). However, without information as to the source and timing of PACB Operations' receipt of an inspection request (Step 2, as discussed earlier), one cannot determine an exact cause triggering PACB Operations to issue the inspection notification. For example, did the subcontractor prematurely request an inspection?

This results in inefficient usage of inspection personnel and may cause delays and additional costs to the Owner. However, the total cost to the project may never be quantified as both the QCORG Technicians and the Threshold Inspectors no longer consistently document work areas that are not ready for inspection.

OIG Recommendation

8. PACB Operations and QCORG should monitor the subcontractor requests for inspections to ensure that the activities to be inspected are, in fact, completed when the subcontractor submits its request.

PACB's Response

“The construction manager agrees that clear communication is absolutely critical to the success of any quality control program. In certain incidences there appears to have been premature notification by subcontractors. There also appear to have been situations where threshold inspections have occurred before notice was given by the subcontracts, again causing inefficiencies. The construction manager believes that its Revised OCORG provides for an improved flow of communication that should address this issue.”

OIG Rejoinder

- *PACB agrees with finding and recommendation and identifies the revised QCORG Program as addressing the stated concern.*

Finding No. 8 Subcontractor requests for inspections fail to identify whether requested inspection is due to previously failed inspections.

Notifications issued by PACB Operations did not consistently indicate if the inspection notification was the result of a previously failed inspection. This information would assist PACB, QCORG and Owner personnel to track previously failed inspections and any subsequent corrective action taken.

OIG Recommendation

9. PACB should coordinate the inspection notification process with its subcontractors to ensure that requests, when appropriate, indicate that the requested inspection is due to a previously failed inspection. The notification issued by PACB Operations to the Threshold Inspectors, which is copied to PACMO, the A/E, the QCORG, should contain the necessary information to advise the parties if the work activity had been previously inspected, the date of said previous inspection, and the deficiencies noted in the previous inspection. It is also recommended that a copy of the report of the previous failed inspection be attached to the new notification.

PACB's Response

“PACB acknowledges the observation of the OIG and although not required by the specifications, the construction manager agrees that this is a good suggestion and will require that such information be included in future notices.”

OIG Rejoinder

- *PACB agrees with finding and recommendation and identifies the revised QCORG Program as addressing the stated concern.*

Daily Inspection Reports (DIRs)

Article 1.08 states that PACB must maintain current quality control records of all inspections and tests performed by the QCORG and the subcontractors. The DIRs are the forms used to record the results of QC inspections and the subcontractors' self-inspections. Proper completion of these forms would ensure that completed work activity conforms to applicable technical specifications and plans. Furthermore, Article 1.08 also requires that each subcontractor's designated QC Representative, for all quality control self-inspections, maintain a daily log of such inspections.

DIRs must be maintained to provide factual evidence that the inspections were actually performed. The responsible QCORG or subcontractor QC Technician and the Program Administrator must sign the DIRs. A copy of each DIR must be provided to the A/E on the following workday after the inspection.

Finding No. 9 PACB has not provided the Owner and A/E with QCORG inspection documentation in accordance with the QC Program DIR reporting format, completeness and frequency requirements.

Prior to February 2003, the QCORG documented its QC inspections using its version of a DIR, albeit in a summary format that did not comply with the specification's minimum requirements for information that should be included on, or with a DIR. For instance:

- The QCORG Technicians used a QCORG-generated generic inspection checklist through the first half of September 2002.
- Use of such checklists was discontinued and QCORG staff began using a more narrative format.
- The report form *Report on Construction Manager Quality Control Inspection*, as presented in the Quality Control Implementation process, was not used during the sample period.
- Article 1.08 requires the DIRs to include a statement "...that all supplies and materials incorporated in the work are in full compliance with the terms of the contract." The DIRs reviewed by the OIG did not include this statement.

During this period, instead of using the required DIRs, PACB and the QCORG implemented an alternative report named *Quality Control Daily Inspection Report Summary* (Summary/Summaries) to recap all the day's events, including the inspections performed. A detailed review of all Summaries prepared by the QCORG Technicians during the period from February 2002 to March 2003 indicate that the format and content of the Summaries do not list the specific inspections conducted, the results of the inspections, the corresponding technical specifications for the work inspected, the location and nature of defects found, the causes for rejection, and the remedial or corrective actions taken or proposed. See Exhibit 4 (page 1) for an example of a QCORG Technician prepared *QC Inspection Form*, wherein work nonconformance is noted but not reported in the corresponding Summary (Exhibit 4 pages 2 and 3) for inspections performed on that same date.

QCORG Technicians since March 2003 have been completing QC inspection forms, albeit not using the "approved" DIR form. The forms used contain some but not all of the information that would be reported on a DIR form.

OIG Recommendations

10. PACB should strictly adhere to the documentations requirements specified in Article 1.08.
11. PACB should discontinue use of the Summaries in lieu of the "approved" DIR format.

PACB's Response

“The construction manager concurs with the OIG finding and has addressed the formatting, completeness and frequency in its Revised QCORG. The revised reporting program exceeds the requirements of Section 01440 consistent with the construction manager’s objective of delivering a world-class facility for the citizens of South Florida.”

OIG Rejoinder

- *PACB agrees with finding and recommendation and identifies the revised QCORG Program as addressing the stated concern.*

Finding No. 10 All subcontractor self-inspections were undocumented prior to February 19, 2003.

PACB/QCORG did not require the subcontractors to document their self-inspections prior to February 19, 2003, and then it was only one subcontractor that began preparing “DIRs”. Other subcontractors began documenting their inspections, using their “DIR” forms, in March 2003. “DIRs” is in quotes because the subcontractors have yet to use the QC Program approved DIR form. In lieu of the approved DIR form, subcontractors typically have been using checklists or some other forms provided by their respective organizations. A review of these substituted “DIRs” prepared by the subcontractors after February 19, 2003, indicate that they do not include the minimum information required by Article 1.08C (see Finding No. 11).

Although some of the work performed by these subcontractors was inspected by the QCORG Technicians (See Finding No. 9) prior to February 19, 2003, **there is no documentation to affirm that each work activity performed by the subcontractors prior to this date was subjected to subcontractor QC self-inspections.** The QCORG had communicated to the subcontractors about their contractual responsibilities and inspection requirements, according to their respective scopes of work,⁹ as early as December 27, 2001.

PACB's Response

“As the construction manager noted in response to Finding No. 2 above, the OIG overlooked a large set of documentation and data reflecting appropriate subcontractor’s self-inspections. Again, however, the revised QCORG provides a more user-friendly set of documentation that should avoid any future issues.”

⁹ Attachment “C” describes the specific scope of work for each trade at the project, including inspections and testing, if required by the Technical Specifications.

OIG Rejoinder

- Refer to *OIG Rejoinder of PACB's response to Finding No. 2 on page 12.*
- *The OIG reaffirms its finding condition.*

Finding No. 11 Subcontractor self-inspection reporting does not contain the required information called for in Article 1.08 Documentation.

After February 19, 2003, for one particular subcontractor and March 24, 2003, for other subcontractors, subcontractors' QC inspection record keeping procedures have not complied with Section 01440 requirements for use of approved format and data completeness. The "DIRs" submitted are not the QC Program approved DIR. In lieu of the approved DIR form, subcontractors typically have been using checklists or some other forms provided by their respective organizations.

Also, QC Program approved checklists are not attached to the subcontractor's self-inspection reports, despite the fact that the QCORG developed these checklists as an integral part of the QC Program implementation. The checklists, while not required by Article 1.08, were developed pursuant to the owner-approved QC Program Manual, as an integral mechanism to capture key information about the work activity subject to inspection. Given the observed subcontractors lack of compliance with reporting criteria, this situation diminishes the effectiveness of the QC Program and its stated goal of assuring quality work at the project.

Attachment B of the contract between PACB and its subcontractors states, "Subcontractor shall demonstrate its commitment to quality workmanship through the appointment of a Quality Control Representative on the job. This representative shall participate in the Construction Manager's QC Program. The purpose of this program is to provide first class workmanship." In addition, Article 1.08C requires that inspections must be conducted continuously and must include certain required information. The minimum information regarding the location, the inspection conducted, results of inspection, nature of defects, causes for rejection, and remedial or corrective action taken is missing from subcontractor-prepared "DIRs" documenting their self-inspections.

OIG Recommendations

12. PACB should enforce its contracts with its subcontractors and require that they fully participate in the QC Program in that they consistently perform self-inspections, use the specified forms and follow all the requirements for inspection documentation.

13. The QCORG should take a more proactive role in assisting the subcontractors in performing and accurately reporting their work activities, including self-inspections, according to Article 1.08.

PACB's Response

“The construction manager concurs with the OIG finding and has addressed the reporting requirements of Section 01440 in its Revised QCORG.”

OIG Rejoinder

- *Notwithstanding PACB's agreement with our finding, the OIG emphasizes that its recommendations focus on PACB and the QCORG taking more proactive roles in QC Program aspects related to subcontractor participation. Enhanced reporting is not, on its own, going to address the OIG recommendations. The OIG reaffirms its recommendations.*

Finding No. 12 PACB has not forwarded the substituted DIR Summaries to the A/E in a timely manner, as required by the QC Program.

No DIRs have been forwarded to the A/E since the Notice to Proceed Date (10/15/01) to the conclusion of the auditors' fieldwork (05/31/03), a total of 593 days. Upon verification of the receipt date with the A/E, the alternatively implemented but inadequate Summaries were not received by the A/E the day after the inspections were performed, as required by Section 01440. The A/E's concern for the untimely receipt of the Summaries from PACB was expressed in a letter to PACMO's Senior Project Managers dated June 6, 2002.

Table 2 below indicates the date the Summaries were prepared by PACB and the date they were received by the A/E.

Table 2

ANALYSIS OF DAILY INSPECTION REPORTS SUMMARY SUBMITTAL				
ITEM No.	MONTHLY BATCH	REPORT DATE (1)	RECEIVED BY PACMO	No. OF DAYS IN BETWEEN
1	February 2002	02/12/02	05/14/02	91
2	March 2002	03/01/02	05/14/02	74
3	April 2002	04/01/02	05/14/02	43
4	May 2002	05/01/02	05/14/02	13
5	June 2002	06/03/02	06/25/02	22
6	July 2002	07/01/02	12/18/02	170
7	August 2002	08/01/02	12/18/02	139
8	September 2002	09/03/02	12/18/02	106
9	October 2002	10/01/02	12/18/02	78
10	November 2002	11/01/02	12/18/02	47
11	December 2002	12/02/02	02/07/03	67
12	January 2003	01/02/03	03/07/03	64
13	February 2003	02/03/03	06/18/03	135
Average Number of Days				81

(1) For illustration purposes, only the date of the first prepared Daily Inspection Reports Summary from each monthly batch was used to compute the number of days that lapsed between the date the Summaries were prepared by QCORG and received by the A/E.

As of the end of audit fieldwork, no additional Summaries completed by the QCORG have been forwarded to the A/E. Without adequate and timely information about the condition of the work activity at the project, the A/E, and ultimately the Owner, are at a disadvantage to implement or demand implementation of corrective measures to ensure that work is being performed according to specifications.

Also, the recently prepared subcontractor self-inspection forms have been submitted to PACB Operations but have not been forwarded to the Owner and A/E. Article 1.03C.1 states, "The Program Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the QC Program to ensure compliance with the Plans and Specifications." Implementation of the QC Program includes providing the A/E with a copy of each DIR the workday following the day of record. The QC Program Administrator has not exercised his full authority in implementing a process by which to deliver these reports to the A/E in a timely manner, as specified in the technical specifications.

OIG Recommendations

14. The QC Program Administrator should exercise his full authority to implement a process by which all the required inspection reports (those prepared by the subcontractor of its self-inspection and those prepared by the QCORG Technicians) are forwarded to the A/E on the following workday.
15. PACB should strictly adhere to the mandated timeframe for forwarding inspection reports required by Article 1.08.

PACB's Response

“The construction manager agrees that ensuring timely distribution of all quality control reporting to the appropriate interested parties is in the best interest of the project. Accordingly, the Revised QCORG establishes an approved protocol to ensure the right reports reach the right people at the right time.

However, PACB disagrees that the A/E or the Owner is at a disadvantage to implement or demand implementation of corrective measures to ensure that work is being performed correctly. Overlapping inspections and oversight are occurring on the project. All structural components are tested and thoroughly inspected by the Materials Testing Laboratory and Threshold Inspector. In addition, the Owner, the A/E and its consultants all have full-time on-site field representation that maintain constant communications with PACB and its subcontractors. Issues related to quality and non-conforming work are discussed regularly with the A/E. There are also inspections by the local building department who provides oversight of threshold inspected work as well as performing plumbing, mechanical, electrical, fire and building inspections.”

OIG Rejoinder

- *Notwithstanding its agreement to the recommendation whereby an “approved protocol” will be established, PACB’s response suggests that the Owner and the Architect are not at a disadvantage, due to the lack of notice of timely inspection results, to implement or demand implementation of corrective measures to ensure that work is being performed correctly. To the contrary, the required DIRs or the substituted DIR Summaries, contain critical information related to quality control issues. Therefore, this method of communication should provide for the timely transmittal of this critical information, in particular should remedial action be required.*

- *This audit addressed PACB's QC Program, a part of which is the requirement for timely QC inspections of work activities. Owner inspections are not meant as a substitute or replacement for timely QC inspections. The Owner has no responsibility for performing or supplementing any part of PACB's QC Program.*
- *Neither the Owner nor the A/E have the contractual obligation to inspect all items of work to ensure that it is being performed according to contract and quality control program requirements. The responsibility for performing the necessary activities to meet these requirements lies solely with PACB.*

Finding No. 13 Subcontractor self-inspection reports are not signed by the QC Program Administrator.

The QCORG Program Administrator has not signed any of the subcontractor self-inspection reports prepared since February 19, 2003. Only the subcontractors' QC representatives have signed these reports. This may be attributable to the fact that such reports are forwarded directly to PACB Operations, with copies to QCORG later. Without anyone in a QC supervisory capacity attesting to the fact that the inspections performed by the subcontractors were conducted in accordance to the requirements of Section 01440 and any specific trade requirements, their value is questionable.

OIG Recommendation

16. The QCORG Program Administrator should receive all subcontractor self-inspection reports first for review and signature prior to forwarding them to PACB Operations and to the A/E.

PACB's Response

“The construction manager agrees that the subcontractor daily reports should be received by the QCORG and signed by the QC Program Administrator. This issue is being addressed in the revised Quality Control Program.”

OIG Rejoinder

- *PACB agrees with finding and recommendation and identifies the revised QCORG Program as addressing the stated concern.*

Finding No. 14 DIRs prepared by the QCORG Technicians and the subcontractors' designated Quality Control representatives do not contain the required remedial or corrective action proposed or taken.

For out of tolerance situations, there is no documentation to indicate that corrective action(s) required by individual items of work contained in the technical specifications were agreed to between PACB and the particular subcontractor, and that corrective action was performed. Article 1.09 *Corrective Action Requirements* states that the QC Program should indicate the appropriate corrective action(s) to be taken when a process is deemed or believed to be out of tolerance. Furthermore, the QC Program Manual assigns corrective action requirements verbatim from Article 1.09 to the subcontractors and makes this a requirement of the subcontractors' QC Program. Thus, work activity may have been corrected but there is no documentation to indicate that the remedy was performed in accordance with the technical specifications and that the final work product is acceptable.

OIG Recommendation

17. The QCORG Technicians and the subcontractors' Quality Control Representatives should strictly adhere to the requirements for corrective action information that must be included in the DIRs.

PACB's Response

“The construction manager acknowledges that the inspection reports have not consistently documented the required remedial or corrective action proposed or taken. As such, the Revised QCORG includes appropriate checks and balances to ensure that all such information is appropriately documented. To be clear, all remedial and corrective action has been or is being reviewed and inspected by all appropriate persons, including the Owners Materials Testing Laboratory, the Threshold Inspector or Regulatory Inspector. Nevertheless, the construction manager agrees that it is important that all documentation be complete.”

OIG Rejoinder

- *PACB agrees with finding and states, “the Revised QCORG includes appropriate checks and balances to ensure that all such information is appropriately documented.”*

Notices of Deficiency

According to Section 01440, the A/E can issue Notices of Deficiencies when the work activity observed is not conducted according to the technical specifications. The A/E has issued eleven (11) Notices of Deficiency to PACB as of May 31, 2003. These notices state that PACB shall “promptly correct all of the defective Work and bear all costs to do so” and “shall provide within ten (10) days a method/plan and schedule for all proposed corrections.”

PACB has responded, by way of proposed plans for corrective work and A/E acceptance thereof, to four (4) of these notices. Resolutions to the remainder of the notices are being discussed between PACB and the A/E. Adverse impacts, if any, to the project’s cost and time budgets have not yet been determined.

TABLE 3

NOTICE OF DEFICIENCY NUMBER	NOTICE OF DEFICIENCY DATE	NOTICE OF DEFICIENCY ISSUE	PACB'S RESPONSE DATE ⁽¹⁾	DATE NOTICE OF DEFICIENCY RESOLVED
1	10/17/02	Incorrect layout of the BOH Orchestra Pit Slides	11/05/02	04/14/03
2	11/04/02	CMU back-up at stone mock-up	11/13/02	-
3	11/21/02	Deficiency at BOH Elevator # 11 Shearwall	12/18/02	04/14/03
4	01/22/03	CH Shearwall #1 exceeding Contract tolerances	02/05/03	04/14/03
5	03/04/03	BOH -Slab depression for Room B3056	07/02/03	-
6	03/18/03	BOH - Stair # 3	-	-
7	03/31/03	Ramp B4026	04/08/03	-
8	04/03/03	Bearing plates and anchor bolts	-	-
9	04/09/03	BOH - Food Dock Lift Pit	05/08/03	07/07/03
10	04/09/03	CH Rear stage entry pipe columns	-	-
11	05/08/03	Unacceptable exposed CMU in Room 1109	-	-

⁽¹⁾ This is either the only or the first documented response from PACB to a Notice of Deficiency.

Daily Test Reports (DTRs)

Article 1.08 also indicates that PACB is responsible for:

- Establishing a system that will record all quality control test results.
- Specifying the information that must be included in the DTRs, and
- Ensuring that “The test results from each day’s work period shall be submitted to the A/E prior to the start of the next day’s work period.”

The OIG auditors reviewed the Daily Construction Testing & Monitoring Reports prepared by the Owner's Testing Laboratory for the two-month sample period, September 2002 and January 2003. PACB Operations maintains the test reports in a chronological order and indexes them by scope of work. It was confirmed verbally by the A/E that a copy of the reports prepared by the Owner's Testing Laboratory were received by the A/E on a consistent basis. No exceptions were noted.

Section III. Inspection Testing Results

Threshold Inspection Reports

Finding No. 15 Deviation from the approved QC Program by the QCORG Technicians may have resulted in a higher failure rate when the Threshold Inspector conducted the same inspection.

During the OIG's two-month sample period, the QC Program approved forms were not used and were replaced by short, narrative, generic forms that did not capture inspection information relevant to each specific work activity. Additionally, inspection logs were not maintained by the QCORG, as required by the Section 01440. QCORG's "approved" inspection method should have consisted of using approved forms and checklists derived from the technical specifications to conduct the required inspections.

The owner, PACMO, hires the Threshold Inspector¹⁰ to observe and document the placement of the structural components of the work so that it conforms to the permitted construction documents and any subsequent revisions. The Threshold Inspector can fail work if it is not up to specifications and may require corrections or that the nonconforming work be redone.

The OIG auditors quantified the QCORG Technicians' pass/fail inspection rates and compared the results to the pass/fail inspection rates conducted by the Threshold Inspector for the same work activities. See Tables 4, 5 and 6 below for details. (There is no requirement that Threshold Inspections be preceded by QCORG inspections. Thus, there are not always one-to-one relationships between all of the QCORG inspection and Threshold Inspection test results shown in the tables below.)

¹⁰ During the audit period, there were two (2) firms providing services as Threshold Inspector—Professional Services Industries, Inc. was the original Threshold inspector but was later replaced by Ysrael A. Seinuk, P.C..

Comparison of Inspection Failure Rates

The QCORG Technicians conducted a total of 176 inspections during the two-month sample period, of which they reported 130 as passed inspections and 46 (or 26%) as failed inspections.

TABLE 4 QCORG Inspections

SAMPLE PERIOD	CMQCORG INSPECTIONS	BOH/ST	CH	TOTAL
September 2002	Inspections Performed	69	36	105
	Inspections Failed	12	22	34
January 2003	Inspections Performed	37	34	71
	Inspections Failed	8	4	12
Total Inspections Performed		106	70	176
Total Inspections Failed		20	26	46
Total % of Inspections Failed		19%	37%	26%

The Threshold Inspector conducted a total of 196 inspections during the sample period, of which they reported 89 (or 45%) as failed inspections. As stated earlier, there is no requirement that Threshold Inspections be preceded by QCORG inspections. Thus, there are not always one-to-one relationships between all of the QCORG inspection and Threshold Inspection results shown in the tables below.

TABLE 5 Threshold Inspections

SAMPLE PERIOD	THRESHOLD INSPECTOR	BOH/ST	CH	TOTAL
September 2002	Inspections Performed	83	35	118
	Inspections Failed	37	15	52
January 2003	Inspections Performed	47	31	78
	Inspections Failed	18	19	37
Total Inspections Performed		130	66	196
Total Inspections Failed		55	34	89
Total % of Inspections Failed		42%	52%	45%

Out of the 130 passed inspections shown in Table 4, a Threshold Inspection followed 101 of them. The Threshold Inspector failed the same location and work activity in 45 (or 45%) instances.¹¹

TABLE 6 QCORG Inspections vs. Threshold Inspections For/At Comparable Work Activities/Locations

SAMPLE PERIOD	INSPECTION ENTITY	BOH/ST	CH	TOTAL
September 2002	Inspection Passed by QCORG	47	16	63
	Inspections Failed by Threshold Inspector	22	3	25
January 2003	Inspections Passed by QCORG	20	18	38
	Inspections Failed by Threshold Inspector	10	10	20
Total Inspections Passed by QCORG		67	34	101
Total Inspections Subsequently Failed by threshold Inspector		32	13	45
Total % of Inspections Subsequently Failed by Threshold Inspector		48%	38%	45%

QCORG and Threshold Inspection results show repeated failures by subcontractors and by QCORG Inspectors to complete their work within the standards established by the technical specifications. Also, such results may indicate an overall problem with PACB’s enforcement of and commitment to the QC Program requirements.

OIG Recommendation

18. PACB should review its QC Program in terms of the failed QCORG and Threshold Inspection results and assess what the results indicate about the success or failure of its QC Program to ensure that it, the QCORG and all subcontractors are aware of the critical need for an effective QC Program.

PACB’s Response

“A review of the detail behind the OIG’s statistics found errors that skew the results. Some examples that would skew the results are as follows:

- Comparisons between what was inspected by the QCORG Technicians and the Threshold Inspectors do not correlate.

¹¹ For 95 Threshold Inspections (196 – 101), the auditors found no comparable QCORG inspection. There is no requirement that Threshold Inspections must be preceded by QCORG inspections.

- Some QCORG inspections noted that the Threshold Inspector could be notified, but that remedial work was required prior to the actual inspection.
- Many inspections reports both from the PACB QCORG and the Threshold Inspectors were also noted as preliminary, clearly indicating that whoever was inspecting the work was doing so ahead of the work being completed.

As a result, the data reviewed by the OIG was incomplete and skewed.”

OIG Rejoinder

- *PACB disagrees with the finding and its comments are not responsive to the OIG recommendation.*
- *The data used by the OIG to compare the results of the inspections conducted by the QCORG Technicians and the Threshold Inspector was neither incomplete nor skewed. The OIG auditors compared only those locations and work activities that were inspected by the QCORG Technicians and which were subsequently inspected and either passed or failed by the Threshold Inspector. A correlation between these inspections was established and used as the basis to compare them. Thus, there may have been more instances where there were corresponding inspections, but such inspections were not reflected in the OIG’s table because the OIG auditors could not establish a definite match between the two inspections.*
- *The fact that the QCORG Technicians noted on some of their inspection forms that remedial work was to be performed before the Threshold Inspector was notified indicates that the work location was not ready for inspection, and therefore, it should have counted as a failed inspection.*
- *According to the QCORG Technicians and the Threshold Inspector, the use of the term “preliminary inspections” was devised so as not to indicate that a certain location or work activity had failed inspection.*
- *The number of inspections for which remedial work was called for corroborate Finding No. 7 about the fact that premature inspection notifications lead to inefficient use of inspection resources.*
- *The OIG reaffirms both its finding and recommendation.*

Finding No. 16 Threshold inspection failures continue at a high rate of failure, even after subcontractors started performing their own self-inspections.

The OIG reviewed the self-inspections conducted by the subcontractors, after February 19, 2003, to test their rate of failure as compared to the Threshold Inspector. The OIG notes that none of the subcontractors' self-inspections, as reported in their self-inspection reports, indicate whether a particular work activity or location was "failed" by the respective subcontractor's QC representative responsible for conducting the inspection.

The OIG auditors selected seven (7) subcontractors, identified by the letters A through G in the table below. The following are the rates of failed threshold inspections following self-inspections conducted by the subcontractors.

TABLE 7

SUBCONTRACTORS	TOTAL SELF-INSPECTIONS OR INSPECTION ELEMENTS	SELF-INSPECTIONS/ ELEMENTS NOT TRACED TO THRESHOLD INSPECTION REPORT	NUMBER OF SELF-INSPECTIONS/ ELEMENTS TRACED TO THRESHOLD INSPECTIONS	SELF-INSPECTIONS/ ELEMENTS FAILED BY THRESHOLD INSPECTIONS	% FAILED SELF-INSPECTIONS/ ELEMENTS WHERE THRESHOLD INSPECTION WAS TRACEABLE TO SUBCONTRACTOR SELF-INSPECTION ⁽³⁾
Subcontractor A ⁽¹⁾	4,066	-	4,066	958	24%
Subcontractor B	29	15	14	9	64%
Subcontractor C	16	9	7	2	29%
Subcontractor D ⁽²⁾	3	3	-	-	-
Subcontractor E	14	4	10	3	30%
Subcontractor F ⁽²⁾	-	-	-	-	-
Subcontractor G ⁽²⁾	2	2	-	-	-

- (1) This subcontractor conducted 65 self-inspections from February 19, 2003 through April 30, 2003. However, these 65 self-inspections were not traceable to a Threshold Inspection report. The inspection reports prepared by the Threshold Inspector includes individual elements of work activity (steel beams, number of studs, weldings, bolts, etc) and may comprise areas inspected over a period of time. Because the Threshold Inspector reports are more specific than the subcontractors' self-inspection reports, the OIG selected to use these reports to tabulate the rate of failure as determined by the Threshold Inspector.
- (2) None or not enough self-inspections to reach any conclusions regarding these inspections. One subcontractor prepared only 3 self-inspection reports during this time period.
- (3) A Subcontractor initiates the threshold inspection process by submitting a request to PACB Operations but should do so only after completing its own self-inspection.

The information contained in some of the subcontractors' self-inspection reports lacked sufficient description of work, as well as location of work activity (See Finding No. 11) versus the information in the Threshold Inspection reports, which contained various elements of work, work activities and locations that were inspected and reported over a period of time (days, weeks, etc.) Because of the situation above, subcontractors B, C and E had a considerable number of self-inspections not traceable to a subsequent threshold inspection report.

PACB's stated approach to the QC Program as it was presented to the Owner was to delegate inspection responsibility to the subcontractors. The subcontractors' QC-designated representatives have not **effectively participated** in the QC Program, as required by Attachment B of PACB's subcontracts. The OIG noted the following:

- There is a lack of self-inspections conducted and documented by the subcontractors, which were not initiated until February 19, 2003.
- Mandated reporting requirements are missing in the subcontractors self-inspection reports generated since February 19, 2003.
- There is a lack of training and guidance that the subcontractors have received from the QCORG regarding how to conduct and document self-inspections as required by the technical specifications.
- Based on audit sample, there is a large percentage rate of failed threshold inspections.

A PACB project manager acknowledged these problems in a letter to one of its subcontractors dated August 16, 2002. (See Exhibit 5.)

OIG Recommendation

19. The QCORG should increase the level of monitoring of the subcontractors' work activities to ensure that is conducted according to technical specifications.

PACB's Response

“A review of the detail behind the OIG's statistics found errors that skew the results. An example is that in the steel beam analysis, the number of shear studs were improperly represented as beams. Once the shear stud count is removed from the table, the result of failed beams drops from 24% to 8%. In addition, once the issues noted in the response to finding number 15 are considered this percentage will drop even lower. As a result, the data reviewed by the OIG are incomplete and skewed.”

OIG Rejoinder

- *The OIG indicated on Table 7 that the items failed results were compiled in two (2) different manners—the first manner was to compare the subcontractor self-inspection forms (with the limitations mentioned earlier) to the threshold inspection reports, and the second manner was to analyze the data shown on the Steel Threshold Inspection Daily Reports, which reflected the various inspection elements. The OIG did not represent the number of missing studs as beams on this table. The “inspection elements” term was used exclusively to note the type of inspections and the results of such inspections for subcontractor A, as indicated in the Steel Threshold Inspections Daily Reports. Note (1) was included with this table to provide clarification of the type of inspection that was analyzed.*
- *The steel subcontractor conducted 65 self-inspections during the period February 19, 2003 through April 30, 2003. However, these self-inspections were not traceable to any Steel Threshold Inspections Daily Reports because the steel subcontractor did not list the individual items inspected. Instead, they only provided an inspection location.*
- *The Steel Threshold Inspection Daily Reports list the locations, items (beams) inspected and the number of inspection elements (bolts, studs and/or welds) required by the project documents. These reports also list those inspection elements that were inspected for but were found to be either missing or not in accordance with project documents. These amounted to 24% of the total inspection elements.*
- *In its response to the OIG draft, PACB states, “Once the shear stud count is removed from the table, the result of failed beams drops from 24% to 8%”. PACB offers no explanation for arbitrarily removing from the tabulation of inspection elements the studs that were missing or not in accordance with project documents. Once again, PACB is confusing the analysis results by comparing the number of inspection elements failed with the number of failed beams. For example, had PACB removed from the table only the count of missing bolts (those with no welds), the percentage of failed inspection elements would have increased to 29%.*
- *The OIG reaffirms both its finding and recommendation.*

OIG EXHIBITS

1. Performing Arts Center of Greater Miami, CM Quality Control Program “Genesis,” dated November 7, 2002. [Referenced on page 4 of the OIG Final Report].
2. Sample PACB letters to subcontractors re: Subcontractor’s QC Representatives, QC Organization and QC Testing, dated October 21 and December 27, 2001. [Referenced on page 9 of the OIG Final Report].
3. Sample QC Final Inspection Form and letter re: “Contractor is not ready for the scheduled inspections.” [Referenced on page 21 of the OIG Final Report].
4. Sample QC Inspection Form wherein work nonconformance is noted but not reported in the corresponding Summary. [Referenced on page 23 of the OIG Final Report].
5. Letter from PACB to subcontractor reference the subcontractor’s quality control program and concern over failed QC and threshold inspections. [Referenced on page 37 of the OIG Final Report].

OIG APPENDIX TO THE FINAL REPORT

- A. Advance notification letter re: draft report to Performing Arts Center Builder (PACB). PACB’s response including: cover letter, PACB’s response to OIG (part of which is incorporated directly into the final report where specific to the enumerated audit findings) the Executive Summary of its Revised Quality Control Program, PACB’s Exhibit A, and PACB’s Exhibit B.
- B. Advance notification letter re: draft report to Performing Arts Center Management Office (PACMO). PACMO’s response to the OIG including: cover letter, PACMO’s identified list of attachments, the attachments, notably Cesar Pelli & Associates’ response to the OIG’s draft report dated September 30, 2003, and a variety of owner issued deficiency notices.
- C. Supplemental Response submitted by PACMO on behalf of Cesar Pelli & Associates re: its review of the PACB’s Revised Quality Control Program, with attachments.