

**The recognition of costs  
in different phases of completion  
of a construction contract**

BY

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## **ABSTRACT**

### **The recognition of costs in different phases of completion of a construction contract**

The standard guideline for accounting for construction firms is AC109/IAS11: Construction Contracts, which recognises that contract start and end dates usually fall into different accounting periods. This creates the problem that forms the primary focus of this study: the allocation of contract revenue and costs to the accounting periods in which construction work is performed.

Critical to the above allocation is the ability to determine percentage of completion of contract and cost to completion at the balance sheet date (reporting date). The important activities in this regard are to “measure” and “estimate” reliably.

AC109/IAS11 contains detailed guidelines on what is to be done with regard to the above. Questions then arise as to who must do what is required, and how it must be done. It seemed apparent that the guidelines used for determining the stage of completion should correspond with the guidelines for on site cost control.

South African literature on the subject is limited to textbooks with detailed guidelines to assist accounting students and qualified accountants. In this study an attempt was made to obtain clarification on key aspects from the experts on the subject, namely the registered auditors and accountants of contractors. The results of a survey indicated that they interpret AC109/IAS11 to require no other skills than general accounting abilities. It also showed that certain important terms and activities described in AC109/IAS11 were interpreted in a way that differed from how built environment professionals would interpret the same terms and use them in “on site cost control”.

It appears from the study therefore, that problems in construction accounting could arise due to the fact that certain guidelines and terms in AC109/IAS11 are not consistently interpreted by all involved.

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- Gert Basson
- Adri Viljoen

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## DECLARATION

I hereby declare that the thesis that I hereby submit to the University of Pretoria for the degree Master of Science (Construction Management) is my own work and has not been submitted before by me for a degree at another university.

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Felix le Roux

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## CHAPTER 1: INTRODUCTION

### 1.1. Motivation for the study

In a construction entity or the business of a contractor one would expect:

- A variety of built environment professionals (BEPs) to be involved in planning, production, on site cost control, etc. They could be internal personnel or external consultants
- Accounting professionals to be involved in preparing financial records
- That these professionals use methods and systems that are mutually compatible to ensure effective and accurate information sharing.

Despite the above expectations, Adrian and Adrian (1999:3) state that:

*“The success of the construction firm is closely aligned to its ability to forecast and control costs. Both of these functions have accounting as their base. “*

*“There is probably no other type of business that needs sound accounting practice more than the construction firm.“*

*“The construction industry has a history of neglecting to perform the accounting function properly. “*

The ability of a contractor to estimate and control costs and cash flow, should and do distinguish him from his rivals in the industry. Contractors seem to prefer and accept the situation where their cost control is done with the aid of systems other than their formal accounting system. Timeliness, reliability, reconcilability, the combination of estimated, budgeted and actual information in one on-line report , (with variances), affordability and comprehension are some of the more common reasons given for this.

Although it is apparent that the list above is not exhaustive some consequential problems are discussed below to determine its relevance to the recognition of costs in different accounting periods. The following seem to be the general guidelines:

- Timeliness and affordability

An accounting system is seldom within the range of being 2 to 3 months behind the current date unless a major effort is made in recruiting accounting personnel and purchasing modern software and updates.

- Reliability

An accounting clerk can verify that an expense is legitimate in terms of description, value, quantity and cost code but he will not be able to verify it in terms of its sequence in procedures

- Reconcilability

It is difficult to persuade individuals, who spend long hours to ensure that their control systems are reliable, to sit down and reconcile it with another system that produces different answers, especially if they do not have experience in each other's field of expertise.

- Estimated, budgeted and actual amounts in one report (online)

Very few systems are capable of this. Most contractors settle for a hybrid spreadsheet solution that runs separately from the accounting system.

- Comprehension

Contractors do not understand accounting concepts and are always informed that construction accounting is somehow different.

The construction entities are roughly divided in:

- Public companies
- Private companies
- Close corporations
- Partnerships
- Sole traders
- Teams of “subcontractors”
- Groups of handymen

(Trusts as construction entities are not common)

Apart from a few exceptions the business forms listed above are normally a reliable indication of:

- The physical size and contracting abilities of the construction entity
- contracts awarded to them and the duration and extent thereof, and
- ultimately, the number of personnel making up the accounting department, in that entity, and their qualifications

Most contractors employ consultants and/or external auditors and/or accountants, possessing varying levels of qualifications.

In the case of a company the directors are responsible for the financial statements. Private companies may transfer this duty to their external and registered auditors and accountants. If close corporations and the owners of the other types of businesses appoint registered auditors and accountants for their accounting and tax responsibilities, they would usually request them to compile the financial statements.

As far as could be established registered auditors and accountants, as a group of professionals, are the only accounting orientated people guaranteed to know and correctly apply the content of AC109/IAS11.

AC109/IAS11: Construction Contracts has the following to say on estimates made on construction contracts by contractors:

*Paragraph .22 states that in general, when the outcome of a construction contract can be estimated reliably, contract revenue and contract costs should be recognised by reference to the state of completion of the contract activity at the balance sheet date.*

*Paragraph .29 refers to the reviewing and revising of estimates, but it also indicates that it is usually necessary for the enterprise to have an effective internal financial budgeting and reporting system.*

The American Institute of Certified Public Accountants' (AICPA) document SOP 81-1 states in paragraph 24:

*The presumption is that they (construction companies) have the ability to make estimates that are sufficiently dependable to justify the use of the percentage-of-completion method of accounting.*

*Persuasive evidence to the contrary is necessary to overcome that presumption.*

*The ability to produce reasonably dependable estimates is an essential element of the contracting business.*

The above assumptions and requirements contradict the results of a survey done in the USA (Duns Review: 1976 as cited by Adrian and Adrian (1999:3) which indicated that the second most frequent reason for business failure in construction firms is inadequate project estimating and/or cost control systems. (Table 1)



**Table 1: The ten leading reasons for construction firm business failures in order of frequency.**

RANK	REASON
1	Lack of business experience
2	Inadequate project estimating and / or cost control systems
3	Inadequate working capital
4	Receivable difficulties
5	To much competition
6	Insufficient advertising
7	Lack of technical experience
8	Wrong location for service
9	Inventory control
10	Fraud

This view is supported by Adrian and Adrian (1999:3), who estimated that approximately 13 percent of all construction firms fail annually and many of the reasons can be traced to inadequate use of accounting. The also point out that Abraham Briloff (in his book *Unaccountable Accounting*) posed the question as to whether one plus one always equals two, in the accounting profession, and draw attention to the fact that alternative accounting methods available to the profession often result in:

- financial statements that are misleading or
- financial statements that is open to interpretation. (Adrian and Adrian, 1999:121)

Furthermore, Adrian and Adrian (1999:121) stated that alternative accounting methods and means of expressing financial data in the financial statements are especially troublesome to the construction industry and often result in:

- lenders and sureties falling victim to misleading financial statements and

- the contractor's ability to continue as a going concern often depends on his accountant's ability to present financial statements in the most favourable light.

Adrian and Adrian (1999:123) concluded that:

*“Alternative accounting methods result in different values for financial ratios. It is a difficulty somewhat unique to the construction industry.”*

The statements and allegations made by Adrian and Adrian and other built environment professionals led to the question whether accounting in construction should be considered to be different from accounting in other fields.

The following are some of the issues that contribute towards the complexity of effective and accurate construction contract accounting, auditing and reporting:

- the contract normally stretches over more than one financial period.
- the different functions of financial operations and control are usually dispersed over long distances.
- the components (materials, labour, etc.) of the end product could change depending on various circumstances.
- the industry is notorious for criminal activities such as fraud, theft, etc.
- it requires more than training to enable an individual to estimate or control the time, material, manpower, etc. needed to complete a constructed facility.
- to be able to measure and estimate require experience and judgment which are both difficult to measure.

If the percentage of completion on a construction contract is to be determined the requirements of AC109/IAS11 will include the following:

- Determine whether it is a construction contract as defined
- Determine whether a loss can be expected or not
- Determine whether there has been any changes in estimates
- Estimate the outcome of the contract reliably
- Measure costs to complete reliably
- Measure cost attributable (costs to date) reliably
- Measure the stage of completion (the work performed) reliably
- Measure income (revenue) reliably
- Identify cost attributable (costs to date) clearly
- Compare actual costs with estimates
- Agree on:
  - the parties' enforceable rights
  - the consideration to be exchanged
  - the manner and terms of settlement
- Determine whether the contract is sufficiently completed to warrant the application of the percentage of completion method
- Determine whether the economic benefits will flow to the entity

- Determine whether the contract(s) is to be combined or segmented
- Determine whether the entity has an effective internal financial budgeting and reporting system
- Determine whether costs were incurred on:
  - future activity on the contract
  - payments to subcontractors in advance
- Determine whether costs were incurred :
  - after date of securing contract
  - before date of final completion
- If costs were incurred before the date of securing the contract, it must be possible to:
  - separately identify the items
  - reliably measure the items
  - determine whether it is probable that the contract will be obtained
- Determine whether costs that were incurred is qualifying costs, i.e.:
  - directly related to the contract
  - attributable to the contract activity
  - specifically chargeable to the customer
- Determine whether costs exclude:
  - general administration costs
  - selling costs
  - research and development costs
  - depreciation on idle plant and equipment

To the construction accountant and built environment professional these requirements will make sense. It is however not the “what” that is questioned, but the “who” and the “how”.

On consideration of the above it raised questions such as:

- Where and when do built environment professionals and their internal accountants acquire the skills in accounting that they need to manage and report on their businesses?
- Do construction companies comply with GAAP or gaap?
- Do the built environment professionals, and their ‘company accountants’, assist the independent accountants and auditors.
- Are the auditors of construction companies able to perform the audit without the direct assistance of the built environment professionals?
- Do / should the auditors rely on the work of the built environment professionals?
- Should independent built environment professionals form part of the audit team and/or should accountants and auditors receive training in what is traditionally built environment domain?

From the above facts and questions the following reasoning emerged:

- The built environment professionals know, at best, little or nothing about AC109/IAS11 and the impact thereof on their entity’s financial statements. The smaller the entity, the bigger the problem. (This is more likely than not also applicable to the entity’s internal accountants or accounting personnel.)

- Where it is allowed or permissible that the external auditors draw up the financial statements they must be doing it on their own if the built environment professionals do not assist them.
- The built environment professionals are of the opinion that one must first be able to measure before one can estimate. If the built environment professionals do not assist the external auditors, chartered accountants or internal accountants with the compilation of financial statements it is unclear where they would have been able to acquire the skills to measure. A quantity surveyor completes four to five years of study plus two to three years practical experience to be able to measure reliably.
- Registered auditors and accountants must be able to rely on the work of an expert. (SAAS620/ISA620). According to the statement they can use the expert's work but not accept it as final proof. In current discussions between the AICPA and International Accounting and Auditing Standards Board (IAASB) on this issue, the same concerns are being raised.
- Registered auditors and accountants make use of a built environment professional as a member of their audit team. This again raise concerns since it would be difficult to keep such a person busy on construction audits only.
- Registered auditors and accountants rely on internal auditors. Again the "use of" versus the "rely on" is not clearly defined and not many contractors can afford internal auditors. The biggest shortcoming of internal auditors is the fact that they are usually accounting-orientated personnel.
- Registered auditors and accountants rely on internal controls. Persons designing the controls need to be experienced in accounting and auditing, as well as in construction and related activities. Such persons appear not to exist.

## 1.2. THE RESEARCH PROBLEM

Does **AC109/IAS11: CONSTRUCTION CONTRACTS** provide clear and feasible guidelines for the determination of the stage of completion on a construction contract for disclosure in the financial statements of contractors?

## 1.3. SUB-PROBLEMS

1.3.1. Sub-problem one:

Are “reliable measurement” and “reliable estimates”, as contained in AC109/IAS11, clearly identified as the most fundamental concepts?

1.3.2. Sub-problem two:

Are “reliable measurement” and “reliable estimates”, as contained in AC109/IAS11, clearly defined?

1.3.3. Sub-problem three:

Do the terms “reliably measurement” and “reliably estimates” refer to the mathematical correctness of calculations, or do they refer to the use of special skills and experience of specific professionals?

1.3.4. Sub-problem four:

Can each of the alternative methods of calculating the stage of completion that are provided for in AC109/IAS11, only be used in a specific set of circumstances, or can any method be used in any given set of circumstances?

1.3.5. Sub-problem five:

Do the prescriptions and guidelines in SAAS620/ISA620 for the “use of the work of an expert” provide an adequate alternative for gaining audit evidence, in verifying calculations and estimates of work in progress and the stage of completion of a construction contract?

## HYPOTHESES

Main hypothesis:

AC109/IAS11 does not provide clear and feasible guidelines for the determination of the stage of completion on a construction contract for disclosure in the financial statements of contractors.

1.4.1. Hypothesis to sub-problem one:

“Reliable measurement” and “reliable estimates” are not clearly identified in AC109/IAS11 as the most fundamental concepts.

1.4.2. Hypothesis to sub-problem two:

No definitions of “Reliable measurement” or “reliable estimates” are given in AC109/IAS11.

1.4.3. Hypothesis to sub-problem three:

The context within which “reliable measurement” and “reliable estimates” are used in AC109/IAS11 is such that it does not seem to imply more than arithmetical correctness.

1.4.4. Hypothesis to sub-problem four:

AC109/IAS11 leaves the choice of the basis and method to be used to determine the stage of completion and therefore the recognition of profit on incomplete construction contracts, to the professional opinion of the accountants involved.

1.4.5. Hypothesis to sub-problem five:

There is no existing and feasible practice for the use of the work of independent, objective, qualified and experienced Built Environment Professionals (BEPs) by Registered Auditors and Accountants of construction contractors.



## **1.5. METHODOLOGY**

1.5.1. A literature study of the relevant laws, guidelines and practices concerning the disclosure and recognition of revenue and expenses on construction contracts in the financial statements of contractors has been undertaken to attempt to define content of the guidelines contained in AC109/IAS11.

1.5.2. A questionnaire was sent to the registered auditors and accountants of the participating large general contractors, registered in 2005 with the Gauteng Master Builders' Association.

## **1.6. DELIMITATIONS**

The research:

- is not intended to determine whether misstatement(s) occurs in the financial statements of construction companies, or to determine the need for guidelines to avoid the occurrence thereof.
- makes no attempt to question or debate any accounting/auditing standards, guidelines or other accounting documentation on accounting procedures or disclosure standards. That is considered to be the domain of registered auditors and accountants (chartered accountants).
- is focused on the prescriptions of the document AC109/IAS11: Construction Contracts, a Statement of GAAP, to determine whether the prescriptions contained in certain paragraphs can be fulfilled by any individual other than a built environment professional. The focus will be limited to aspects influencing the calculation or establishment of the stage of completion on a construction contract in progress, by using the methods suggested by AC109/IAS11 to identify costs and to measure such costs.

- is mainly focused on the paragraphs contained in AC109/IAS11. Literature in South Africa on the subject is limited to textbooks written for accounting students and qualified accountants. Literature from the United States of America has been consulted for possible clarification where definitions and descriptions do not exist in AC109/IAS11, as there might be a difference between the South African and USA GAAP on certain topics of construction accounting.
- is limited to the bigger construction companies registered in the category, “Large General Contractors” with the Gauteng Master Builders’ Association of South Africa in 2005. The external and registered auditors and accountants of those enterprises were asked to complete a questionnaire in an attempt to clarify certain paragraphs.
- is intended to determine the meaning attached to specific paragraphs contained in AC109/IAS11 that prescribes the determination of the stage of completion on construction contracts. It is not the intention to attach any meaning to these paragraphs that were not originally intended.
- is not intended to question, contribute or otherwise debate the auditing practices as far as construction contracts are concerned. Any reference to the difficulty of construction company audits is done solely to supply background to the complexity of the construction environment and the accounting thereof.
- is not intended to bring the content of AC109/IAS11, as a whole, under scrutiny. The aim is to determine the possibility of the fulfilment of certain paragraphs in AC109/IAS11, by accountants and/or external auditors and accountants, which refer to work normally done by built environment professionals. These paragraphs refer to skills acquired by accountants or

they refer to skills acquired by built environment professionals, not many skills are mutual to both professions.

- do not include the July 2006 Discussion Papers by the IASB (International Accounting Standards Board) issued in conjunction with the FASB (Financial Accounting Standards Board of the Financial Accounting Foundation).
  - The IASB document is titled “Preliminary Views on an improved Conceptual Framework for Financial Reporting: The Objective of Financial Reporting and Qualitative Characteristics of Decision-useful Financial Reporting Information.”
  - The FASB document No.1260-001/July 6, 2006 is titled “The Preliminary Views is issued by the Financial Accounting Standards Board for public comments as a step preceding the Development of an Exposure Draft of the Initial Parts of an Improved Conceptual Framework for Financial Reporting.”

Important dates:

- It was added to the IASB agenda in October 2004.
- The Memorandum of Understanding was published in February 2006.
- The joint Press Release was issued on July 6, 2006.
- Comments on both documents to be submitted by 3 November 2006.
- The Exposure Draft is expected during 2007.

## **1.7. DEFINITION OF TERMS**

### **1.7.1. Construction contract**

According to AC109: CONSTRUCTION CONTRACTS (AC109.03/IAS11.03):

“A construction contract is a contract specifically negotiated for the construction of an asset or a combination of assets that are closely interrelated or interdependent in terms of their design, technology and function or their ultimate purpose or use.”

### **1.7.2. Guidelines, Statements and Standards**

“South Africa’s standard setters have agreed to use the international standards as the basis for new standards (adapted for local conditions where required). This avoids duplication and has the obvious advantage of facilitating comparability of financial statements prepared in different countries. Certain aspects of accounting are either very contentious (such as accounting for inflation), or specialised, such as accounting by co-operatives. These issues are therefore the subjects of guidelines rather than standards.” (Everingham and Watson, 2003: 3-4)

### **1.7.3. Built Environment Professionals (BEPs)**

For purposes of this study Built Environment Professionals include the following:

Construction Manager  
Construction Project Manager  
Quantity Surveyor  
Town and Regional Planner  
Urban Designer

Architect

Landscape Architect

Interior Architect

Property Valuer

Civil Engineer

Structural Engineer

Electrical Engineer

Mechanical Engineer

Electronic Engineer

Geotechnical Engineer

Land Surveyor

## **1.8. ASSUMPTIONS**

The research is based on the following assumptions:

- That the completed-contract method of accounting for construction contracts is not a viable option to report the results of a construction contract. The research does not consider the completed-contract method and no attempt is made to evaluate or otherwise compare the completed-contract method with the percentage-of-completion method of accounting for construction contracts.
- It is assumed that the accounting policies, within a group of companies, are applied consistently, as dictated by GAAP.
- It is assumed that the accounting policies of similar types of companies are viewed in a consistent manner by the same firm of registered auditors and accountants.

- It is assumed that the information contained in AC109/IAS11 is not subjected to major changes in the near future. Small changes to AC109 were affected during the alignment exercise with the content of IAS11. The alterations were disclosed in the SAICA's ED167.
- It is assumed that International Financial Reporting Standards (IFRS) will not undergo any changes in the near future.
- It is further assumed that topic of determining the stage of completion on a construction contract do not influence the disclosure principles contained in AC109/IAS11, in financial statements of contractors.

## **1.9. THE IMPORTANCE OF THE STUDY**

### **1.9.1. Performance of the South African Construction Industry**

According to the U.S. Department of Commerce (as cited by Groskopf, 2005:1) the situation in the U.S.A. reveals that: "...more than 50 percent of new contractors fail in the first five years of operation." The magnitude of the problem is illustrated follows: "Since 1987, the U.S. construction industry has generated some ... sales, accounting for 4 to 5 percent of the U.S. gross domestic product each year".

Milliner (as cited by Groskopf 2005:1) states: "Yet, in spite of being the nation's largest industry and largest source of employment, more than 50 percent of new contractors fail in the first five years of operation, most of these in the first two. These "upstarts" usually have good field knowledge but have little knowledge of the business and financial environment".

A similarities situation prevails in South Africa:

“The perception of the banking sector in South Africa is that the construction industry is a high-risk industry and that almost all construction companies have been faced with serious problems at one time or another and have been helped to survive through subsidisation from industrial investments in conglomerate structures.” (CIDB, 2004:16)

The business performance of the construction industry is summarized in the CIDB’s status report for 2004 (2004:44) as follows:

- The industry has developed low and unreliable rates of profitability and sustainability across the spectrum of established and emerging suppliers.
- Lenders to the industry define its high-risk, low-reward ratio as some of the main aspects leading to poor performance in terms of defects, cost and time over-runs and eventually to project and enterprise failure.
- Performance and value-add is not readily marketable.

### **1.9.2. Clarification and prominence of “estimates” and “measurement”**

In the Practice Alert (2000-3) issued by the AICPA in 2000 concerning construction auditing and accounting the difficulty of construction audits are stressed in stating the following:

*“One of the more challenging audits is that of construction companies and other companies using the percentage of completion method of accounting for long-term contracts.”*

*“Auditing construction contractors or entities using contract accounting is complex.”*

*“Such businesses rely on accurate and reliable estimates to operate their business as well as to prepare financial statements in accordance with generally accepted accounting principles. “*

*“Therefore, it is critical that the auditor gain an understanding of the contractor’s significant estimates and assumptions in operating its business.”*

The Professional Issues Task Force’s (PITF) Practice Alert (2000-3) ends this particular section with the words:

*“Remember that the audit of a contractor is an audit of a contractor’s ability to estimate.”*

If the construction contractor is “One of the more challenging audits” and “complex” it will be the same for the contractor and his internal accountant. It is further significant that the AICPA refers to the contractor’s estimates in such a way that it is clear that the Built Environment Professionals are obviously involved in the auditing and accounting. The same can not be deducted from the phrases in AC109/IAS11.

### **1.9.3. Construction accounting records and cost control reports**

Conceptions and misconceptions exist regarding important aspects in the areas between accounting and construction. The effects of “getting it right or getting it wrong” could be fatal to certain construction companies.

Financial and cost reports for construction entities can be grouped as:

- Audited Annual Financial Statements
- Management Financial Statements
- Various project costs reports



The conclusion made by non-accountants is that the above reports reflect different results. That is true. It should be noted although the report contains the results of the same construction contracts it is:

- compiled by different people (with different background experience),
- with different objectives (accounting, tax, or company politics),
- using different input data (estimates, measurements or actuals),
- using different cost allocation definitions (direct and overheads) and
- reporting over different time periods (depending on dates and yearends), to name but a few of the multitude of possible differences.

This study will attempt to highlight the importance of some of the above differences, conceptions and misconceptions, problems and fallacies, created in the compilation of the various reports. Decisions based upon wrong information can result in disaster even if it is made by knowledgeable and experienced individuals.

## **1.10 Outline of the study**

### **Chapter 2: Literature study**

It is expected that literature will be not be abundant. It will mostly comprise:

- GAAP and gaap orientated material.
- AC109/IAS11 - Construction Contracts and related material.
- Auditing of construction contracts related material, and
- SAAS620/ISA620 “Using the work of an Expert” by an auditor.

Prescriptive construction literature is divided between the United States of America and the internationally aligned countries (the rest). The leading documentation available on the international side is AC109/IAS11: Construction Contracts.

The motivation for including the American documents in the research is:

- to determine whether it clarifies certain concepts and phrases contained in AC109/IAS11. AC109/IAS11 appears to be a summarised and concise document and a more descriptive document might supply insight into reasons for possible “wrong perceptions” formed to date.
- Convergence between the “International” and the “American” accounting regulating bodies are reality.

### **Chapter 3: Research design and methodology**

Small contractors are generally excluded from the definition of AC109/IAS11’s construction contractors because of size, duration of contracts, internal control and internal accounting knowledge and expertise.

To be able to determine what is the accountant’s interpretation of certain paragraphs in AC109/IAS11 the registered external auditors and accountants will have to be consulted. It is expected that the consistent answers and general knowledge of accounting principles of the registered external auditors and accountants would prove to be valuable. A questionnaire will be sent to the external auditors and accountants after the contractor’s permission were obtained. The questionnaire is expected to raise sensitivity issues with the contractors.

The contractors so selected are expected to include:

- listed companies and/or their group companies, and
- the larger unlisted companies.

The registered external auditors and accountants so selected are expected to include:

- the “big four” internationally registered audit and accounting firms, and
- the other larger registered auditing and accounting firms in South Africa.

The questionnaire will be structured as set out in table 2, on page 34.

**Table 2: The structuring of the questionnaire sent out to external and registered auditors and accountants of construction contractors.**

<b>No.</b>	<b>Sub-problem</b>	<b>Hypothesis</b>	<b>Strategy</b>
1	Are “reliable measurement” and “reliable estimates” clearly identified in AC109/IAS11 as being the most important concepts?	“To measure reliably” and “reliable estimates” are not clearly identified as being the most important concepts in AC109/IAS11.	To determine whether the external auditors and accountants of construction contracts consider “reliable measurement” and “reliable estimates” to be the most important concepts in AC109/IAS11
2	Are “reliable measurement” and “reliable estimates” clearly defined in AC109/IAS11.	“Reliable measurement” and “reliable estimates” are not clearly defined in AC109/IAS11.	To determine whether the auditors and accountants consider this concepts to be adequately defined and described to avoid confusion.
3	Do “reliable measurement” and “reliable estimates” refer to the skills and experience of specific professionals?	“Reliable measurement” and “reliable estimates” in AC109/IAS11 do not seem to imply more than the skills expected from accountants.	To determine whether registered auditors and accountants are of the opinion that special knowledge and skills are required or that accounting personnel are adequately equipped
4	Can the alternative methods of profit recognition, in AC109/IAS11, only be used under very specific circumstances?	AC109/IAS11 leaves the choice of the method to the professional opinion of the accountants involved.	Do auditors and accountants agree that the method that reliably determines the stage of contract completion is required at all times?
5	Is the “use of the work of an expert” an option or a prerequisite?	There is no feasible solution to the problems regarding the “use of the work of an expert”.	Do auditors recognise the need for experts in auditing of construction companies?

## **Chapter 4: Presentation of results**

The answers are expected to be short and to the point and no special arrangements are deemed necessary in the presentation of these results.

The answers are expected to be “yes” and “no” answers and therefore the use of graphs and other graphical methods is not envisaged.

## **Chapter 5: Conclusion and recommendations**

It is expected that the results of the research and questionnaires would substantiate recommendations on three problem areas, namely:

- The interpretation by construction managers and contractors of certain key paragraphs contained in AC109/IAS11.
- Possible hints to assist auditors in the general conduct of construction contract audits, as seen from the perspective of the built environment.
- The possible “use of the built environment professionals as experts” in the auditing of construction contracts.

Initial discussions with public auditors and accountants indicated that they do encounter problems in the auditing of construction companies but that they all have ways and means to overcome these problems. The aim of the research will not be to determine how they cope with these routine audit problems.

*The focus will also be kept on the reason for perceived misunderstanding of AC109/IAS11 by the build environment professionals other than due to such aspects as the possible lack of knowledge or experience of the built environment professionals in accounting, reporting and representation of information in the financial statements of contractors.*

*The focus will be towards clarifying aspects of AC109/IAS11 for contractors.*

## CHAPTER 2: LITERATURE REVIEW

### 2.1. INTRODUCTION

Publications on construction accounting, and more specifically AC109/IAS11 - Construction Accounting, can be grouped as follows:

- ❑ Accounting literature that contains prescriptions, guidelines, statements, sections in acts and other statutory documentation.
- ❑ Text books for accounting students (Chartered Accountants) (handbooks on GAAP). They are mostly theoretical of nature and contain little reference to practice.
- ❑ Books and articles on the topic of accounting in which the reader is cautioned to steer clear from construction accounting.
- ❑ Publications by accounting bodies on AC109/IAS11 and other international equivalents from countries such as Australia, New Zealand and China.
- ❑ Accounting material from the United States of America containing the US alternative/equivalent of AC109/IAS11. This includes the Accounting Research Bulletin 45, (1955) and the 1981 Statement of Position 81-1. The American Institute of Certified Public Accountant's (AICPA) audit alert PITF (2000-3) for construction companies proved to be a valuable guideline.

Due to the state of affairs regarding literature, together with the multi-disciplinary nature of the study, it becomes essential to put matters into perspective. A contextual background to each section, of chapter 2, will serve this purpose.

Diagram 2.1 on page 3 is used as an index to the literature study. It was created to provide a visual structure to the content and various directions contained in the literature. It furthermore provides a historical perspective on developments. Each section of the literature review will be introduced to place it in context, followed by relevant citations and a short conclusion. Most of the sources consulted revealed the following characteristics:

- They are instructive and prescriptive.
- They provide practical and theoretical guidelines intended to secure exact results.
- They are intended for application by qualified professionals.
- The professionals are the knowledgeable experts on the topic.
- The professions have as its foundation the credibility of facts.
- The topic is multi-disciplinary in nature.

It is not often that one discipline is expected to display an interest and appreciation for the content of literature intended for another discipline.

The nature of the above dictated the manner of referencing and citation of text.

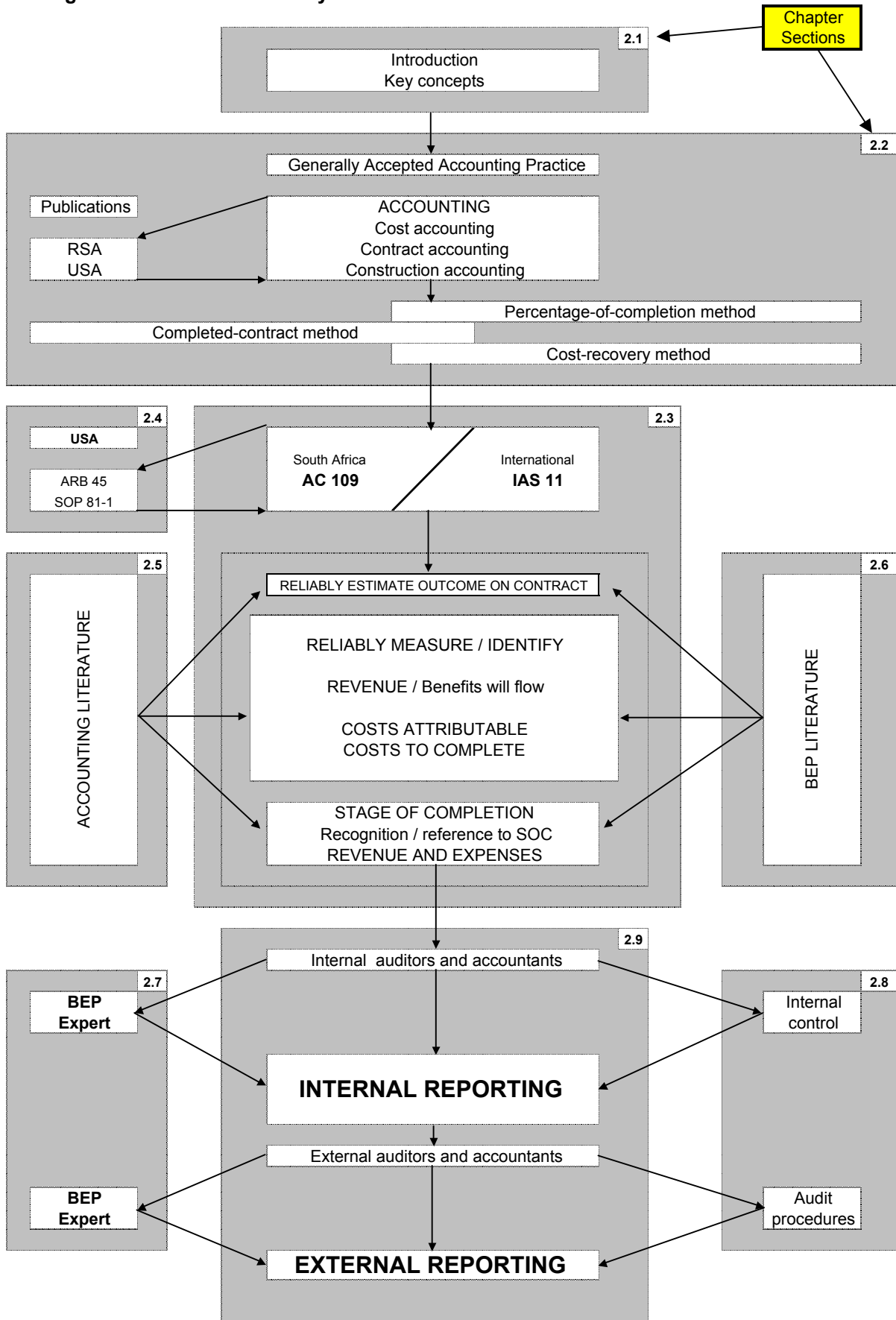
## **KEY CONCEPTS**

The key concepts required for the elucidation of the stated problem are the following (each concept is clarified by means of an appropriate citation from authoritative sources and are all directly applicable to construction contracts):

### **Accounting treatment**

“The accounting treatment of a construction contract depends therefore on whether or not the outcome of the contract can be measured reliably.” (Von Well and Wingard, 2003:128)

**Diagram 1: The literature study**



## Conceptual issues

“Long-term construction contracts extend over more than one accounting period. The basic problem therefore is determining the income that should be recognised in each of the different periods. Conceptually, elements of financial statements should be recognised if:

- it is probable that any future economic benefit associated with the item will flow to or from the enterprise; and
- *the item has a cost or value that can be measured with reliability.*”  
(AC000.83)

## Expected losses

“Where it is probable that total contract costs will exceed total contract revenues then the excess contract costs should be recognised immediately as an expense.” (Von Well and Wingard, 2003:128 -129).

## Stage of contract completion

“The stage of completion should be determined based on the work performed on the contract at the balance sheet date.” (AC109:22/IAS11.22)

## Contract revenue and expenses

“Contract revenue and expenses should only be recognised when it is probable that future economic benefits associated with the revenue *and expenses* will respectively flow to and from the enterprise and the amount of revenue and expenses can be measured with reliability.” (Von Well and Wingard, 2003:128)



## **Cost recovery**

“Where the outcome cannot be measured reliably then no profit should be recognised. However, in order to correctly reflect the level of activity undertaken by the construction company, revenue should be recognised to the extent of costs incurred that are recoverable and contract costs should be recognised as expenses in the period when incurred. The recognition of such revenue and related costs provides useful information about the extent of contract activity in the period.” (Von Well and Wingard, 2003:128)

## **Estimated cost to complete**

“These are the anticipated costs required to complete a project at a scheduled time. They would be comprised of the same elements as the original total estimated contract costs and would be based on prices expected to be in effect when the costs are incurred. The latest estimates should be used to determine the progress towards completion.” (Epstein and Mirza, 2005:187)

## **Reliable measurement**

“The second criterion for the recognition of an item is that it possesses a cost or value that can be measured with reliability as discussed in paragraphs .31 to .38 of this framework. In many cases, cost or value must be estimated; the use of reasonable estimates is an essential part of the preparation of financial statements and does not undermine their reliability.” (AC000.86)

“The probability associated with the reliable measurement of contract revenue and expenses becomes easier to assess as contract activity progresses.” (Von Well and Wingard, 2003:128)

### **Future economic benefit**

“The probability that future economic benefits will flow to an enterprise engaged in construction contract activity is dependent on the outcome of that activity. Only once that probability has been established can there be any degree of certainty about the future economic benefits associated with the contract.” (Von Well and Wingard, 2003:128)

### **Percentage-of-completion method**

“When the outcome of a construction contract can be estimated reliably then the revenue and expenses associated with the construction contract should be recognised by references to the stage of completion at the balance sheet date. This implies recognition of a portion of the total anticipated contract revenue, expenses and, consequently, profit attributable to the particular accounting period.” (Von Well and Wingard, 2003:128)

### **Reliable estimate**

“During the first stages of the contract it is often the case that the contract outcome cannot be estimated with any degree of reliability. However, when contract revenue can be measured reliably and the costs to complete a contract and the stage of contract completion at the financial year-end can be measured reliably, then profit (i.e. contract revenue less contract expense) should be recognised by reference to the stage of completion of the contract activity. The reliability of current estimates of future revenue and expenses is therefore a key factor when assessing the extent to which profit associated with partial completion of a contract should be recognised.” (Von Well and Wingard, 2003:128)

(The definitions and descriptions of key concepts are that of accountants.)

## **Contextual background to section 2.2 - Generally Accepted Accounting Practice (GAAP) and construction contracts**

The literature research focused mostly on cost accounting, contract accounting and construction accounting leading up to AC109/IAS11. The three major accounting methods in construction accounting, namely the completed-contract method, the percentage-of-completion method and the “cost-recovery” method came under scrutiny.

The argument, or rather debate, concerning GAAP and gaap is alive and well in certain industries. The focus of this study is on a Statement of Generally Accepted Accounting Practice (GAAP), namely AC109/IAS11. What exactly constitutes GAAP and gaap is therefore not a concern of this study.

Construction accounting is cost accounting. Cost accounting is considered by many to be management accounting. Management accounting in turn, is regarded as similar to internal reporting. This means that construction accounting by its nature, origin and method of reporting, is to a large extent a personalised affair. It is therefore one of the areas where there could be a thin dividing line between GAAP and gaap.

The method of recognising profit on construction contracts has been determined by the above situation. A perceived lack of knowledge, experience and general interest in AC109/IAS11 by the non-accountants involved in construction and construction accounting, also plays a part. Contractors still have the notion that the completed-contract method is the only way to determine the actual profit or loss on a construction contract. They are critical of the percentage of completion method because they are sure it can be manipulated, and they do not recognise the difference between the completed-contract method and the cost-recovery method. If taxation were linked to a specific construction accounting method, the interest in the method employed might increase.

## **2.2.1. Generally Accepted Accounting Practice**

### **2.2.1.1. Introduction**

Everingham and Watson (2003:1) states that the phrase generally accepted accounting practice (gaap) was introduced into law for the first time in South Africa with the introduction of the 1973 Companies Act.

It was commonly used before that but received special attention through the Act. The Companies Act gives no definition or explanation of what constitutes generally accepted accounting practice (gaap). Gaap includes those accounting practices that are uncodified, but are regarded as being generally accepted

According to Vorster et al, (2003:10) accounting practices documented in statements are called promulgated GAAPs but those practices that are not documented are called unpromulgated gaap. Although both types of GAAP have the same authority, the unpromulgated gaap is difficult to establish.

Statements of Generally Accepted Accounting Practice (GAAP) are approved by the Accounting Practices Board (APB) following a process of drafting and exposure by The South African Institute of Chartered Accountants (SAICA) and are numbered in the AC100 series. Thus: GAAP and gaap might or might not be the same.

### **2.2.1.2. The development of GAAP in South Africa**

GAAP developed on a piecemeal basis in South Africa until 1990 when the Conceptual Framework was introduced by the International Accounting Standards Committee (IASC) and adopted in South Africa as AC000. The framework then served as a basis for new standards and revision of existing statements.

The IASC started 'harmonisation' of accounting standards, internationally, by producing high quality standards and reducing accounting choices available to preparers. This increased the status of international standards. International standards will be required by companies listed on the major stock exchanges. The IASC was re-constituted as the International Accounting Standards Board (IASB) during 2001 and the IASs, International Accounting Standards, will in future be issued as IFRSs, International Financial Reporting Standards.

South Africa agreed on the use of the international standards. This not only avoids duplication but facilitates comparability of financial statements, prepared in different countries.

The Gaap documents referred to is those available as:

- AC000 Accounting Framework (issued by APB);
- AC100 series Statements of Generally Accepted Accounting Practice (issued by APB)

### **2.2.1.3. Who determines GAAP?**

Everingham and Watson (2003:1) states that the 1973 Companies Act came into effect on 1 January 1974. The Accounting Practices Board (APB) was constituted in 1973 to establish what GAAP should represent.

Everingham and Watson (2003:1-2) explains the applicability of statements of generally accepted accounting practice and state that they were enforceable only for companies, but their scope widened to Close Corporations, who according to section 58(2) of the Close Corporations Act of 1985 is required to comply with GAAP. "It might not be necessary to apply statements of GAAP rigidly to close corporations as far as disclosure is concerned, but underlying principles of measurement should nevertheless be followed."

#### 2.2.1.4 Conclusion

Vorster et al (2003:12-13) further states that the following must be kept in mind:

- Following the requirements of statements of GAAP blindly does not necessarily guarantee fair presentation.
- What constitutes fair presentation in particular circumstances still rests on professional judgement.
- Such circumstances should arise very seldom, however, and when they do, full disclosure should be made of the circumstances.
- It should not be concluded that non-compliance with GAAP is acceptable in all circumstances as long as full disclosure is made in the notes.
- A vital principle of disclosure is that complete disclosure does not rectify an incorrect treatment.
- Accounting is a communication process that is referred to as the language of business and has its grammatical rules called generally accepted accounting practice (GAAP).

According to Von Well and Wingard (2004:2): “Generally accepted accounting practice (gaap) includes those accounting practices, which are uncodified, but are regarded as generally accepted due to their being followed by a number of companies. These practices may or may not comply with statements of GAAP, but would be the minimum required to meet the requirements of S286(3), provided fair presentation is achieved.” and “Statements of GAAP are those accounting standards and practices which have been codified and are based on internationally accepted standards. Compliance therewith would ensure fair presentation in the financial statements and compliance with S286(3).”

## 2.2.2. Construction contracts

### 2.2.2.1. Completed contracts method

Everingham and Watson (2004:22:11) discusses the method in detail. The completed contract method recognizes profit only when:

- the results of the contract are finally determined or
- where the contract has been substantially completed, and
- proponents of this method consider that it is not possible to determine in advance of completion of the contract whether or not a profit will be made, but
- the advantage of this method is that there is no risk of profits being recognized prior to their being realized, since
- they will be based on finally determined results and not estimates.

According to Everingham and Watson (2004:22:12) the completed contract method is widely used in:

Germany, and also encountered in France, Spain, Italy and the Netherlands.

It is also still permissible in the United States, in terms of Accounting Research Bulletin 45, which dates to 1955.

However ARB 45 (paragraph 22) does indicate a preference for the percentage of completion method provided estimates are reasonably

dependable and this position was endorsed in 1981 in Statement of Position 81-1.

In the United Kingdom, SSAP9's approach is that profit should be recognized when there is reasonable certainty that it will be made (SSAP 9:29).

Although less explicit than IAS 11 and AC 109, this also points away from the use of the completed contract method.

In South Africa the following viewpoint applies: "The completed contract basis was fairly widely used in South Africa before AC109/IAS11 came into effect, but has now disappeared, at least as far as listed companies are concerned." (Everingham and Watson, 2004:22:12)

According to Von Well and Wingard (2003:130) the completed contract method recognises profit only after all work on a contract is complete, but AC109/IAS11) do not sanction the use of this method.

According to Adrian and Adrian (1999:53-54) the argument between completed contract and percentage of completion produced the following points to consider:

Some individuals would argue that the completed-contract method is a more accurate method in that the method requires no estimates of profits earned prior to the completion of the construction.

These defenders of the completed-contract method argue that only at the time of a project's completion is it possible to determine profits in that prior recognition of profits is based on estimates of costs to complete.



Given the uncertainty of the construction process, one might question the validity of any estimate of costs to complete a project.

The argument for completed-contract remains weak. While it may have support in that it is not dependent on estimates, the fact remain that the method results in poor matching of revenue and expense and often results in misleading financial statements. Significant revenues and expenses may be omitted from the income statement during construction. Given this fact, the reader of the financial statements may come to the wrong conclusion regarding the profitability of a given project or the company as a whole.

*The argument is won by the percentage of completion method. (own emphasis)*

*There is, however, an ongoing debate. (own emphasis)*

According to Palmer et al (1995:279) “The generally accepted alternative method of accounting for revenue on long-term contracts is the completed-contract method of accounting.”

On the accounting method Palmer et al (1995:279) indicated that during job construction:

- revenue and costs are accumulated on the balance sheet and
- transferred to the income statement when the job is substantially complete.

Palmer noted that a contract is generally considered complete for accounting purposes if the remaining costs are minor, physical construction is complete and the only remaining work is clean-up and demobilization.

“It is important, however, that a contractor establishes a consistent policy in determining when a contract is complete. “ (Palmer et al, 1995:279)

*Advantage of the completed-contract method:*

“It is based on final results (revenue, cost and profit are clear), and accountants do not have to be concerned with the reliability of engineers’ or architects’ estimates.” (Palmer et al, 1995:279)

*Disadvantage of the completed-contract method:*

“When it has many jobs in progress it is difficult to evaluate the company as a whole (revenues and costs deferred) and potentially it has the possibility of significant distortion of events and amounts.” (Palmer et al, 1995:279)

According to Palmer et al (1995:279) in the extreme, it is conceivable that a contractor could have no work other than completion of a long-term contract his income statement will show significant revenue for the year when in reality the profit had been earned in prior years. When using the completed-contract method, it is generally common practice:

- not to accumulate, as deferred contract costs, general and administrative expenses or overhead,
- these expenses are usually treated as “period costs.”

Not allocating such expenses to contract costs means:

- that a contractor will have a disastrous-looking income statement if all of his work during the year is still in progress at year-end.
- There will be no revenue or profits from jobs and only overhead costs will appear on the income statement.

(Under the percentage-of-completion method, this difficulty does not occur because the revenue and profits earned on contracts in progress are reflected in the income statement for the period.)

According to Palmer et al (1995:280) “The AICPA recognizes this problem and makes the following statement: When the completed-contract method is used, it may be appropriate to allocate general and administrative expenses to contract costs rather than periodic income. This may result in a better matching of costs and revenues than would result from treating such expenses as period costs, particularly in years when no contracts were completed.”

This statement can be interpreted to mean that:

- when a contractor has relatively few jobs in progress at any one time it may be preferable for him to allocate overhead to these contracts, thereby providing a better matching of income and expense when the completed-contract method is used.
- If he has numerous jobs in progress at any point in time, it is preferable to expense overhead as it is incurred.

### 2.2.2.2 Cost recovery method

AC109/IAS11 States in paragraph .32 that when the outcome of a construction contract cannot be estimated reliably then revenue should be recognised only to the extent of contract costs incurred that will probably be recovered, and contract costs should be recognised as an expense in the period in which it is incurred. (AC109.32 / IAS11.22)

According to Von Well and Wingard (2003:128-129):

- The accounting treatment of a construction contract depends therefore on whether or not the outcome of the contract can be measured reliably.
- Where the outcome cannot be measured reliably then no profit should be recognised.
- However, in order to correctly reflect the level of activity (own emphasis) the construction company, revenue should be recognised to the extent of costs incurred that are recoverable and contract costs should be recognised as expenses in the period when incurred.
- The recognition of such revenue and related costs provides useful information about the extent of contract activity in the period.

The phrase “correctly reflect the level of activity” is emphasized to indicate that Von Well and Wingard agree, that the results must be reflected in the income statement. The results according to the completed-contract method remains on the balance sheet until such time that the final results can be shown in the income statement.

Thus: revenue and costs must be taken to the income statement but no profit is taken (Thus: a nil profit margin).

SOP81-1 describes it in paragraph 33 as the third method of accounting with:

“However for circumstances in which there is an assurance that no loss will incurred on a contract:

- the percentage-of-completion method based on a zero profit margin, rather than the completed-contract method, is recommended until precise estimates can be made.
- The significant difference between the percentage-of-completion method applied on the basis of a zero profit margin and the completed-contract method relates to the effects on the income statement.
- Under the zero profit margin approach to applying the percentage-of-completion method, equal amounts of revenue and cost, measured on the basis of performance during the period, are presented in the income statement:
- whereas, under the completed-contract method, performance for a period is not reflected in the income statement, and no amount is presented in the income statement until the contract is completed.
- The zero profit margin approach to applying the percentage-of-completion method gives users of general purpose financial statements an indication of the volume of a company’s business and of the application of its economic resources.”

### 2.2.2.3. Percentage of completion method

In the past accounting for construction contracts consisted of the accounting commonly known as management accounting or even cost accounting. That is exactly what it is. Construction accounting was viewed to be the same as “pure” cost accounting, except that the contract stretches over year-ends into following accounting and reporting periods. This difference had no effect on some contractors, but created enormous problems for others. The problem was initially dealt with by leaving it to the contractor’s discretion to make the choice between the completed-contract method and the percentage-of-completion method. This practice ended in 1995 with the Statement of Generally Accepted Accounting Practice, called AC109/IAS11. The numbering of statements has no significance other than indicating, together with the AC, that it is an accounting statement. Accounting statements start at 100, thus construction contracts are the ninth statement. Stock is discussed in AC108 but exclude construction contracts.

Why AC109/IAS11: Construction contracts were necessary. The main reasons that a difference is made between work in progress on construction contracts and other such stock on hand appear to be:

- The unpredictability of the end result on the contract of which the work in progress is an integral part.
- The production periods for manufacturing and commercial industries are relatively short. (Vorster et al, 2003:233)
- The valuation of contracts in progress is not at the lower of historical cost and net realisable value as is the case with other inventories. (Vorster et al,2003:233)
- The difficulty concerning the allocation of contract revenue and expenses to different accounting periods over the duration of the contract. (Vorster et al,2003:233)

Therefore Statement AC108/IAS 2, which prescribes the accounting treatment and disclosure of inventories, is not applicable to construction contracts, but “AC109/IAS11 which deals with *Construction Contracts*, serves to a certain extent as an extension of Statement AC108/IAS2, because it deals with the valuation and disclosure of a particular kind of inventories in the financial statements of contractors.” (Vorster et al, 2003:233)

The main reason why it was decided that construction contracts warrants different treatment is because it is apparent that projects such as dams or roads can keep construction companies busy over several financial years. “If the companies waited until the completion of such a long-term scheme before any profit or loss was reflected in the annual financial statements, the net profit could fluctuate substantially from year to year or even half-year to half-year. This may cause the stock of a listed company to fluctuate materially on the stock exchange, a phenomenon, which is not desirable to shareholders. It could also lead to a fluctuation in the dividend rate, which could make the stock unattractive to potential investors.” (Vorster et al, 2003:233)

“Contracts that do not run over more than one accounting period usually do not present any problem as the revenue and costs are matched in the same accounting period. Long-term construction contracts, by contrast, continue over more than one accounting period and most of these contracts provide for certified work, which indicates that revenue is realised before the project is completed.” (Vorster et al, 2003:238)

“The percentage of completion method is therefore used to ensure that the contract revenue and contract costs are matched according to the specific stage of completion of the project. This leads to the reporting of contract profit attributable to the portion of the project completed. According to this method, both contract revenue and costs are recognised in the income statement in the accounting period in which the work is done.” (Vorster et al, 2003:239)

“The percentage-of-completion method has been developed in accounting as an attempt to match the profit earned in a particular accounting period with the effort expended during that period. This method requires the accountant to measure and make judgements concerning the reasonableness of estimates provided by the contractor and the owner. Because of this critical reliance on estimates, the method can be used only when the dependability of the estimates is measured with some precision. Even so, the percentage-of-completion method is preferred over the completed-contract method. In addition to the threshold requirement of reasonable dependable estimates, other criteria must be satisfied before the percentage-of-completion method can be adopted. (Miramontes & Rice, 2005:1-19)

“In evaluating the acceptability of the method used by the contractor, auditors should be satisfied that the contractor has followed the recommendations in SOP 81-1, which describes the percentage-of-completion method as the basic accounting policy when reasonable dependable estimates can be made and when the contracts generally meet the following three conditions:

1. Contracts executed by the parties normally include provisions that clearly specify the enforceable rights regarding goods or services to be provided and received by the parties, the consideration to be exchanged, and the manner and terms of settlement.
2. The buyer can be expected to satisfy the obligations under the contract.
3. The contractor can be expected to perform the contractual obligation.

If contracts meet these conditions, a contractor is generally deemed able to make reasonably dependable of contract revenue, contract costs, and the extent of progress toward completion.” (Miramontes and Rice, 2005:12-13)

The objectives of AC109/IAS11 SOP81-1 are an honest and straight forward attempt to match the profit earned with the effort expended during the same period.



## **Conclusion on section 2.2 - Generally Accepted Accounting Practice (GAAP) and construction contracts**

### **GAAP**

Generally accepted accounting practices could change on construction contract profit reporting, if contractors change their accounting policies concerning financial reporting in the industry. It was not the object of this study but it was noted that some major contractors started doing that.

### **Completed-contract method**

This is probably the only option available to the smaller contractor. The main difference between this method and the rest is that results are carried forward on the balance sheet, till the date of completion is reached.

### **Cost-recovery method**

The cost recovery method is true to the spirit of AC109/IAS11 in the sense that it reflects the activity of the contractor in any specific period. Reporting is the beneficiary, and the income statement is the medium of communication rather than net amounts on the balance sheet that disclose irrelevant information.

### **Percentage-of-completion method**

Although the contractor does not have various options when confronted with reporting on construction contracts, the perception to the contrary persists. The question arises whether ambiguous paragraphs and interpretations of AC109/IAS11 allow this leniency, or whether misrepresentation by the contractor, in determining stage of completion and cost recording, creates this leniency.

## Contextual background to section 2.3 – AC109/IAS11

According to built environment students, AC109/IAS11 seems to be easy to read, but problems arise when the information and principles contained in the document need to be recalled and applied.

For this reason it was decided to analyse AC109/IAS11 diagrammatically (refer to diagram 2 on page 61) to determine whether:

1. the document's layout contributes to the problem.
2. the wording used in the document is unusually difficult or confusing.
3. the document is written in a style that makes it difficult to follow or understand.
4. the text is such that it assumes too much from the reader.
5. the text is in abbreviated form / style and contains a lot more than meets the eye.

From the diagram it became apparent that none of the first four possibilities listed were relevant. AC109/IAS11 is written in perfectly understandable English and set out in fluent style. Point 5 above, however, seemed to pose the possibility of a problem. Only after the recognition section was highlighted on the diagram it became clear that in order to identify costs, one had to be able to read and interpret various documents that form part of the contract, such as the architect's drawings, the quantity surveyor's bill of quantities, the construction manager's on site costs control report, and a so forth.

Going back to the diagram the prerequisite to recognising costs and revenue took on a new significance. In both the cases of fixed-price-contract and cost-plus-contracts, it is a prerequisite that in order to recognise costs and revenue it must be possible to "estimate reliably" the outcome on the contract.

The steps to comply with the primary issue of construction accounting according to AC109/IAS11 are indicated on diagrams 3 & 4 on pages 62 and 63. The diagrams are presented to facilitate closer scrutiny of paragraphs .23 and .24 of AC109/IAS11 and are a direct result of diagram 2 on page 61.

This section focused on the explanation of those paragraphs in AC109/IAS11 that have a direct bearing on the hypotheses in chapter 1. Added to the Statement of GAAP are explanations by authoritative South African prescribed textbooks.

The method that will be followed is to discuss AC109/IAS11 per paragraph. The South African authors are then quoted immediately thereafter. Brief discussions are added where possible ambiguities have been identified. The content of AC109/IAS11 is more complex than meets the eye. The phrasing of certain paragraphs creates the perception that AC109/IAS11 is the result of abbreviation upon abbreviation. This also contributes to the further perception that certain sections are ambiguous.

If any criticism can be directed towards the content of AC109/IAS11, it is that the following aspects might have received more attention:

- The usage of construction related wording in an accounting document that discusses the methods and procedures to be applied in the construction environment on accounting matters.
- Definitions on the above wording and other similar phrases used throughout AC109/IAS11. Words like measurement, estimate, reliability and cost to complete are built environment related and will have such a connotation to built environment professionals.
- A decision tree orientated guidance method to assist contractors in the application of certain paragraphs, contained in AC109/IAS11, in practice.

## Discussion of diagram 2 on page 61

AC109/IAS11 is divided into paragraphs. The division is as follows:

<b>AC109 Par. no.</b>	<b>Paragraph topic</b>	<b>IAS11 Par. no.</b>
.01	Objective	1
.02	Scope	2
.03 - .06	Definitions	3 - 6
.07 - .10	Combining & segmenting	7 - 10
.11 - .15	Contract revenue	11 - 15
.16 - .21	Contract cost	16 - 21
.22 - .35	Recognition of contract revenue & expenses	22 - 35
.36 - .37	Expected losses	36 - 37
.38	Changes in estimates	38
.39 - .45	Disclosure	39 - 45

The document is written in the sequence that accountants would view the steps taken in preparation for disclosure of construction contracts in the financial statements of contractors. Diagram 2 on page 61 is set out in the same manner and sequence. From the diagram it became apparent that AC109/IAS11 could also be viewed in a more summarised form in:

<b>AC109 par. no.</b>	<b>Paragraph topic</b>	<b>IAS11 par. no.</b>
.01 - .21	Introduction & Setting	1 - 21
.22 - .35	Recognition & Applications	22 - 35
.36 - .45	Disclosure	36 - 45

The crux of AC109/IAS11 lies within the paragraphs .22 - .35 and more specifically paragraphs .22 - .24 read in conjunction with paragraph .30.

Diagram 2: Diagram of the requirements contained in AC109/IAS11: Construction contract (Statement of GAAP)

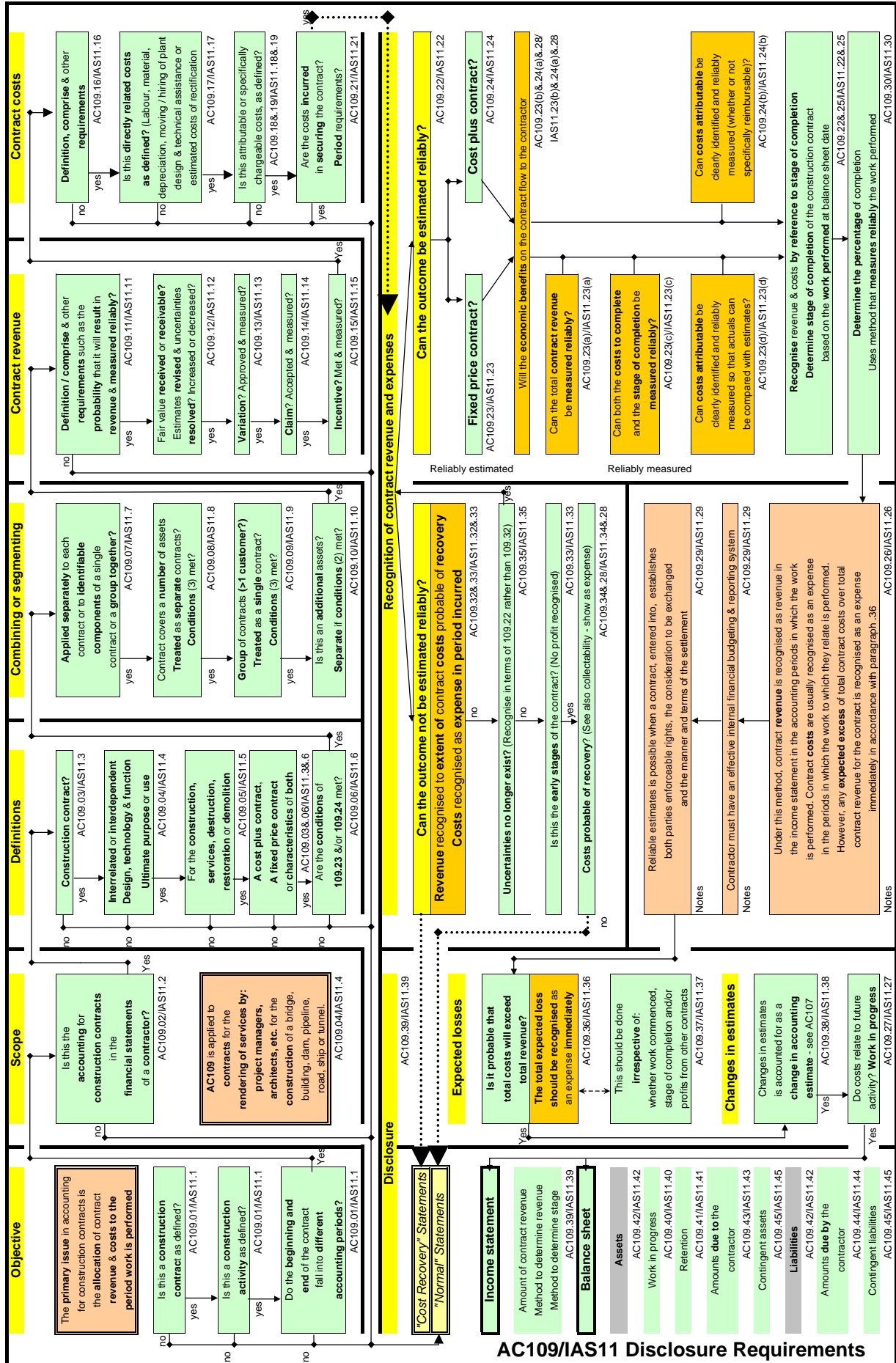
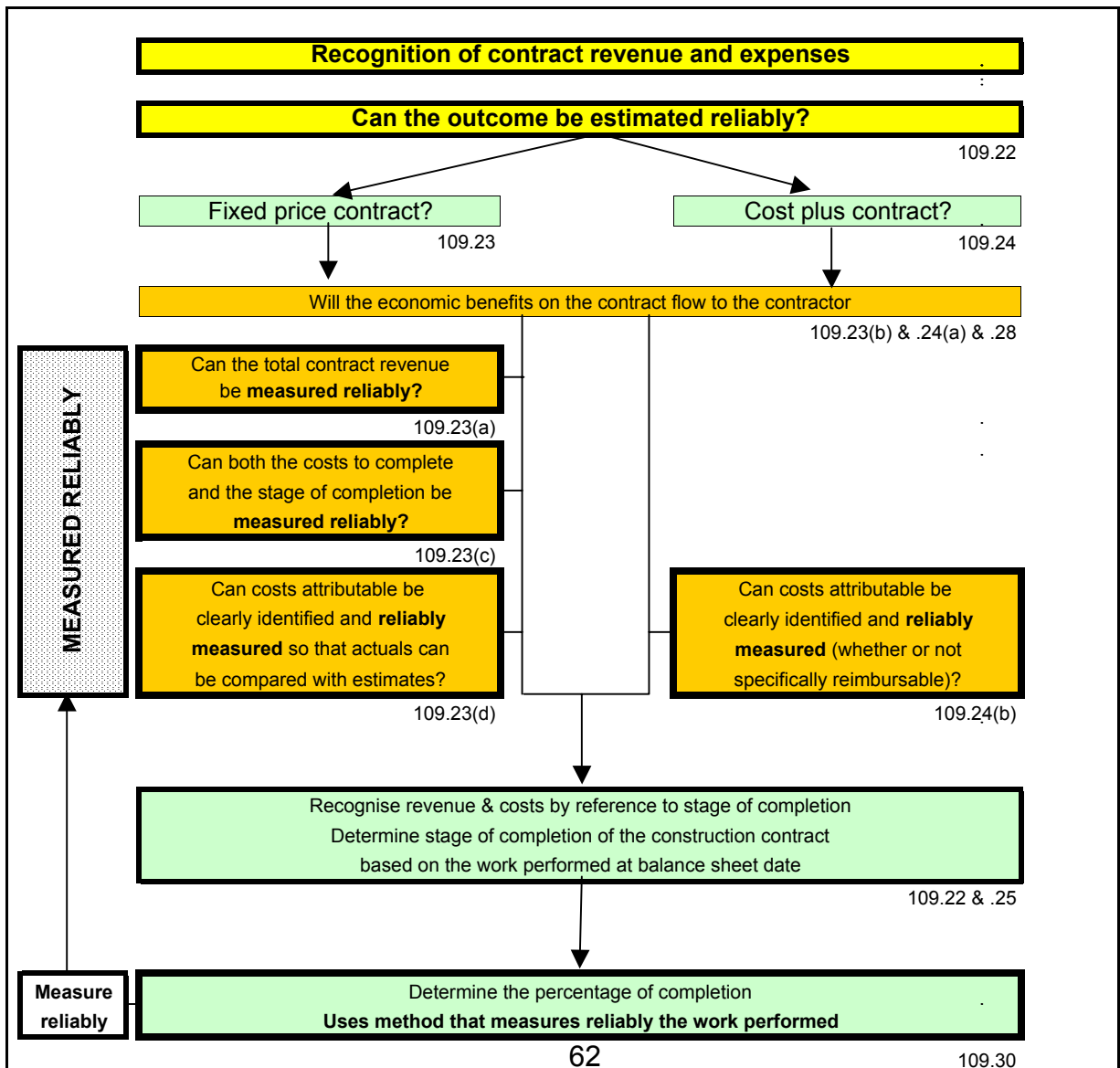
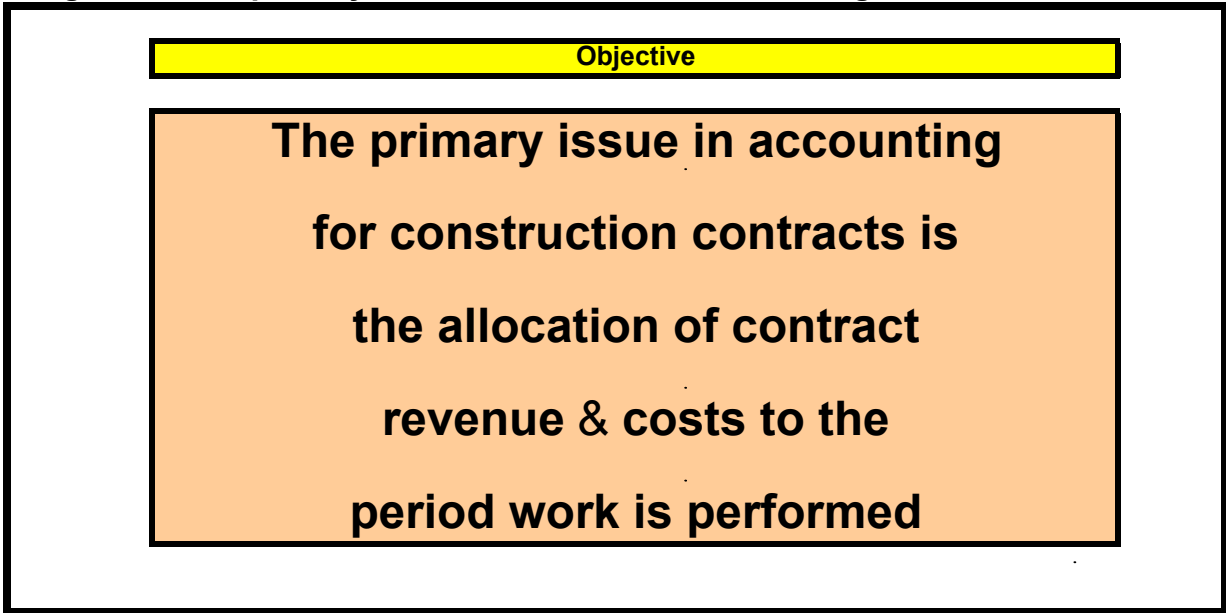
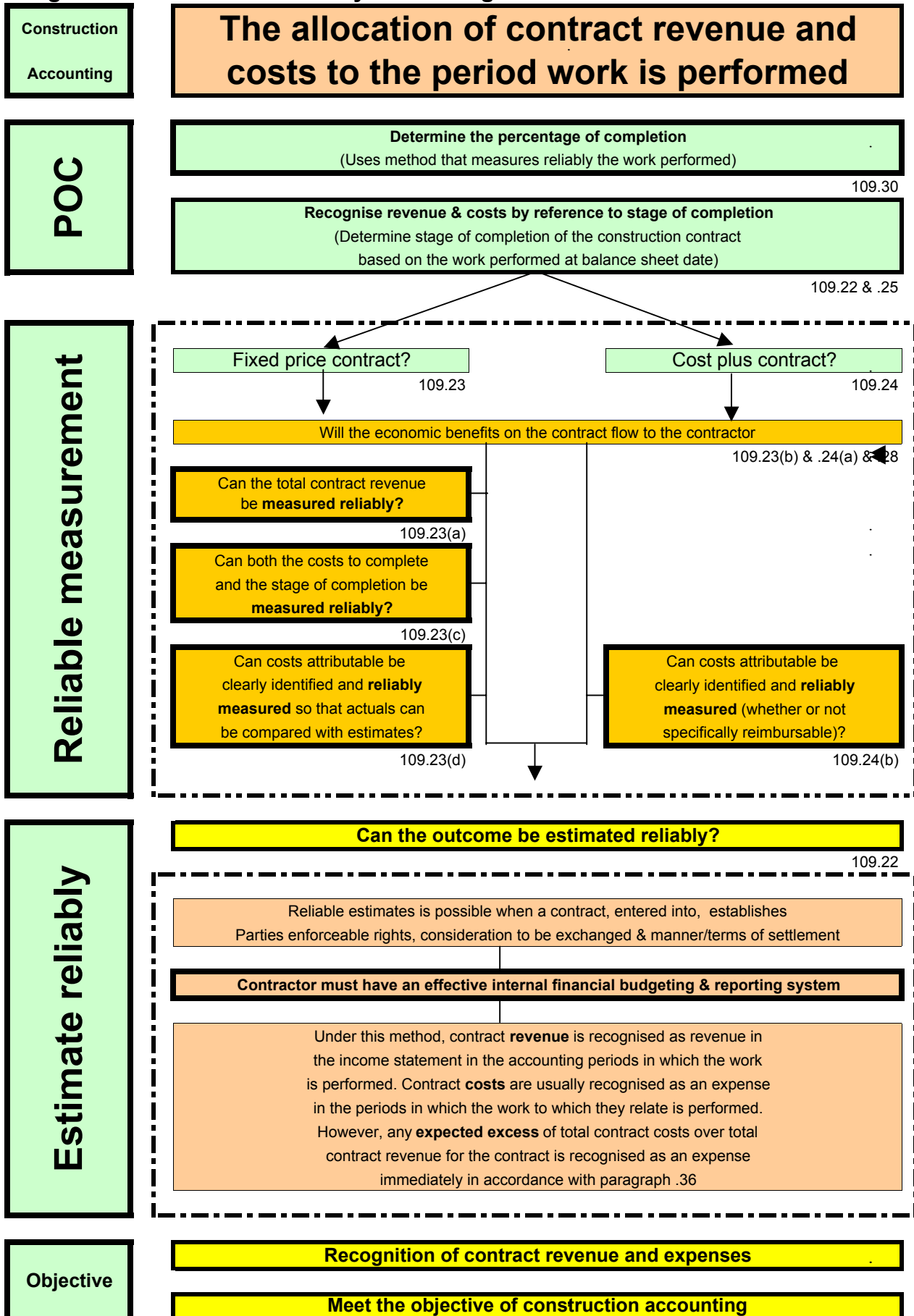


Diagram 3: The primary issue in construction accounting



**Diagram 4: "To measure reliably" according to AC 109**



## 2.3. AC109/IAS11

*Although all of the paragraphs in AC109/IAS11 will be referred to in the text, only those deemed to have any bearing on the hypotheses will be discussed at length.*

*Apart from AC109/IAS11 text references this section will only contain references to South African textbooks. The object is not to debate the content of AC109/IAS11 but to determine, and if it should be required, to analyse and interpret it.*

### 2.3.1. Objective, scope and definitions according to AC109/IAS11

Vorster et al (2003:238) stated that “According to AC 109.01 the most important matter in accounting for construction contracts is the correct allocation of contract revenue and costs (own emphasis). The question here is whether the profit has to be determined periodically as the construction of the asset proceeds or at the completion of the project.”

Vorster is of the opinion that the allocation of contract revenue and costs (the most important matter) only becomes a problem in the situation of periodic calculations of profit and the resultant determination of the stage of completion on the construction contract. The basis of this deduction is unclear.

When referring to AC109/IAS11 authors will follow the format of referencing the paragraphs directly, if applicable.

Thus the manner in which AC109.01/IAS11 will be referenced would be to indicate the paragraphs with the reference. Paragraph .01 (as indicated in AC109 but not IAS11) will be referenced as AC109.01/IAS11.01.



According to the objective paragraph of AC109.01/IAS11.01:

The objective of this statement is to *prescribe the accounting treatment* of revenue and costs associated with construction contracts.

Because of the nature of the activity undertaken in construction contracts, the date at which the contract activity is entered into and the date when the activity is completed usually fall into different accounting periods.

Therefore, the primary issue in accounting for construction contracts is the allocation of contract revenue and contract costs to the accounting periods in which construction work is performed.

This statement uses the recognition criteria established in the framework for the preparation and presentation of financial statements (AC000) to determine when revenue and contract costs should be recognised as revenue and expenses in the income statement. It also provides practical guidance on the application of these criteria.

AC109/IAS11 set out to prescribe the accounting treatment and immediately identify its main focus as the allocation of revenue and costs to correct periods. It is, however, important that the accountant takes into account that he will be challenged with numerous aspects, namely: the verification of the actual transaction in respect of value, delivery and other actions, the placing of costs and revenue, together, in the correct period, the correct period being the period in which the work is performed, that the work performed is actually completed, and that the work performed contributed to the work in progress and therefore decreased the work to complete.

Throughout this discussion section the reader must bear in mind and refer to certain questions that are still unanswered, namely:

- Can an accountant perform the above tasks on his own?
- Is a built environment professional able to comply with the above?
- Should it be done by an accountant and a built environment professional together?

*Paragraph 109.02 states that: “This statement should be applied in accounting for construction contracts in the financial statements of contractors.”*

The paragraph is specific and there could be no doubts as to the scope and application of AC109/IAS11.

Certain definitions are given in *paragraph .03*, namely:

- *A construction contract* is a contract specifically negotiated for the construction of an asset or a combination of assets that are closely interrelated or interdependent in terms of their design, technology and function or their ultimate purpose or use.
- *A fixed price contract* is a construction contract in which the contractor agrees to a fixed contract price, or a fixed rate per unit of output, which in some cases is subject to cost escalation clauses.
- *A cost plus contract* is a construction contract in which the contractor is reimbursed for allowable or otherwise defined costs, plus a percentage of these costs or a fixed fee.

The importance of paragraph .03 probably lies in the fact that certain concepts are not defined. The fact whether the above is correct is acceptable to built environment professionals but of no real consequence to an accountant.

What is lacking is a description or definition of those procedures and other “common words” contained in AC109/IAS11 where confusion or ambiguity could occur or already exist. The definition of “measure” and “estimate” proved to be examples of possible ambiguity.

*Paragraph .04* contains a further description of assets included as an example of a construction contract. The only surprise, if any, is the inclusion of the building of a ship as part of construction contracts. One is used to buildings being the only referred construction in literature of this kind.

*Paragraph .05* states that construction contracts include:

- contracts for the rendering of services that are directly related to the construction of the asset, such as, for the services of project managers and architects and thus the other built environment professionals according to Vorster et al (2003:234), and
  
- contracts for the destruction or restoration of assets.

*Paragraph .06* acknowledges the fact that there are more types of contracts than the above two mentioned in paragraph .03. Where contracts contain characteristics of both types of contracts, a contractor needs to consider all the conditions contained in paragraphs .23 and .24 in order to determine when to recognize contract revenue and expenses.

This is a surprising explanation and unfortunately the other possible contracts types are not listed. That would have indicated which contracts were evaluated

and included in the discussion. It could be important in future to be aware of the fact, if so encountered.

Von Well and Wingard (2003:127) state that there are a number of different types of construction contracts but unfortunately fail to discuss the consequences of AC109/IAS11 on them.

They listed:

- A lump sum (fixed price) contract,
- Schedule of rates contract,
- Cost plus contracts and
- Guaranteed maximum price contracts.

There exist a longer list than the above but it is assumed that it will not change the intent of this study.

It is, however, generally accepted among built environment professionals and practitioners, that contracts can be separated into the above two classifications.

### **2.3.2. The combining and segmenting of construction contracts according to AC109/IAS11**

In *paragraph .07* from AC109/IAS11 the following is relevant:

- The requirements of this statement are usually applied separately to each contract.
- However, in certain circumstances, it is necessary to apply the statement to the separately identifiable components of a single contract or to a group of contracts together in order to reflect the substance of a contract or a group of contracts.

Once again this paragraph does not contribute to the evaluation of the hypotheses as formulated.

Accountant's intentions will be conservative in their approach to profit and losses. The grouping of contracts could hinder them in this endeavor. To be conservative in respect of profits and losses on contracts accountants need to separate contracts, whereas contractors would prefer to group them together. The contractor can achieve an offset of losses against profits in the grouping of contracts.

*Paragraph .08* contains the requirement of when to treat several assets as separate contracts and *paragraph .09* contains requirements of when several assets should be treated as one single contract.

The wording contained in paragraph .09 seems to describe a situation that is impossible to attain, namely: "A group of contracts, whether with a single customer or with several customers, should be treated as a single construction contract." This is considered to be impossible, in practice. This issue is currently under scrutiny by the IASB, and has been referred to IFRIC for clarification and guidance. The conditions set out in paragraph .09 would rarely be met by any group of customers.

According to *paragraph .10* a contract may provide for the construction of an additional asset. According to Vorster et al (2003:235) "a contract can provide for the construction of an additional asset or can be amended to incorporate the construction of an additional asset.

This should be accounted for as a separate construction contract when:

- the asset differs significantly in design, technology or function from the assets covered by the original contract, or
- the price is determined independently of the original contract.”

The above are technicalities that do not affect or contribute to the hypotheses posed.

### **2.3.3. Contract revenue according to AC109/IAS11**

*AC109.11/IAS11.11* states that:

Contract revenue should comprise the initial amount of revenue agreed in the contract, and contract revenue should comprise variations in contract work, claims and incentive payments, to the extent that it is probable that they will result in revenue, and they are capable of being reliably measured.

*This is the first reference to “reliably measured” in AC109/IAS11.*

Without the help of detailed descriptions and explanations Paragraph .11 can prove to be problematic to an accountant incorporating the measurements and calculations of quantity surveyors and/or cost engineers.

The difficulty of the situation is described in *paragraph .12* as follows:

Contract revenue is measured at the fair value of the consideration received or receivable. The measurement of contract revenue is affected by a variety of uncertainties that depend on the outcome of future

events. The estimates often need to be revised as events occur and uncertainties are resolved. Therefore the amount of contract revenue may increase or decrease from one period to the next.

*Paragraphs .13, .14 and .15* explain when a variation, claim and incentive payment is due. These amounts should not be material in the context of the construction contract as a whole. Here, again, it is indicated that the income must be “reliably measured”.

According to Vorster et al (2003:235) the initial amount of revenue can vary due to events occurring and uncertainties being resolved. The following examples are provided in AC109/IAS11:

A contractor and a customer can in a period subsequent to that in which the contract was initially signed, agree to variations or claims which decrease or increase contract revenue.

The revenue amount of a fixed price contract can increase due to cost escalation clauses.

Contract revenue can decrease due to penalties arising from delays caused by the contractor in the completion of the contract (paragraph 12(c)).

Where a fixed price contract contains a fixed price per unit output clause, contract revenue increases as the number of units increases.”

### 2.3.4. Contract costs according to AC109/IAS11

*If the contractor decides to account for construction contracts according to AC109/IAS11 then the classification and resulting allocation of contract cost must be done according to the prescriptions of AC109/IAS11.*

Vorster et al (2003:236) states that in the determination of and allocation of costs to specific construction contracts, two matters of importance should be considered, namely:

- the period of the allocation of attributable costs of a contract; and
- the identification of attributable contract costs.

According to AC 109.16/IAS11.16 contract costs should be divided into three groups as:

- Direct costs
- Attributable costs
- Specifically chargeable costs  
(to the customer, in terms of the contract)

*Paragraph .17 is clear on direct cost but not on attributable costs. The requirement to estimate reliably for both the fixed-price contract and the cost-plus contract is that costs must be clearly identifiable.*

*Paragraph .18 provides some unnecessary uncertainty to the previous with regard to the inclusion of “construction overheads”.*



*Paragraph .18* states that costs that may be attributable to contract activity in general and can be allocated to specific contracts include:

- Insurance
- costs of design, and
- construction overheads.

These costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics.

*Paragraph 0.19* states that costs that are specifically chargeable to the customer in terms of the contract may include general administration costs and development cost if specific reimbursement is included in the contract.

*Paragraph .20* lists costs that cannot (should not) (own insertion) be attributed to a contract is:

- General administration costs  
(for which reimbursement if not specified in the contract)
- Selling costs
- Research and development costs  
(for which reimbursement is not specified in the contract)
- Depreciation of idle plant and equipment  
(that is not used on a particular contract)

A comprehensive summary on cost is provided by Vorster et al (2003:236-237) in stating that:

“Not all the expenses of a construction company can be recognised as costs to be allocated to construction contracts.

It can be divided into:

Costs that relate to a specific contract, for example labour, material, subcontractors costs, warranty costs, costs connected to the moving of construction equipment to the building site, depreciation on assets used on a specific project, finance costs on funds which were specifically borrowed for a project, materials that were custom made for the contract, even if it were not installed, and claims from third parties.

Costs that are attributable to contract activity in general and can be allocated to the contract, for example insurance, design, technical assistance and construction overheads.

Other costs which are specifically chargeable to the customer under the terms of the contract, for example general administration costs and development costs.

Costs which cannot be allocated to a specific contract since their link to the contract activities is fairly remote, for example finance charges, research and development costs, selling and administrative expenses, and depreciation on underutilised assets will not be accounted for as contract expenses.

*Paragraph .21* refers to cost incurred on a contract before commencement and would either not be material or otherwise influence results. The paragraph states that:

Contract costs include the costs attributable to a contract for the period from the date of securing the contract to the final completion of the contract.

However, costs that relate directly to a contract and are incurred in securing the contract are also included as part of the contract costs if:

they can be separately identified and measured reliably and it is probable that the contract will be obtained

When costs incurred in securing a contract are recognized as an expense in the period in which they are incurred, they are not included in contract costs when the contract is obtained in a subsequent period.

Vorster et al (2003:236) presents the following interpretation to the above in stating that “According to AC109/IAS11, the costs attributable to a contract commence with the securing of the contract and end with the final completion of the contract.”

According to *AC109.21* expenditure incurred by the contractor prior to the signing of the contract must be recognised in the income statement as period cost.

An exception is the cost that relates to the securing of the contract provided it can be separately identified and reliably estimated and it is probable that the contract will be obtained.

### 2.3.5. Recognition of contract revenue and expenses

*This should be considered to be the most important part of AC109/IAS11. Paragraphs .22 - .24 forms the crux of the statement as it contains the “recipe” in determining “cost to complete the contract”, “cost to date on the contract”, “costs attributable to the contract”, “total expected costs” and eventual “stage of contract completion”.*

*If these requirements can be met the aims of AC109/IAS11 can be achieved, but if it is not possible to “identify” and “measure” with clarity and reliability, then the guidelines concerning the application of the percentage-of-completion method, contained in these statements, cannot be followed.*

*Paragraph .22 states that when the outcome of a construction contract can be estimated reliably:*

- contract revenue and contract costs*
- associated with the construction contract*
- should be recognised as revenue and expenses respectively*
- by reference to the state of completion of the contract activity*
- at the balance sheet date*

*The stage of completion should be determined based on the work performed on the contract at the balance sheet date. An expected loss on the construction contract should be recognised as an expense immediately in accordance with paragraph .36.*

According to Vorster et al (2003:237) it should also be taken into account that the outcome of a contract:

- can be estimated reliably only when it is probable that economic benefits associated with the contract will flow to the enterprise and
- the application of the percentage of completion method contributes to the reliable measurement of contract profit to date.
- Therefore the two basic criteria to recognising a transaction, in accordance with AC000.83, are met.

Von Well and Wingard (2003:128) supply a comprehensive discussion and summarise and argue the point as follows:

- “The probability that future economic benefits will flow to an enterprise engaged in construction contract activity is dependent on the outcome of that activity.
- Only once that probability has been established can there be any degree of certainty about the future economic benefits associated with the contract.
- Contract revenue and expenses should only be recognised when it is probable that future economic benefits associated with the revenue and expenses will respectively flow to and from the enterprise and the amount of revenue and expenses can be measured with reliability.
- Expected losses should be recognised immediately.

- The probability associated with the reliable measurement of contract revenue and expenses becomes easier to assess as contract activity progresses.
- During the first stages of the contract it is often the case that the contract outcome cannot be estimated with any degree of reliability.
- *However, when contract revenue can be measured reliably and the cost to complete a contract and the stage of contract completion at the financial year-end can be measured reliably, then profit (i.e. contract revenue less contract expense) should be recognised by reference to the stage of completion of the contract activity.*
- **The reliability of current estimates of future revenue and expenses is therefore a key factor when assessing the extent to which profit associated with partial completion of a contract should be recognised.**
- *The accounting treatment of a construction contract depends therefore on whether or not the outcome of the contract can be measured reliably.”*

According to Vorster et al (2003:237) it should also be taken into account that the outcome of a contract can be estimated reliably only when it is probable that economic benefits associated with the contract will flow to the enterprise.

According to Von Well and Wingard (2003:128) the probability that future economic benefits will flow to an enterprise engaged in construction contract activity is dependent on the outcome of that activity.

*Paragraph .23* refers to a fixed price contract and states that: in the case of a fixed price contract, the outcome of a construction contract can be estimated reliably (*only*) (own insertion) when all of the following conditions are satisfied:

1. Total contract revenue can be measured reliably.
2. It is probable that the economic benefits associated with the contract will flow to the enterprise.
3. *Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be measured reliably* (own emphasis).
4. *The contract costs attributable to the contract can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates* (own emphasis).

*Paragraph .24* continues on a cost plus contract and states that: In the case of a cost plus contract, the outcome of a construction contract can be estimated reliably when both of the following conditions are satisfied:

1. It is probable that the economic benefits associated with the contract will flow to the enterprise.
2. *The contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and measured reliably* (own emphasis)

Vorster et al (2003:237) comments as follows on estimating the outcome of a contract:

1. The outcome of a construction contract can be estimated reliably only if it is probable that economic benefits will flow to the company.
2. Aspects to be considered beforehand are the predictability of the cost, the accuracy of cost allocations to the contract, the accuracy with which the contract completion is established and duration of the contract.

*Von Well and Wingard (2003:128) summarised estimates as follows:*

“Contract revenue and expenses should only be recognised when it is probable that future economic benefits associated with the revenue and expenses will respectively flow to and from the enterprise and the amount of revenue and expenses can be measured with reliability.”

(It can reasonably be expected to be good advice only. AC109/IAS11 do not contain references to expenses “flowing” as a precondition.)

*Von Well and Wingard (2003:128) further summarised estimates as follows:*

“However, when contract revenue can be measured reliably and the cost to complete a contract and the stage of contract completion at the financial year-end can be measured reliably, then profit (i.e. contract revenue less contract expense) should be recognised by reference to the stage of completion of the contract activity.”

“The reliability of current estimates of future revenue and expenses is therefore a key factor when assessing the extent to which profit associated with partial completion of a contract should be recognised.”



The authors do not explain the intricacy of in verifying “cost to date” and the “reliability of current estimates of future revenue and expenses”.

*Paragraph .25* prescribes the reporting of revenue and expenses in the income statement and how the recognition contributes to the reporting activity as a whole.

Revenue and expenses are recognised by reference to the stage of completion of a contract (sometimes referred to as the percentage of completion method).

Under this method:

- contract revenue is matched with the contract costs incurred in reaching the stage of completion,
- resulting in the reporting of revenue, expenses and profit that can be attributed to the proportion of work completed.
- The use of this method provides useful information on the extent of contract activity and performance during a period and

*Paragraph .26* continues with, under this method:

- contract revenue is recognised as revenue in the income statement in the accounting periods in which the work is performed.
- contract costs are usually recognised as an expense in the income statement in the accounting periods in which the work to which they relate is performed.
- however, any expected excess of total contract costs over total contract revenue for the contract is recognised as an expense immediately in accordance with paragraph .36.

Paragraph .27 states that:

- A contractor may have incurred contract costs that relate to future activity on the contract.

- Such contract costs are recognised as an asset provided it is probable that they will be recovered.
- Such costs represent an amount due from the customer and are often classified as contract work in progress.

Vorster et al (2003:251) explain this as:

- *A matter that is really problematic is the uncompleted work of a contractor.*
- This applies especially to the work that is completed but has not been certified.
- For the contractor it is in the nature of normal commercial stock; indeed, for the purpose of the balance sheet the contract balance, according to AC108/IAS 2 and the applicable paragraphs from the Fourth Schedule of the Companies Act, is recorded as stock but legally this asset no longer belongs to the contractor.
- If the building material is permanently fixed to the customer's site, it belongs to the customer.
- According to the concept of "substance over form", it is, however, correct to include it in the balance sheet of the contractor, as stock, in spite of the fact that right of ownership has already passed and the Receiver should not tax the closing stock.

*Paragraph .28 states that:*

- *The outcome of a construction contract can only be estimated reliably when it is probable that the economic benefits associated with the contract will flow to the enterprise.*

*The choice of words in .28 give rise to the perception that this is the only and the most important precondition in AC109/IAS11 as shown by Vorster et al (2003:237) and Von Well and Wingard (2003:128).*

- However, when an uncertainty arises about the collectability of an amount already included in contract revenue, and already recognised in the income statement,
- the uncollectable amount or the amount in respect of which recovery has ceased to be probable is recognised as an expense rather than as an adjustment of the amount of contract revenue.

According to Vorster et al (2003:239) the above paragraph implies that adjustments as a result of collectability should go against expenses and not as a reversal against income. “If there is any uncertainty as to the recoverability of an amount already recognised as contract revenue in a previous period, the amount deemed as probably irrecoverable is recognised as an expense rather than an adjustment to contract revenue and a corresponding provision is created.

Another prerequisite for reliable estimates is suddenly introduced with *paragraph .29* that states:

An enterprise is *generally able* to make reliable estimates after it has agreed to a contract that establishes each party’s enforceable rights regarding the asset to be constructed the consideration to be exchanged, and the manner and terms of settlement.

*The last part of paragraph .29 is interesting in two ways, namely:*

- (a) the choice of the words “usually necessary” for the enterprise to have an effective internal financial budgeting and reporting system and*
- (b) the sentence does not seem to relate to the latter part of the paragraph.*

The latter part of paragraph .29 refers to review and revising of estimates.

- It is also usually necessary for the enterprise to have an effective internal financial budgeting and reporting system.
- The enterprise reviews and, when necessary, revises the estimates of contract revenue and contract costs as the contract progresses.
- The need for such revisions does not necessarily indicate that the outcome of the contract cannot be estimated reliably.

Vorster et al (2003:240) agrees with the above with a clear description:

- Construction companies must have effective internal financial budgeting and reporting systems.
- They must evaluate and revise where necessary the estimates of contract revenues and costs as the contract proceeds.
- The need for such revisions does not necessarily indicate that the outcome of the contract cannot be estimated reliably.
- A change in the estimate of contract costs or revenue or in the expected outcome of the contract must be accounted for as a change in estimate.
- A change in estimate is used to determine the amount of revenue and costs which will be recognised in current and future income statements.

### 2.3.6. Percentage of completion method - which method?

*Paragraph .30 reads as follows:*

- ❑ The stage of completion of a contract may be determined in a variety of ways.
- ❑ The enterprise uses the method that measures reliably the work performed.
- ❑ Depending on the nature of the contract, the methods may include:
  - the proportion that contract costs incurred for work performed to date bear to the estimated total contract costs
  - surveys of work performed, or
  - completion of a physical proportion of the contract work

Von Well and Wingard (2003:130) add a fourth method and interpret the paragraph as follows: The stage of completion of a contract can be determined in a number of ways, for example:

- The proportion that costs incurred for work performed to date bear to the estimated total costs of the contract would indicate activity based on costs incurred to date over total anticipated costs;
- surveys of work performed;
- completion of a physical proportion of the contract work; or
- any combination of these methods.

The method adopted by a construction company would depend on the nature of the contract and should be the one that most closely approximated the stage of completion.

*Added to paragraph 30* is the following sentence:

- Progress payments and advances received from customers
- often do not reflect the work performed.

Vorster et al (2003:243) explains the above sentence with the following amplification:

- Most construction contracts stipulate that certain payments should be made at specific stages of completion, according to certified progress certificates issued by an architect.
- The following payments occur frequently:

An advance is structured as a loan in the contractual agreement. When an amount is received, it is recorded as a liability. Depending on the contractual agreement, the contractor can be obliged to pay interest on an advance. The contract should also indicate whether the loan should be repaid or off set against a progress certificate as payment. This type of advance is normally negotiated by a contractor when the contract is capital intensive and the contractor does not have sufficient funds.

With regard to a normal advance payment the following guideline is given by Vorster et al (2003:244):

- A contractor can request a client to pay an advance before the related work is completed.
- This usually occurs when a contractor experiences a temporary cash flow problem

It is thus clear that the contractor, in agreement with the external accountant and auditor, can apply any valid method to determine the percentage of completion.

**Paragraph .31** focuses the attention on the costs that can / may determine the percentage of completion. An item might represent costs but does not contribute to completion. Material should not be expended on at yearend to inflate the percentage of completion. The part that is surprising is how AC109/IAS11 differentiates between payment to subcontractors and materials made especially for the contract, on the one hand, and other materials bought on the contract, for the contract, on the other hand.

- When the stage of completion is determined by reference to the contract costs incurred to date,
- only those contract costs that reflect work performed are included in costs incurred to date.

Examples of contract costs that are excluded are:

- (a) contract costs that relate to future activity on the contract, such as costs of materials that have been delivered to a contract site or set aside for use in a contract but not yet installed, used or applied during contract performance, unless the materials have been made specially for the contract, and
- (b) payments made to subcontractors in advance of work performed under the subcontract.

*Paragraph .32* is one of the most misinterpreted paragraphs in AC109/IAS11. The wording at the end of paragraph .25, namely, “The use of this method provides useful information on the extent of contract activity and performance during a period”, is probably best suited for this paragraph. The method referred to in the paragraph is commonly referred to as the cost recovery method. The method is not referred to as such by AC109/IAS11 and the origin of the above name is the AC109/IAS11 equivalent, SOP 81-1 from the USA. The use of the method, however, is more well known.

AC109/IAS11 States in paragraph .32 that when the outcome of a construction contract cannot be estimated reliably then revenue should be recognised only to the extent of contract costs incurred that will probably be recovered, and contract costs should be recognised as an expense in the period in which it is incurred. (AC109.32 / IAS11.22)

*This sounds like the postponement of profit till such time as the contract is completed and that means that the completed contract method. The correct interpretation of this paragraph is that profit must be taken but at a zero profit margin.*

According to Von Well and Wingard (2003:128-129):

- The accounting treatment of a construction contract depends therefore on whether or not the outcome of the contract can be measured reliably.
- Where the outcome cannot be measured reliably then no profit should be recognised.
- However, in order to *correctly reflect the level of activity* (own emphasis) of the construction company, revenue should be recognised to the extent of costs incurred that are recoverable and contract costs should be recognised as expenses in the period when incurred.
- The recognition of such revenue and related costs provides useful information about the extent of contract activity in the period.

The phrase “correctly reflect the level of activity” is emphasized to indicate that Von Well and Wingard agree, that the results must be reflected in the income statement. The results according to the completed-contract method remains on the balance sheet until such time that the final results can be shown in the income statement.

Thus: revenue and costs must be taken to the income statement but no profit is recognised (Thus: a nil percentage profit margin).



*Paragraph .32* supplies the alternative to reliable estimates by stating that when the outcome of a construction contract cannot be estimated reliably:

- revenue should be recognised only to the extent of contract costs incurred that it is probable will be recoverable, and
- contract costs should be recognised as an expense in the period in which they are incurred.
- An expected loss on the construction contract should be recognised as an expense immediately in accordance with paragraph .36.

The above followed by *paragraph .33* stating:

- During the early stages of a contract it is often the case that the outcome of the contract cannot be estimated reliably.
- Nevertheless, it may be probable that the enterprise will recover the contract costs incurred.
- Therefore, contract revenue is recognised only to the extent of costs incurred that are expected to be recoverable.
- As the outcome of the contract cannot be estimated reliably, no profit is recognised.
- However, even though the outcome of the contract cannot be estimated reliably, it may be probable that total contract costs will exceed total contract revenues.
- In such cases, any expected excess of total contract costs over total contract revenue for the contract is recognised as an expense immediately in accordance with paragraph .36.

Von Well and Wingard (2003:133-134) discusses the conservative use of the stage-of-completion method and gives the following explanation:

Some companies which use the stage of completion method have a policy that no profits should be recognised on a contract until it has reached a given stage of completion.

For example, XYZ Construction Company might have a policy that states “profit is only recognised under the stage of completion method in long-term construction contracts which are at least 60% complete.

This conservative use of the stage of completion method is applied as a result of the uncertainty inherent in estimating costs to complete construction contracts, particularly during the early stages of the construction period.

A problem with this practice is that reported income can be distorted because revenue is not recognised proportionally to the work carried out during any accounting period. This is particularly the case where the higher the minimum percentage becomes, the closer this method comes to the completed contract method.

A further problem is where companies are allowed to vary this minimum percentage from year to year and from contract to contract. In this way profit can be increased or decreased at management’s discretion.

AC 109 (IAS 11) gives guidance about the conservative use of the stage of completion method.

The statement requires the use of the stage of completion method unless the outcome of a construction contract cannot be measured reliably. Where reliable measurement is not possible, then revenue should be recognised only to the extent of costs incurred that are recoverable and contract costs should be recognised as an expense in the period when incurred.

*This approach sanctions the use of the completed contract method only until reliable measurement of future revenue and costs are possible.*

From that period on, construction contracts would be recognised using the stage of completion method. This is a logical extension of the principles examined above under conceptual issues.

An advantage of the AC109/IAS11 approach is that an enterprise is not restricted to a particular (and somewhat arbitrary) stage of completion prior to recognising profits.

This makes it more difficult to manipulate profits by continually changing the minimum percentage from year to year or conservatively applying a set minimum percentage to construction contracts. Furthermore, this approach recognises that in certain cases the reliability of future revenue and expenses is so uncertain that profit might well not be recognised until a contract is, say, 80% complete, whereas profit might be recognised on other contracts which are only, say, 10% complete but future revenue and expenses can be reliably measured.

*Paragraph .34* states that:

Contract costs that are not probable of being recovered are recognised as an expense immediately.

Vorster et al (2003:239-240) explains this as:

- Contract costs that will probably not be recovered are recognised immediately as an expense.

Examples of such instances include contracts such as:

- those whose validity is seriously questioned;
- those whose completion is subject to pending litigation or legislation;
- those relating to property that is likely to be condemned or expropriated;
- those where the customer cannot meet his liabilities; or
- those where the contractor cannot complete the contract or meet his obligations under the contract.

*Paragraph .35* states that:

- When the uncertainties that prevented the outcome of the contract being estimated reliably no longer exist,
- revenue and expenses associated with the construction contract should be recognised in accordance with paragraph .22 rather than in accordance with paragraph .32.

The following explanation is applicable: “When the uncertainties which initially prevented the outcome of the contract from being estimated reliably no longer exist, the revenue and expenses associated with the construction contract should be recognised as usual.” (Vorster et al, 2003:238)

### 2.3.7. Recognition of expected losses, changes in estimates and disclosure

AC109/IAS11 states in *paragraph .36*:

- When it is probable that total contract costs will exceed total contract revenue,
- the expected loss should be recognised as an expense immediately.

“When current estimates of the result of a contract indicate a loss, the entire loss should, in accordance with the prudence concept, be recognised as an expense.”  
(Vorster et al, 2003:238)

The rationale behind recognising losses immediately is that the moment you realise, or come to the conclusion, that a loss will be suffered in future; the loss is already incurred in full. For example, if a contractor tenders at a loss in order to defend his company’s infrastructure against idle time, he suffers the loss at the time of signing the tender document. The only way that he can avoid the loss, in future, would be non-completion of the contract, which was not the intention when the tender document was signed. Therefore he will suffer the loss, immediately in full, and not at the rate that the contract is completed.

Everingham and Watson (2004:22:9) and Von Well and Wingard (2003:128-129) provide the following comments on the issue:

- Where it is probable that the total costs will exceed total contract revenues, the anticipated excess costs should be written off immediately. Recognition of the additional expenses will give rise to a corresponding credit on the balance sheet.

- Where the contractor using the percentage of completion method anticipates making a profit on the contract as a whole but is faced with making a loss in the current period, it is the final outcome of the contract which is important in determining the appropriate basis for recognising revenue. and Von Well,
- Where it is probable that total contract costs will exceed total contract revenues then the excess contract costs should be recognised immediately as an expense.

Vorster et al (2003:240) states that:

- If it becomes probable that the project will be running at a loss during the construction period,
- the full amount of the expected loss is recognised immediately in the income statement.
- When a project takes up a major portion of a contractor's capacity for an extended period,
- indirect costs are sometime allocated as losses to the completion of the project.

According to Vorster et al (2003:240):

- The main idea with the provision for losses arises from the basic principles in the theoretical framework for the recognition of an element in the financial statements.
- Actual and expected losses are provided for immediately in accordance with the prudence concept if it is possible that they will arise and they can be estimated.

- Even if the outcome of the contract cannot be estimated reliably, the total contract cost can exceed the total contract revenue. In such a case the excess of the Total cost over the revenue of the contract is recognised immediately as an expense.
- Other losses or contingencies are disclosed in the financial statements in accordance with the requirements of AC 130 (IAS 37).

*Paragraph .37* states that:

- The amount of such a loss is determined irrespective of:
- whether or not work has commenced on the contract
- the stage of completion of contract activity, or
- the amount of profits expected to arise on other contracts that are not treated as a single construction contract in accordance with paragraph .09.

Vorster et al (2003:240) states that: “According to AC109/IAS11, provision must be made for losses without considering the following:

- whether or not work has started or not in accordance with the contract;
- the stage of completion of contract activities;
- the amount of profit expected from other contracts.”

If a provision for loss is required, the amount of such loss is provided for irrespective of:

- whether or not work has commenced on the contract;
- the stage of completion of contract activity; or
- the amount of profits expected to arise on other contracts, and
- In providing for expected losses on construction contracts, the future income tax benefits that will accrue should be taken into account,
- subject to there being a reasonable likelihood of future taxable income to offset those losses against. (Von Well and Wingard, 2003:135)

According to *paragraph .38*:

- The method set out in this statement is applied on a cumulative basis in each accounting period to the current estimates of contract revenue and contract costs.
- Therefore, the effect of a change in the estimate of contract revenue or contract costs, or the effect of a change in the estimate of the outcome of a contract, is accounted for as a change in accounting estimate (see the statement on net profit or loss for the period, fundamental errors and changes in accounting policies).
- The changed estimates are used in the determination of the amount of revenue and expenses recognised in the income statement in the period which the change is made and in subsequent periods.



Vorster et al (2003:240) agrees with the above with a clear description:

- A change in the estimate of contract costs or revenue or in the expected outcome of the contract must be accounted for as a change in estimate.
- A change in estimate is used to determine the amount of revenue and costs which will be recognised in current and future income statements.

**DISCLOSURE** is only discussed as far as it can / might have any bearing on the hypotheses arrived at / posed and are therefore only included in the literature study to the extent that it contributes to the content of this chapter.

Paragraph thirty-nine states that the following should be disclosed:

- the amount of contract revenue recognised as revenue in the period
- the methods used to determine the contract revenue recognised in the period, and
- the methods used to determine the stage of completion of contracts in progress.

On the subject of disclosure, Vorster et al (2003:254-255) recommends that the following be disclosed in the financial statements on accounting policies:

- the method according to which contract revenue is recognised;
- the method which was used in determining the stage of completion of incomplete contracts.

**Taxation** does not have any bearing on the hypotheses and is therefore ignored. “The change of tax legislation is more a tax than an accounting problem.” Vorster et al (2003:251)

## **Conclusion on section 2.3 – AC109/IAS11**

It should be clear from the above that although AC109/IAS11 is important as a whole, certain paragraphs carry more weight and authority than others.

Paragraph .22 states that when the outcome of a construction contract can be estimated reliably, contract revenue and contract costs should be recognised as revenue and expenses respectively by reference to the state of completion of the contract activity.

Paragraph .32 states that when the outcome of a construction contract cannot be estimated reliably, revenue should be recognised only to the extent of contract costs incurred that will probably be recovered, and contract costs should be recognised as an expense in the period in which it is incurred.

The application of AC109/IAS11 is therefore not dependent on whether the outcome can be estimated with reliability, however, the application of the percentage of completion is.

AC109/IAS11 is clear on the requirements of estimating the outcome of a construction contract. The requirements are listed but not defined and described. This might be deliberate or by default. The aim is probably to refer all statements to the framework (conceptual) and that the framework will be able to cover the concepts in the statements. In AC109/IAS11 certain concepts are problematic for non-accountants to interpret, for example;

1. Cost to complete
2. Overheads
3. Measurement
4. Estimate

Important steps contained in AC109 are required when the stage of completion on a construction contract has to be determined. The accountant is then confronted with the following choices and decisions:

- The accounting records will show the cost to date, attributable to the contract. If the accountant wants to utilise the information from the cost records, he must be able to do the following:
  - Ensure that cut-off, rework, abnormal wastages, uninstalled material and prepayments to subcontractors are verified according to prescribed procedures and are recorded correctly.
  - Know the sequence of contract activities so that
  - he will be able to measure such cost reliably, and
  - identify such cost clearly, but
  - without being able to rely on the assistance of others in determining the stage of completion on a construction contract.
  
- Difficulties that the accountant might encounter, are:
  - To determine whether the choice of matching costs to costs is the correct one, from all the unlimited possibilities.
  - Not to be in a position to rely on the work of a professional who determines stage of completion on construction contracts as a livelihood

Determining costs to complete and then comparing actuals to estimates is a complex task. Certain knowledge is only acquired on site, in this case on the construction site. If you do not visit the construction site you will encounter difficulties.

## Contextual background on section 2.4 – USA - statements and guidelines

The objective of consulting the USA Statements of GAAP and gaap was twofold:

- ❑ To be able to compare the documents with the intent to see whether there are major differences in approach to the topic of construction accounting/contract accounting.
- ❑ To determine whether there are definitions, explanations and elaborations on the same key concepts in the South African Statements of GAAP in general and AC109/IAS11 in particular, that could prove to be a problem during the literature study.

The United States of America has an equivalent to the South African Institute of Chartered Accountant (SAICA), named the American Institute of Certified Public Accountants (AICPA). They published documents on accounting in the USA in conjunction with the Federal Accounting Standards Board (FASB). The emergence of an accounting framework is explained by Everingham and Watson (2003:5) in the following brief summary:

- Accounting standard setters struggled to produce acceptable statements of GAAP because of failure to agree on the fundamental principles of accounting.
- In the United States the collapse of the Accounting Practices Board (APB) led to the formation of the Financial Accounting Standards Board (FASB) in 1973. The FASB completed a conceptual framework project in 1985.
- The International Accounting Standards Committee (IASC), now the International Accounting Standards Board (IASB), issued its framework in 1989. The South African framework is called Statement AC000 and follows the international one.
- Although there is an ongoing debate concerning fundamental issues they are currently working on a joint project for a new framework.

## **2.4. The United States of America - statements and guidelines**

### **2.4.1. SOP 81-1: The AICPA'S Statement of Position No. 81-1 Accounting for Performance of Construction-Type and Certain Production-type contracts – October 1981**

*Although the American statements are not applicable in South Africa it contributes to the general understanding of the South African Statement, namely AC109/IAS11. It is quoted per paragraph. The paragraphs are taken as direct as possible but only certain paragraphs are quoted. Some of the paragraphs are shortened to quote the essence only.*

#### **Paragraph 4**

**The definition of the percentage-of-completion and completed- contract methods.**

Accounting Research Bulletin no. 45 (ARB 45), Long- term Construction-Type Contracts, issued by the AICPA Committee on Accounting Procedures in 1955, describes the two generally accepted methods of accounting for long-term construction-type contracts for financial reporting purposes:

- The percentage-of-completion method recognizes income as work on a contract progresses; recognition of revenues and profits generally is related to costs incurred in providing the services required under the contract.
- The completed-contract method recognizes income only when the contract is completed, or substantially so, and all costs and revenues are reported as deferred items in the balance sheet until that time.

The use of either of the two generally accepted methods of accounting involves, to a greater or lesser extent, three key areas of estimates and uncertainties:

- the extent of progress towards completion,
- contract revenues, and
- contract costs.

Although the ultimate amount of contract revenue is often subject to numerous uncertainties, the accounting literature has given little attention to the difficulties of estimating contract revenue.

## **Paragraph 5**

### **The choice between the two methods.**

ARB 45, paragraph 15, describes the circumstances in which each method is preferable as follows:

- The committee believes that in general when estimates of costs to complete and extent of progress toward completion of long-term contracts are reasonably dependable, the percentage-of-completion method is preferable. When lack of dependable estimates or inherent hazards cause forecasts to be doubtful, the completed-contract method is preferable.
- The two methods should be used in specified circumstances and should not be used as accepted alternatives for the same circumstances.
- This statement provides guidance on the application of ARB 45 and does not amend that bulletin.

## **Paragraph 24**

### **The ability of entities to estimate costs and revenue**

For entities engaged on a continuing basis in the production and delivery of goods or services under contractual arrangements and for whom contracting represents a significant part of their operations:

- the presumption is that they have the ability to make estimates that are sufficiently dependable to justify the use of the percentage-of-completion method of accounting.
- Persuasive evidence to the contrary is necessary to overcome that presumption.
- The ability to produce reasonably dependable estimates is an essential element of the contracting business.

## **Paragraph 33**

### **The third method of accounting: the cost-recovery method**

However for circumstances in which there is an assurance that no loss will be incurred on a contract:

- the percentage-of-completion method based on a zero profit margin, rather than the completed-contract method, is recommended until precise estimates can be made.
- The significant difference between the percentage-of-completion method applied on the basis of a zero profit margin and the completed-contract method relates to the effects on the income statement.
- Under the zero profit margin approach to applying the percentage-of-completion method, equal amounts of revenue and cost, measured on the basis of performance during the period, are presented in the income statement:

- whereas, under the completed-contract method, performance for a period is not reflected in the income statement, and no amount is presented in the income statement until the contract is completed.
- The zero profit margin approach to applying the percentage-of-completion method gives users of general purpose financial statements an indication of the volume of a company's business and of the application of its economic resources.

#### **Paragraph 44**

##### **Methods of measuring extent of progress toward completion**

In practice, a number of methods are used to measure the extent of progress toward completion. They include:

- the cost-to-cost method,
- variations of the cost-to-cost method,
- efforts-expended methods,
- the units-of-delivery method, and the
- units-of-work-performed method.

#### **Paragraph 45**

##### **Measurement**

Some methods used in practice measures progress toward completion in terms of:

- costs,
- some in terms of units of work,
- and some in terms of values added.

All three of these measures of progress are acceptable in appropriate circumstances. (However, the method or methods selected should be applied consistently to all contracts having similar characteristics.)



## **Paragraph 46**

### **Input and output measures**

The several approaches to measuring progress on a contract can be grouped into:

- input and
- output measures.

## **Paragraph 47**

### **Drawbacks of input and output measures**

Both input and output measures have drawbacks in some circumstances.

- Input is used to measure progress toward completion indirectly, based on an established or assumed relationship between a unit of input and productivity.
- A significant drawback of input measures is that the relationship of the measures to productivity may not hold, because of inefficiencies or other factors.
- Output is used to measure results directly and is generally the best measure of progress toward completion in circumstances in which a reliable measure of output can be established.
- However, output measures often cannot be established, and input measures must then be used.
- The use of either type of measure requires the exercise of judgment and the careful tailoring of the measure to circumstances.

## Paragraph 78

### Estimated cost to complete

The estimate to complete, the other component of total estimated contract cost, is a significant variable in the process of determining income earned and is thus a significant factor in accounting for contracts. The latest estimate may be determined in a variety of ways and may be the same as the original estimate. Practices in estimating total contract cost vary, and guidance is needed in this area because of the impact of those practices on accounting. The following practices should be followed:

- Systematic and consistent procedures that are correlated with the cost accounting system should be used to provide a basis for periodically comparing actual and estimated costs.
- In estimating total contract costs, the quantities and prices of all significant elements of cost should be identified.
- The estimating procedure should provide that estimated cost to complete includes the same elements of cost that are included in the actual accumulated costs: also, those elements should reflect expected price increases.
- The effect of future wage and price escalations should be taken into account in cost estimates, especially when the contract performance will be carried out over a significant period of time. Escalation provisions should not be blanket overall provisions but should cover labor, materials, and indirect costs based on percentages or amounts that take into consideration experience and other pertinent data.
- Estimates of cost to complete should be reviewed periodically and revised as appropriate to reflect new information.

## **Summary on SOP 81-1**

*As seen from the more important paragraphs in the above text, SOP 81-1 is:*

- *more comprehensive than AC 109 and, therefore, IAS 11.*
- *explains what is meant by a certain principle and concept.*
- *explains what is not meant by a certain principle and concept.*
- *satisfy readers from the accounting and built environments.*
- *a more “complete” document than AC109/IAS11.*

### **2.4.2. ARB 45: Long-term construction-type contracts**

ARB 45 Status

Issued: October 1955

Effective date: October 1955

Generally accepted methods. Two accounting methods commonly followed by contractors are:

- the percentage-of- completion method and
- the completed-contract method.

Percentage-of-Completion Method (This method only is discussed)

- The percentage-of-completion method recognises income as work on a contract progresses.
- The committee recommends that the recognised income be that percentage of estimated total income, either:
  - that incurred costs to date bear to estimated total costs after giving effect to estimates of costs to complete based upon most recent information, or
  - that may be indicated by such other measure of progress toward completion as may be appropriate having due regard to work performed.

Costs as here used might exclude, especially during the early stages of a contract: all or a portion of the cost of such items as materials and subcontracts if it appears that such an exclusion would result in a more meaningful periodic allocation of income.

Under this method:

- current assets may include costs and recognised income not yet billed, with respect to certain contracts; and liabilities, in most cases
- current liabilities, may include billings in excess of costs and recognised income with respect to other contracts.

When the current estimate of total contract costs indicates a loss:

- in most circumstances provision should be made for the loss on the entire contract.
- If there is a close relationship between profitable and unprofitable contracts, such as in the case of contracts which are parts of the same project, the group may be treated as a unit in determining the necessity for a provision for loss.

The principal advantages of the percentage-of-completion method are:

- periodic recognition of income currently rather than irregularly as contracts are completed, and
- the reflection of the status of the uncompleted contracts provided through the current estimates of costs to complete or of progress toward completion.

The principal disadvantage of the percentage-of-completion method is:

- that it is necessarily dependent upon estimates of ultimate costs and
- consequently of currently accruing income, which are subject to the uncertainties frequently inherent in long-term contracts.

#### Selection of Method:

- The committee believes that in general when estimates of costs to complete and extent of progress toward completion of long-term contracts are reasonably dependable, the percentage-of-completion method is preferable.
- When lack of dependable estimates or inherent hazards cause forecasts to be doubtful, the completed-contract method is preferable.
- Disclosure of the method followed should be made.

#### **2.4.3. Statement of Financial Accounting Standards NO. 56**

Statement of Position (SOP) 81-1 on contractor accounting (an amendment of FASB Statement No. 32). AICPA Audit and Accounting Guide for Construction Contractors and Statements of Positions 81-1, Accounting for Performance of Construction-Type and Certain Production-Type Contracts

#### Introduction and background information:

- The primary concern is that application of SOP 81-1 and the Guide will restrict the use of the completed-contract method to circumstances more limited than from application of ARB No. 45, Long-Term Construction-Type Contracts.
- The percentage-of completion and completed-contract methods are not intended to be free choice alternatives for the same circumstances under either ARB 45 or SOP 81-1.
- ARB 45 states that “when estimates of costs to complete an extent of progress toward completion of long-term contracts are reasonably dependable, the percentage-of-completion method is preferable” and
- “when lack of dependable estimates or inherent hazards cause forecasts to be doubtful, the completed-contract method is preferable.”

- SOP 81-1 states that the two methods “should not be acceptable alternatives for the same criteria” and specifies criteria for choice of method similar to those in ARB 45.
- In applying either ARB 45 or SOP 81-1, a contractor should evaluate the facts and circumstances pertaining to contract work performed and decide which of the two methods is appropriate.

Standards of financial accounting and reporting:

- Messrs. March and Walters dissent from this Statement principally because they believe SOP 81-1 substantively changes the application of the criteria established in paragraph 15 of ARB 45 for selecting the preferable accounting method.
- SOP 81-1 states that it “does not amend” ARB 45. Nonetheless, the tone and thrust of the SOP suggest that the completed-contract method is seldom acceptable, by establishing a presumption (paragraph 24) and taking positions that effectively limit the completed-contract method to cases where the choice of method makes no difference or where “unusual inherent hazards” raise serious questions about the outcome of the contract or the ability of the contractor or customer to perform.
- They believe the expression of preferability for the percentage-of-completion method with a zero estimate of profit in the circumstances described in paragraph 7 of this Statement is (1) a direct contradiction of paragraph 15 of ARB 45, and (2) entitles the user to assume that the contractor estimates a break-even, which is not a fact.
- The Board has not considered a need to amend ARB 45. The Board has a process for considering and interpreting or changing existing principles. This is not it.

#### **2.4.4. The literature from the United States of America**

Palmer et al (1995:25) summarizes the construction accounting situation in the USA with: “When to report profit on a contract is a problem somewhat unique to construction contractors as well as to other contractors who perform work over a long period of time. Over the years, four accounting methods evolved to deal with the timing of profit recognition:

- Cash Method,
- Accrual Method,
- Percentage-of-completion Method, and
- Completed-Contract Method.

For the topic under consideration only the Percentage-of-completion Method is relevant.

##### **2.4.4.1. Determining percentage of completion**

According to Palmer et al (1995:271-274): “The AICPA’s *Accounting Research Bulletin 45* recommends that income to be recognized in a contractor’s accounts to be either:

- That percentage of estimated total income that costs bear to estimated total costs, after giving effect to estimates of costs to complete based upon most recent information, or
- That percentage of estimated total income that may be indicated by such other measure of progress toward completion as may be appropriate giving due regard to work performed.

### ***The cost-to-cost method***

Palmer et al (1995:271-272) states:

- The cost-to-cost method is the most prevalent method of arriving at a percentage of completion for the purpose of recognizing profit and losses on contracts in progress.
- It is fair to state that it is generally used by most contractors since amounts are easy to verify from the contractor's normal accounting records, and
- The estimated total costs may not provide the necessary detail for other methods.
- In applying the cost-to-cost method, accountants recognize that, since work performed is a primary basis for income allocation, certain costs may, or should, be disregarded as a measure of performance in the early stages of a contract for the purpose of determining income allocation. In SOP 81-1, the AICPA further expands discussion of cost which should be excluded from the formula.
- Some of the costs incurred particularly in applying this method because they do not relate to contract performance.
- These include the costs of items such as uninstalled materials not specifically produced or fabricated for the project or of subcontracts that have not been performed.



- Also the cost of equipment purchased for use in a contract should be allocated over the period of its expected use unless title to the equipment is transferred to the customer by terms of the contract.
- Whether or not to include costs which have been incurred but have not directly benefited the project is a source of major differences between contractors and accountants.
- This is particularly true where the contractor's work is in remote areas of the world and the mobilization effort with regard to the job is almost of equal importance to performance of the work at the site.
- If material costs which have been incurred through purchase and delivery to the job are not included in the formula for the cost-to-cost method then the contractor will receive no profits to date for the major purchasing and expediting effort involved in getting the materials to the project site.
- In any event, costs to date must be carefully studied to determine whether they should be included in the cost formula for determining percentage of completion under the cost-to-cost method.

### ***Efforts-expended method***

Palmer et al (1995:273) discusses the method as:

- Many contractors use some form of labor base for determining percentage of completion.

- These contractors believe their profits are earned from their efforts expended rather than from the intrinsic value of materials, subcontracts, and other costs incurred on the project.
- This is particularly true in the case of some general contractors whose profit margins result more from their ability to manage subcontractors than from the value of the subcontracts themselves.
- The formula most commonly used is direct labor hours of effort to date versus forecast total labor hours. In this context the term “direct labor” may include the time of home office employees whose efforts can be directly identified with the job.
- One advantage that this method has over the “cost-to-cost” method is that it does attach profit to the mobilization effort, since, for example, hours of effort expended by the personnel department to purchase the material and hours of effort expended by the personnel department and management to employ the labor are included in the numerator and denominator of the efforts expended formula.

### ***Physical observation method***

Palmer et al (1995:273) concludes his discussion on methods with:

- *Perhaps the best method of computing percentage of completion is the physical observation method.*

- For example, if the job is an excavation contract, then cubic yards of excavation to date versus forecast cubic yards of excavation would be a good measure of progress.
- Another example would be a highway job where square yards of concrete or asphalt laid versus projected total square yards would be the formula.
- However, on a complex job such as a nuclear electric power plant or a job where there are significant amounts of engineering and where components of the project are hard to measure, the physical observation method is hard to employ.
- It is important for the company accountant and the certified public accountant to independently verify the percentage of completion periodically.
- *The physical observation method should be employed periodically as a check on the cost-to-cost method or labor-based method of determining physical percentage of completion.*
- This is similar to what a typical accountant does in a regular manufacturing operation, where at month end he will use perpetual inventory records to record inventory for financial statement purposes.
- However, even where accounting records are used for statement purposes, a physical inventory is taken generally on an annual basis and adjustments are made where necessary

to bring the perpetual inventory records into line with what is actually on hand.

Epstein and Mirza (2005:183-184&188) noted the following on construction accounting in general:

- Percentage-of-completion accounting cannot be employed if the quality of information will not support a reasonable level of accuracy in the financial reporting process.
- The thinking worldwide on this issue is equivocal and rather confusing. Many countries still recognize both the foregoing methods as being in accordance with generally accepted accounting principles (GAAP), although they may not be viewed as equally acceptable under given circumstances.
- The Accounting Standards Division of the AICPA believes that these two methods should not be used as acceptable alternatives for the same set of circumstances.

#### **2.4.4.2. Computing earned revenue**

According to Palmer et al (1995:274) “Once a method for determining the percentage of completion has been chosen, the next step in determining earned revenue is the application of the percentage. The AICPA’s SOP 81-1 presents two alternative approaches to the mechanics of computing earned revenue:

##### ***Under Alternative A:***

- ❑ *Earned Revenue* to date should be computed by multiplying total estimated contract revenue by the percentage of completion (as

determined by one of the acceptable methods of measuring the extent of progress toward completion). The excess of the amount over the earned revenue reported in prior periods is the earned revenue that should be recognized in the income statement for the current period.

- ❑ *Cost of Earned Revenue* for the period should be computed in a similar manner. Cost of earned revenue to date should be computed by multiplying total estimated contract cost by the percentage of completion on the contract. The excess of that amount over the cost of earned revenue reported in prior periods is the cost of earned revenue that should be recognized in the income statement for the current period. The difference between total cost incurred to date and cost of earned revenue to date should be required on the balance sheet.
  
- ❑ *Gross Profit* on a contract for a period is the excess of earned revenue over the cost of earned revenue.

***Under Alternative B:***

- ❑ *Earned Revenue* is the amount of gross profit earned on a contract for a period plus the costs incurred on the contract during the period.
  
- ❑ *Cost of Earned Revenue* is the cost incurred during the period, excluding the cost of materials not unique to a contract that have not been used for the contract and costs incurred for subcontracted work that is still to be performed.
  
- ❑ *Gross Profit* earned on a contract should be computed by multiplying the total estimated gross profit on the contract by the percentage of completion (as determined by one of the acceptable methods of measuring extent of progress towards completion). The excess of

that amount over the amount of gross profit reported in prior periods is the earned gross profit that should be recognized in the income statement for the current period.

The presence of two alternatives has caused considerable confusion among contractors because few have seen or heard of Alternative A. The authors believe that Alternative B is more appropriate for construction contractors.

### ***Contract Losses***

According to Palmer et al (1995:280-281) conservatism is a basic byword of accounting practice and means that:

- most accountants will “provide for all losses and anticipate no gains”.
- the principle of conservatism will be especially important in the construction industry.

It is also generally an accepted accounting principle that when a loss is forecast:

- the full loss must be reflected in the income statement in the period in which it is first learned that the job will result in a loss
- the loss is not prorated over the life of the job but is reflected in the earliest period even though the percentage-of-completion method or the completed-contract method of accounting is employed,
- the general purpose is to take into account only direct contract costs and exclude general and administrative overhead from calculation, unless the contractor has only one or two jobs in progress, these costs should then be considered together with the estimated direct contract costs

## ***Other Considerations***

Palmer et al (1995:281) pointed out that where the percentage-of-completion method of accounting is being employed, the task of determining contract price can sometimes be difficult. This is especially true in contracts covering some of the larger, more sophisticated projects as indicated below:

- When a job is completed ahead of schedule, there may be an amount added to the contract price based on the number of days of early completion.
- Where the project involves a producing asset, such as an electric generator, the increase may be based on the increased production.
- When the job is completed late, there may be a comparable reduction in price based on time or production.
- Where an estimated (or target) price is set, the contract price may be adjusted upward or downward, depending on whether the final cost is below or above the target price.

Other factors to consider are provisions for:

- escalation, change orders, extras, and
- price redeterminations.

“The adequacy of the contractor’s forecasting plays an important part. Many accountants will argue that the rule of conservatism should apply in that the contract price should be adjusted down when penalties are forecasted but that rewards should be reflected only when such rewards have been received.”  
(Palmer et al, 1995:281)

## ***Progress Billing***

Construction contracts permit the contractor to bill the owner for:

- work performed up to a given date,
- percentage of completion ,or
- stage of physical completion.

According to Palmer et al (1995:281-282) progress billings have been referred to previously as “billed” revenue as opposed to “earned” revenue for the following reasons:

- the unbalanced bid or payment schedule procedure that a contractor will usually attempt to get into his contract to provide financing at early stages of the job.
- a progress billing is merely an advance against the amount that will be earned when and if the contract is completed.
- complete non-recognition of the profit element in progress payments can result in the equally anomalous position of showing as a current liability, a credit balance which is in fact virtually all profit.
- accountants believe that all reimbursable costs other than the contractor’s own costs should be excluded from the books of accounts, other accountants believe that all reimbursable costs billed should be reflected in revenue and job cost.
- where the contractor is responsible for specification, type, characteristic or management or where the contractor’s fee is based on the reimbursable cost item, those reimbursable costs should be included in the contractor’s revenue and cost.



- accountants believe that unless the contractor actually expends cash for materials or subcontractors performing work under his supervision, they should not be included in revenue and cost, where other accountants take the view that it doesn't matter whether the owner gives the money to the contractor who then buys the material.
- The basic contract or intent of the parties should be the governing rule.”

### ***Retained Percentages***

Palmer et al (1995:283) indicated that in the construction industry, it is common:

- for the owner to withhold a percentage as contract retentions until the contract is complete
- that most accountants support the view that progress billings should include retention and should be so recorded in the accounts, and
- if the accounts are kept on a completed-contract basis, the accounting treatment of the retained percentage is not a problem.

### **Conclusion on section 2.4 – USA - statements and guidelines**

References made to AC109/IAS11's equivalent/alternative Statements of GAAP adhered to in the USA are contained in this section. The statements comprise the well known SOP 81-1, ARB 45 and FAS no. 56.

The most important difference between the above and AC109/IAS11 is the length of the documents. SOP 81-1, for instance, contains accounting related data and descriptions as well as comprehensive built environment information.

Certain concepts not touched on by AC109/IAS11 but contained in the USA documents are:

- The ability of entities to estimate costs and revenue

This aspect in particular evaluates the ability of contractors to estimate contract cost and attempts to put it in perspective for accountants. Whether the assumptions are valid is not yet clear.

- Methods used in practice to measure progress toward completion in terms of costs, units of work and values added.

Some of these concepts are not part of local contractors accounting methods.

- The estimate of cost to complete, the other component of total estimated contract cost, is a significant factor in accounting for contracts.

This important aspect is named in AC109/IAS11 but not discussed or explained. It would serve every contractor and accountant to take note of this discussion.

With reference to the introduction of this section on page 61, the expectation was twofold, namely:

- determining the USA approach and
- clarification on similar content encountered in AC109/IAS11.

A third issue that came to light was the discussion of built environment related issues, directly and indirectly, that are contained in the USA statements.

## Contextual background on section 2.5 - Accountants and definitions

*(Note: This section is repeated in 2.6 as the objectives are similar.)*

AC109/IAS11 paragraph .23 refers to a fixed price contract and states that:

□ The outcome can be estimated reliably when all of the following four conditions are satisfied:

1. Total contract revenue can be measured reliably.
2. It is probable that the economic benefits associated with the contract will flow to the enterprise.

These two conditions are similarly interpreted by accountants and built environment professionals. The following two conditions, however, seem to create ambiguity:

3. Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be measured reliably
4. The contract costs attributable to the contract can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates

The key concepts of measurement, estimates, cost to complete, reliability, cost attributable and identify clearly are all contained in the above paragraph. The following section is intended to clarify its actual meaning and definition. *The origin of the documentation is derived from accountancy.*

## **2.5. Accountants and definitions**

### **2.5.1. Measurement**

#### **Introduction**

#### **Definition of measurement by a researcher**

According to Klopper (2003:12):

“Measurement is limiting the data of any phenomenon – substantial or insubstantial – so that those data may be interpreted and, ultimately, compared to an acceptable qualitative or quantitative standard.”

#### **Measurement as defined by a dictionary**

According to Fowler and Fowler (1974:754) the word measure as a noun refers to:

“size, quantity or found by measuring”

“degree or extent or amount,” or

“a system of measuring.”

Measure as a verb refers to

“ascertain extent or quantity of (thing)”,

“by comparison with fixed unit” or

“with object of known size. “ (Fowler and Fowler, 1974:754)

These definitions make it clear that different meanings are attached to the concept of “measurement”.

## **Definition of measurement by an accountant**

“The measurement basis most commonly adopted by enterprises in preparing their financial statements is historical cost. This is usually combined with other measurement bases.” (Cilliers et al, 2000:419)

## **Defining the recognition criteria in AC109/IAS11 and AC000**

AC109.01 contains no definition of “reliable measurement” but states: “This statement uses the recognition criteria established in the framework for the preparation and presentation of financial statements to determine when revenue and contract costs should be recognised as revenue and expenses in the income statement. It also provides practical guidance on the application of these criteria.”

AC000/Framework states the following on the reliability of measurement:

“The second criterion for the recognition of an item is that it possesses a cost or value that can be measured with reliability as discussed in paragraphs .31 to .38 of this framework. In many cases, cost or value must be estimated; the use of reasonable estimates is an essential part of the preparation of financial statements and does not undermine their reliability. When, however, a reasonable estimate cannot be made, the item is not recognized in the balance sheet or income statement. For example, the expected proceeds from a lawsuit may meet the definitions of both an asset and income as well as the probability criterion for recognition; however, if it is not possible for the claim to be measured reliably, it should not be recognized as an asset or as income; the existence of the claim, however, would be disclosed in the notes, explanatory material or supplementary schedules.” (AC000:86)

“An item that, at a particular point in time, fails to meet the recognition criteria in paragraph .83, may qualify for recognition at a later date as a result of subsequent circumstances or events.” (AC000:87)

“An item that possesses the essential characteristics of an element but fails to meet the criteria for recognition may nonetheless warrant disclosure in the notes, explanatory material or in supplementary schedules. This is appropriate when knowledge of the item is considered to be relevant to the evaluation of the financial position, performance and changes in financial position of an enterprise by the users of financial statements.” (AC000:88)

AC000/Framework has the following to add on measurement in accounting:

“Measurement is the process of determining the monetary amounts at which the elements of the financial statements are to be recognized and carried in the balance sheet and income statement. This involves the selection of the particular basis of measurement.” (AC000:99)

“A number of different measurement bases are employed to different degrees and in varying combinations in the financial statements. They include historical cost, current cost, realisable (settlement) value and present value.” (AC000:100)

“The measurement basis most commonly adopted by enterprises in preparing their financial statements is historical costs.” (AC000:101)

## 2.5.2. Estimates

Epstein and Mirza (2005:187) stated that: “Although IAS11 does not specifically provide instructions for estimating costs to complete, practical guidance can be gleaned from other international accounting standards, as follows:

The **first rule** is that:

1. Systematic and consistent procedures should be used:
2. The procedures should be correlated with the cost accounting system and
3. Should be able to provide a comparison between actual and estimated costs.
4. The determination of estimated total contract costs should identify the significant cost elements.

The **second rule** is that:

1. The estimation of the cost to complete should include the same elements of costs.
2. The estimated costs should reflect any expected price increases.
3. The expected price increases should reflect specific provisions for each type of cost.
4. Increases in cost elements should be taken into consideration separately.

## **Finally:**

1. Estimates of cost to complete should be reviewed periodically to reflect new information.
2. Estimates of costs should be examined for price fluctuation and reviewed for possible future problems.”

There are two ingredients to measuring costs, namely: quantity and price. Price features prominent in the above text.

## **An accountants view on estimates**

On the nature of accounting estimates ISA540 states:

- In complex estimates, there may be a high degree of special knowledge and judgment required. (ISA 540.05)
- Accounting estimates may be determined as part of the routine information system relevant to financial reporting operating on a continuing basis, or may be non-routine, operating only at period end. (ISA 540.06)
- The auditor may make or obtain an independent estimate and compare it with the accounting estimate prepared by management. When using an independent estimate the auditor would ordinarily evaluate the data, consider the assumptions and perform audit procedures on the calculation procedures used in its development. It may also be appropriate to compare accounting estimates made for prior periods with actual results of those periods.”(ISA 540.22)



## Cost to Complete

Miramontes and Rice (2005:6-4) states:

“The objective of a contractor’s cost estimate is to determine total contract cost at completion. However, it is impossible to determine total contract cost at completion without first determining contract cost to complete.

Once contract cost to complete are estimated, it is a simple matter to add costs incurred (or committed) to date to determine the estimate of total contract cost at completion.

Therefore, the primary focus of the estimate process must be on contract cost to complete.

Contractors who say they do not estimate cost to complete, only cost at completion, probably do little more than use their original estimates of total contract costs.

A reestimate of cost to complete serves to prove or disprove the accuracy of contract status and profits. However, to serve its purpose, the reestimate must be independent of the original estimate that is intended to prove or disprove. A reestimate based in part on the original estimate has less integrity than an independent reestimate.”

Epstein and Mirza (2005:187) had this to add on estimated cost to complete: “These are the anticipated costs required to complete a project at a scheduled time. They would be comprised of the same elements as the original total estimated contract costs and would be based on prices expected to be in effect when the costs are incurred. The latest estimates should be used to determine the progress towards completion.”

### 2.5.3. Reliability

Faul et al (1997:26-28) commented on reliability as follows: “Reliability does not necessarily imply certainty of precision. For example, estimates may be reliable. Reliability has different degrees, and what constitutes an acceptable degree of reliability will depend on the circumstances. The ingredients of reliability are faithful representation, neutrality and practical considerations such as balance between relevance and reliability, timeliness, completeness, substance over form and prudence.”

Finally AC000/Framework has the following to add on reliability:

“To be useful, information must also be reliable. Information has the quality of reliability when it is free from material error and bias and can be depended upon by users to represent faithfully that which it either purports to represent or could reasonably be expected to represent. (AC000:31)

Information may be relevant but so unreliable in nature or representation that its recognition may be potentially misleading.” (AC000:32).

AC000/Framework supplies further detail in stating that reliability is enhanced by:

#### **Faithful representation**

“To be reliable, information must represent faithfully the transactions and other events it either purports to represent or could reasonably be expected to represent.” (AC000:33)

“Most financial information is subject to some risk of being less than a faithful representation of that which it purports to be.” (AC000:34)

## **Substance over form**

“If information is to represent faithfully the transactions and other events that it purports to represent, it is necessary that they are accounted for and presented in accordance with their substance and economic reality and not merely their legal form.” (AC000:35)

### **☐ Neutrality**

“To be reliable, the information contained in financial statements must be neutral, that is, free from bias.” (AC000:36)

## **Prudence**

“The preparers of financial statements do, however, have to contend with the uncertainties that inevitably surround many events and circumstances, such as the collectability of doubtful receivables, the probable useful life of plant and equipment and the number of warranty claims that may occur.” (AC000:37)

### **☐ Completeness**

“To be reliable, the information in financial statements must be complete within the bounds of materiality and cost.” (AC000:38)

#### 2.5.4. Other comments and considerations

According to Cairns (1999:588) there are five preconditions to the application of IAS11. “In order to apply the requirements of IAS11, the enterprise must determine:

The total amount of contract revenue;

2. The total amount of contract costs;

3. The outcome of the contract; and

4. The stage of completion of the contract activity at each balance sheet date.

Only if the enterprise is able to determine these four things is it able to apply the percentage of completion method.

“Furthermore, the enterprise must also have an effective internal financial budgeting and reporting system (IAS11:29).

Without such a system, it is difficult to obtain reliable information to make the calculations and, as a result, to obtain the necessary assurance about the outcome of the contract.”

(Now there is no reference to “cost to complete”.)

## **The Architects Certificate – An accountant’s view**

According to Puttick and van Esch (2004:619) depending on the type of building contract, the percentage of completion reflected on this document may be based on reports of bills of measured quantities prepared by the appointed quantity surveyor, or based on a cost plus basis monitored by the architect, or on the estimated stage of completion determined by the architect according to the progress on the construction plan.

This document is used to authorize payments, interim and final, by the property owner or developer to the main building contractor.

Puttick and van Esch (2002:774) have the following to add on forecasting in accounting (in general):

“As forecasts are dependent on subjective judgments Disciplinary Rule 2.1.11 of the Public Accountants’ and Auditors’ Board prohibits registered accountants and auditors from allowing their names to be used in connection with estimates of earnings contingent upon future transactions in a manner which may lead to belief that they vouch for the accuracy of such estimates.

“A reporting accountant can, however, reasonably accept responsibility for examining the accounting bases and calculations. The reporting accountant may also express an opinion that the assumptions provide a reasonable basis for the preparation of the profit forecast, and that the forecast have been properly compiled from the underlying assumptions an information, and is presented on a basis consistent with the accounting policies normally adopted.”

## **Conclusion on section 2.5 - Accountants and definitions**

Concepts in this section were researched in the accounting literature available. The aim was to determine how accountants view the following topics by making use of references to Statements of GAAP and authors referred to in the section:

### **☐ Measurement**

AC000/Framework states that it is a process of determining the monetary amounts at which the elements of the financial statements are to be recognized. This process involves selecting a particular basis of measurement. The measurement basis most commonly adopted is historical costs.

### **☐ Cost to complete**

Epstein and Mirza (2005:187) state that IAS11/(AC109) does not provide instructions for estimating costs to complete but guidance can be obtained from other accounting standards. Miramontes and Rice (2005:6-4) state that the primary focus of the estimate process should be on contract cost to complete.

### **☐ Estimates**

SAAS540.05/ISA540.05 acknowledges that there may be a high degree of specialised knowledge and judgment required in complex estimates.

### **☐ Reliability**

Faul et al (1997:26-28) state that reliability does not necessarily imply certainty of precision. It has different degrees that will depend on the circumstances.

## **Contextual background on section 2.6 - Built environment professionals and definitions**

*(Note: This section is repeated in 2.5 as the objectives are similar.)*

AC109/IAS11 paragraph .23 refers to a fixed price contract and states that:

- The outcome can be estimated reliably when all of the following four conditions are satisfied:
  1. Total contract revenue can be measured reliably.
  2. It is probable that the economic benefits associated with the contract will flow to the enterprise.

These two conditions are similarly interpreted by accountants and built environment professionals. The following two conditions, however, seem to create ambiguity:

3. Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be measured reliably
4. The contract costs attributable to the contract can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates

The key concepts of measurement, estimates, cost to complete, reliability, cost attributable and identify clearly are all contained in the above paragraph. The following section is intended to supply clarity on its actual meaning and definition.

*The origin of the documentation is derived from the built environment.*

## 2.6. Built environment professionals and definitions

### 2.6.1. Measurement

#### Measurement: Divisions of bill preparation

According to Willis and Trench (1998:3) the traditional preparation of a bill of quantities divides itself into two distinct stages:

- (1) “The measurement of the dimensions and the compilation of the descriptions from the drawings and specification. This process is commonly known as *taking-off*.”
- (2) “The preparation of the bill.” (*Abstracting and billing*). “This involves the calculation of volumes, areas, etc. (*squaring the dimensions*). Traditionally, this was followed by entering the descriptions and the squared dimensions on an abstract to collect similar items together and present them in a reorganized bill order. From this abstract the draft bill was written. This process was commonly known as *working-up*.”
- (3) “More recently,” (*cut and shuffle and*) “through the utilization of computerized systems, the various stages have become more integrated.”

Ashworth and Hogg (2002:177-178) listed the forms of measurement contracts:

- Drawing and specifications
- Performance specification
- Schedule of rates
- Bill of quantities and bill of approximate quantities



According to Ashworth and Hogg (2002:206) the quantification of construction works is best done using:

- an agreed set of rules or
- method of measurement

It is then clear to all users how the work has been measured and what has not been measured.

Ashworth and Hogg (2002:206) state that historically quantities were prepared and remeasured by using individual's own ideas and preferences.

This often caused:

- ambiguity
- confusion
- doubt and
- disagreement

on the part of:

- the contractor's staff
- the estimators and
- surveyors

Some surveyors measure work in detail, whereas others would adopt a practice of measuring only cost significant items.

According to Ashworth and Hogg (2002:206) the main aim of the different methods of measurement is to provide clear rules that can be used for measuring construction work. The rules apply equally to work that is proposed (cost to complete) or executed (cost to date). Words and phrases in contract bills have developed implied meanings, trade customs and practices.

## 2.6.2. Estimates

Elhag et al (2005) discussed the critical determinants of construction tendering costs from a quantity surveyors' standpoint with:

“Cost estimation is an experience-based process. Construction practitioners are aware of uncertainty, incompleteness and unknown circumstances of factors affecting construction costs. “

“A wide range of cost forecasting techniques has been exploited in the construction industry. A major limitation of most of these models is that they only take account of significant factors that can be readily quantified.”

“However, most of the significant factors affecting project costs are qualitative such as:

- Client priority on construction time
- Contractor's planning capability
- Procurement methods
- Market conditions including level of construction activity.”

Elhag et al (2005) stated that due to the qualitative nature of these factors, they are difficult to structure and quantify and despite their importance, most of these factors are often ignored by current forecasting techniques.

Perrot (2004) indicated that the cost estimator's dilemma in preparing a bid is best summed up as: “An estimator's job can be unforgiving, like walking a tightrope without a safety net. One slip and it is all over. And who knows this more than the Contractor, whose margin for error in a lump-sum contract (the focus of this Paper) is often slim and in some cases, non-existent. Many have faced financial ruin because of flawed estimates. “If only they had seen it coming

they would have raised the bid”; a sad but all too common refrain. It is a dilemma the estimator knows only too well.”

Perrot (2004) added that:

- the bottom line for the estimator is to come up with a figure
- although it is quite obvious from the unpredictable nature of project costs that no one figure can do it
- *the key may be in how we define an estimate.* (own emphasis)

### **Computerized estimating**

Richards’ (2004) cautions of computerized estimating were in line with Rapiers’ (2004) advice on the basics in: “The old adage “garbage-in, garbage-out” is especially applicable in the field of computerized estimating. While computers have vastly improved estimating, they have also reinforced the importance of estimating steps that have existed prior to the advent of such technology. There seems to be a recent trend among those trained in the computer era to neglect traditional estimating practices. Without taking into consideration these practices, computers become instruments for more quickly producing inaccurate and unreliable estimates rather than enhancing the estimating profession.

According to Richards’ (2004) among the many important steps of estimating, the following take on particular importance with respect to computerized estimating:

- “Performance of physical site visits;
- Understanding the estimate database;
- Consideration for the unique project aspect; and
- Review of estimates by peers.”

Geddes (1996:10) states that the estimation of the total cost of the work consists of estimating the cost of the individual elements of the cost and then building up the total cost taking into account each individual element of the cost concerned.

The major elements of the total cost of the work are:

- The labour cost
- The material cost
- The plant cost

The remaining elements which contribute to the total cost are:

- Dayworks, provisional sums, prime cost sums and contingencies.
- Preliminaries or site charges
  - (a) Water for the works
  - (b) Small plant and tools
  - (c) The haulage of plant
  - (d) Site office for the architect or engineer
  - (e) Site office for the builder or contractor
  - (f) Watching and lighting
  - (g) The control of traffic and the additional cost involved
  - (h) Temporary roads and hoardings
  - (i) The contract guarantee bond
  - (j) Insurances
  - (k) Building fees
  - (l) Hoardings
- Establishment, overheads or head office charges

### **Method of analysing cost**

According to Willis and Trench (1998:1) in the method of measuring and analysing costs it is evident that:

- if a building is divided up into its constituent parts,
- and the cost of each part can be estimated,
- an estimate can be compiled for the whole work.

Willis and Trench (1998:1) also found in practice that:

- by making a schedule setting out the quantity of each type of work
- in recognized units of measurement,
- the estimated prices can be built up for the labour and materials involved in each unit.
- This schedule is the bill of quantities, the prices in which can be added to arrive at a total sum.

Willis and Trench conclude that it must not be forgotten that the bill of quantities:

- only produces an estimate.
- is prepared and priced before the erection of the building and
- gives the contractor's estimated cost.

Such an estimated cost, however, under the most commonly used construction contracts, becomes a definite price for which the contractor agrees to carry out the work as set out in the bill. The bill must, therefore, completely represent the proposed work so that a serious discrepancy between actual and estimated cost does not arise. (Willis and Trench, 1998:1)

Moreover, according to Willis and Trench (1998:3) the surveyor must:

- be careful and accurate in making calculations,
- have a systematic and orderly mind and
- be able to visualize the drawings and details,
- a detailed knowledge of contractor's prices,
- experience of the construction process,
- an ability to foresee the likely effect of economic trends,
- a certain amount of legal knowledge and
- knowledge of the law of contract.

### 2.6.3. Reliability

According to Skitmore (1988) the factors affecting estimating accuracy of engineers' estimates are:

- Types of projects
- Sizes of contracts
- Geographical locations
- Numbers of bidders
- Ability of the estimators
- Levels of information and the
- State of the market

The definitions that the built environment professionals supply for reliable estimate differ in essence from that of accountants. The definitions of Boeschoten (2004) gave a total different viewpoint and he had the following to add on the general reliability and accuracy of estimates

“Reliability of an estimate refers to the closeness of the initial estimated value(s) to the subsequent estimated values.”

“Accuracy of an estimate refers to the closeness between the estimated value and the (unknown) true value that the statistics were intended to measure.”

“These definitions exclude a statement concerning the scope on which the estimates are based and apparently assumes a definition of an estimate being the cost assessment of an agreed scope. This assumption is in line with the generally accepted definition of estimate.”

“Applying these definitions to the estimating process, an initial (class 5) estimate is reliable if the subsequent (class 4 to 1) estimates are close to the initial estimate. An estimate is accurate if the true value, as-built costs, is close to the initial estimate(s).”

“So accuracy refers to the closeness of the as-built cost to the class 4 estimate, etc.”

“It is these “closeness” that need further discussion. In fact, these are two distinctly different types of closeness: one is between estimates, i.e., the reliability, and the other is between the as-built costs and the estimates, i.e., the accuracy.”

“The reliability closeness is driven by the quality of the definition of the project scope. The better the scope has been defined, the more reliable the ensuing estimate will be. In other words, reliability is high if few scope changes are expected and therefore low if many scope changes are expected. Apart from the number of changes, the value of the changes is also a determining factor for the reliability.”

“The accuracy closeness is driven by the quality of the measurement or estimation of the scope.”

“Every time an estimate is made, the scope is treated as fact and during the preparation of an estimate, previous estimates are of no influence. An estimate is just a measurement of a given situation and as a result, measurements can be made at various levels of accuracy.”

“Both reliability and accuracy are driven by change. If something changes the estimate as a whole, it will influence the reliability or the accuracy and, in many cases, both reliability and accuracy.”

“It is therefore the utmost importance to understand changes and what impact changes have on reliability and accuracy.”

“The fact that projects and estimates are perpetually affected by change is a well-known given. Such changes may vary considerably in nature, impact and origin.”

“Depending on their role in the entire process, every stakeholder has a different perception of change.”

The conclusion to the above is thus: certain changes affect the reliability of the estimate and other changes affect the accuracy of the estimate.

In his article on cost management Hamilton (2004) pointed out that cost estimation is the determination of quantity and the predicting or forecasting, within a defined scope, of the cost required to construct and equip a facility, to manufacture goods, or to furnish a service. He stated that the main characteristics of a cost estimate is an approximation of the final cost that has an equal chance of overrunning or under-running and is commonly referred to as a 50/50 probability. Hamilton defined an estimate as having a basis in the cost estimate depending on a greater understanding of the total project to arrive at a true cost. He stated that the cost estimate consists of three parts, namely:

❑ Design basis

“The design basis is the technical content that drives the quantities of the project and the quality of the installation.”



- Planning basis

“The planning basis is the description of how the project will be built.”

- Cost basis

“The cost basis is the description estimating methods, unit quantities and unit costs.”

Rapier (1990) attempted to describe the method of dealing with accuracy and contingency in estimating through: “Accuracy” and “contingency” seem to be the most “misunderstood” and “mistreated” words used in cost engineering.

*What is a project cost estimate?* When asked this question, many engineers will answer “a guestimate”, “a forecast”, or “a prediction.” When asked “of what?” the reply is simply “cost” or “expenditures.” Invariably it takes a bit of prompting for them to say, “final project cost.”

Rapier (1990) asked the question “What factors affect the final as-booked cost of a project?” and answered in agreement with Hamilton above: “Everybody has answers to the question, because there are thousands of factors which affect the cost. It is helpful for this discussion to view all factors as falling into one of three categories as follows:

- Design factors

- Execution factors

- Cost factors

According to Rapier (1990) “Design factors are all the aspects and project influences which lead to the final as-built design, on which the final costs are based. This covers such factors as:

- design/economic criteria as well as design philosophy
- environmental, legal and operational restraints
- the amount of recycle (changes) in basic design decisions that occur during detailed engineering and construction
- quality/sharpness of the detailed design execution factors”

“These are factors pertaining to the implementation of the engineering, procurement and construction. They cover factors such as:

- contracting strategy
- type/conditions of contracts (engineering, construction, etc)
- site/environment orientated factors (weather, geography, etc)
- procurement policy, political decisions, etc
- project schedule
- degree of cost and schedule control
- engineering, construction and overall project management skills/productivity
- environmental, legal and operational restraints
- labor relations.”

“Cost factors influences the price in the marketplace, covering such items as:

- currency value
- inflation (escalation of prices)
- local/national wage price structure”

Rapier (1990) stated that every project cost estimate is a prediction of the affect of all the above factors either implicitly or explicitly. He stated that that is certainly the connotation to management and although it is another simple point it is often overlooked.

On how to express accuracy Rapier (1990) had the following to add:

- Since final costs depend upon the design, execution, and cost factors,
- an estimate's accuracy depends upon how firm the design, execution and cost input upon which the estimate is based,
- ie, how firm the design and the execution decisions, and
- how reliable present day cost knowledge, prediction of escalation, etc, are.
- Accuracy is also a function of the degree of project cost control.
- No control – no accuracy.
- It relates to errors and mistakes, but to an insignificant extent.

Rapier (1990) mentioned that accuracy statements in the past have been related to the method of estimating much as follows:

- curve/proration estimates
- semi-detailed (factored)
- detailed conceptual estimates
- definitive (takeoff) estimates

Rapier (1990) added that this way of expressing accuracy was misleading and failed to communicate because:

- “The statement implied that the estimate has a 100% probability of falling within the bounds stated.
- It ignored the quality of design and execution input, ie, the firmness of the project basis.
- Risk or probability of overrun/under-run was not clear.”

The AACE Cost Engineers’ Notebook and Chapter 3 of Project and Cost Engineers’ Handbook (as referenced by Rapier: 2004) state accuracy in the following manner:

Type of Estimate	Expected Accuracy Range
Order of magnitude estimates (those done with cost/capacity curves/ratios)	-30% to +50%
Budget estimates (where detailed design is only 5 to 20% complete)	-15% to +30%
Definitive estimates (detailed design is >20% complete)	-5% to +15%

Rapier (2004) stated that:

- “This approach expressing accuracy is an improvement over the previous example because it starts to relate the estimate to the design status.
- However it still implies that these are 100% probability ranges.
- The risk or probability is not stated.
- Also it implies to management that the estimate is biased low.”

Rapier (2004) concluded that “the best way to express accuracy is to quantify it in probability terms, and to relate it in some way to the degree of firmness of the design, execution and cost basis of the estimate.”

Rapier (2004) suggested that to quantify accuracy there are three good approaches available for establishing the probability range of estimates:

1. Historical analysis of past project statistics (batting average) wherein actual final cost deviations from the estimates establish the estimate accuracy.
2. Risk analysis wherein the expected deviations (based on experience) of significant elements of the estimate are analysed using Monte Carlo techniques.
3. Project definition rating wherein the firmness of the design, execution and cost basis are rated (calibrated) and related to an historical cost analysis. (This approach was developed by John W. Hackney and presented in his book *Control and Management of Capital Projects*, published in 1965.

On the question of “what is contingency?” Rapier (2004) concluded that “Contingency is that money added to an estimate to cover the unforeseen needs of the project. Many people add a contingency to cover one or more of the following:

1. Personal concerns
2. Soft spots in the costing
3. To allow for future scope changes
4. To balance out an estimate that is biased low
5. To provide a form of insurance”

Rapier (2004) stated that “contingency for these reasons is difficult to sell to management and can hurt credibility. Also many people bury their contingency and/or confuse contingency with allowances. This leads to inconsistency, the worst sin of all in estimating.”

Rapier’s (2004) solution to the contingency problem is to name the contingency in order to deal with it. The names originate as a result of:

- Project contingency
- Bias contingency
- Technology contingency
- Economic contingency
- Political contingency

According to Rapier (2004) project changes result in project contingencies since project contingency covers inadequacies in the design and execution input, it is meant to cover changes that occur downstream of that input, but what type of changes?

- Project scope changes
- Contract scope changes
- Basic design changes
- Execution basis changes
- Field changes
- Estimating changes
- Project contingency

Rapier's (2004) summarises the above as:

- "Accuracy is the degree of conformance of the estimate to the final project cost. That degree of conformance is a function of the firmness of design factors, the execution factors and cost factors that are being predicted.
- Accuracy should be quantified in probability terms. Management are the risk takers. They want to know the odds.
- Contingency should not be confused with allowances and should never be buried. They are management's prerogative.
- Contingency(ies) should be named. This is a prerequisite to consistent treatment.
- Every estimate should have a project contingency. That contingency should be qualified as a function of accuracy."

Rapier's (2004) advice on the basics is the following:

- “Garbage in – garbage out
- Consistency is next to godliness – in estimating
- Name that contingency or you may lose it
- Don't wing it – classify it
- If you can't lick them, join them. Use the financial control system to your advantage”

Cullen (2004) stated that the essentials of cost management are: “Budgets (that) may even be intentionally understated out of fear that perceived high cost could jeopardize the project.” He stated that in the utilization of cost estimating: “there is no substitute for sound cost estimating, whether provided from internal sources, outside consultants or constructors. Furthermore, the accuracy of any estimate is only as good as the information on which it is based and the validity of assumptions that invariably must be made, especially for early stage estimates. Experience has clearly shown that certain steps will improve the accuracy and validity of estimates:

1. Insist on clear estimate documentation indicating information used, assumptions made, inclusions, exclusions and project schedule
2. Ensure a clear understanding and agreement over format, level of detail and overall approach to estimate preparation
3. Require that all parties participate in a comprehensive review of the estimate to validate the basis of the estimate
4. Develop a clear understanding and agreement over market factors, inflation, major risks and contingency
5. Allow sufficient time for the process to complete”



Nasr (2000) indicated that in using total project cost success factors “Today’s managers typically use different project control systems and techniques (earned value and variance calculations) to measure the health of project performance and to ensure project success.

However, project performance evaluation and analysis are mostly done in an ad-hoc manner (shotgun fashion). “

Peak (1993) summed up the common mistakes in construction cost estimation resulting from:

- Estimated time of construction
- Estimated production factors
- Support by other nearby project
- Estimated unfamiliar work
- Quantity takeoff mistake
- Neglecting previous experience
- Miscalculating of indirect cost
- Selection of construction method
- Mistake in unit price contract
- Tender contract
- Lack of preparation for structural demolition
- Proposal based on incomplete drawings
- Vertical transportation
- Cleanup and trash removal

## 2.6.4 Other comments and considerations

### The role of the quantity surveyor and/or cost engineer

According to Bowles and le Roux (1990:5-6) the services provided by the independent quantity surveyor, in private practice, include the following:

- “Preparation of the initial budget before the detailed design is developed, in order to establish whether the project is feasible in terms of the client’s financial resources
- Preparation of preliminary cost studies, comparing alternative choices of materials and design in terms of capital, operating and future maintenance costs
- Monitoring and evaluating the various stages of project design, as they are prepared by the architect and/or engineer, to ensure compliance with the client’s budget
- Advising on contractual arrangements and preparing tender documents for pricing by contractors (these documents may or may not include bills of quantities, according to the circumstances)
- Investigating, checking and reporting on the sustainability of lowest tenders submitted in competition
- Negotiating tender sums with individual contractors
- Analysing and recording price data for use in future budgeting
- Preparing cash-flow predictions

- Valuing construction work in progress
- Evaluating final costs (including variations, necessary measurements and adjudication of claims) in two stages:
  - estimating, reporting for the purpose of budgetary control;
  - agreeing with the contractor the final costs of the variations for the purpose of the final account
- Settlement of the final building cost with the contractor and sub-contractors
- Advising on planned maintenance and environmental services replacement programmes for building and installations, together with cost forecasts
- Advising on the settlement of disputes in connection with building and civil contracts, through mediation and arbitration
- Acting as expert witness – Preparing valuations of replacement costs for insurance purposes
- Assessing the value of fire insurance claims.”

Seeley (1992:11) stated the following on the contractor’s surveyor: “The contractor’s quantity surveyor performs a rather different range of functions, and these are now described, since there can be few of the large or medium size contracting firms who do not employ quantity surveyors. Usually, the contractor’s organization will include a quantity surveying department controlled by a quantity surveyor who is normally a senior executive and may have director status.

The duties of the contractor's quantity surveyor will vary according to the size of the company employing him; tending to be wide in scope with the smaller companies, but rather more specialized than the larger firms."

According to Seeley (1992:11), in a smaller company the activities of the contractor's surveyor will be more of a general nature and include:

- "Preparing bills of quantities for small contracts;
- Agreeing measurements with the client's quantity surveyor;
- Collecting information about the cost of various operations from which the contractor can prepare future estimates;
- Preparing precise details of the materials required for the projects in hand;
- Compiling target figures so that the operatives can be awarded production bonuses;
- Preparing interim costings so that the financial position of the project can be ascertained as the work proceeds and appropriate action taken where necessary;
- Planning contracts and preparing progress charts in conjunction with the general foreman;
- Making application to the architect for variation orders if drawings or site instructions vary the work;
- Agreeing sub-contractors' accounts;
- Comparing the cost of alternative methods of carrying out various operations so that the most economical procedure can be taken."

## **A quantity surveyor's viewpoint**

Within the construction industry quantity surveyors are involved in the following four main areas of work.

- **Building work**

- Ashworth and Hogg (2002:5) state that quantity surveyors are considered the cost and value experts of the construction industry.
- Ashworth and Hogg (2002:5) state further that great importance is now attached to the control of costs on the majority of projects. Clients and designers are making changes after the signing of the contract and order additional works that were not envisaged and this leads to impressions that the quantity surveyor made mistakes.

- **Building engineering services**

- According to Ashworth and Hogg (2002:5) on large complex projects this has become a specialist function for the quantity surveyor and an ever increasing amount is expended on the elements of this type of work.
- Ashworth and Hogg (2002:5) points out that quantity surveyors employed in this discipline have had to become conversant with engineering services in their science, technology and terminology, in order to correctly interpret engineering drawings.

- **Civil engineering**

- Ashworth and Hogg (2002:5) state that civil engineering works often requires a design solution to take into account complex physical and geological problems. The scope, size and extent of civil engineering works are considerable. Problems encountered can have a major impact on the

- cost of the solution, and the engineer must keep within the limits of the budget for it can involve a large amount of uncertainty. Temporary works can be considerable and represent a significant part of the budget.
- They further point to the fact that civil engineering projects use different methods of measuring and different forms and conditions of contract.
  - Ashworth and Hogg (2002:4-5) added that in addition to the methods of measurement and conditions of contract, quantity surveyors must also be conversant with the different:
    - working rule agreements,
    - daywork rates and
    - other documents (such as Civil Engineering Procedures published by the Institute of Civil Engineers)
  - **Heavy and industrial engineering**
    - Ashworth and Hogg (2002:4-5) state that the work involved is generally classified as cost engineering and modern-day cost engineers evolve from a variety of professions and a considerable number start as quantity surveyors.
    - They state further (2002:4-5) that quantity surveyors who are employed on this type of work must be able to adapt to new methods of:
      - measurement,
      - cost analysis,
      - contract procedures and
      - cost engineering practices

Building and civil engineering contractors are paid on the basis of one of two methods, measurement or cost reimbursement (Ashworth and Hog, 2002:177)

### **Cost control by the contactor**

According to Seeley (1997:265) “the assessment of the profitability of a particular contract consists basically of knowing precisely the value of work executed at a specific date, compared with the actual costs incurred in achieving that value of work. The difference between the two figures will be the amount available to allocate to the off-site overheads of the company, to fund its working capital and make a profit. In an adverse situation the difference may show that off-site overheads are not being covered and that no profit is being made. In the worst situation, the actual costs of construction on site may exceed the value of the work that those costs have generated.”

Seeley (1997:265) states that “the usual reason given for a company’s difficulties is cash flow, whereas this is more often a symptom of the problem and not the cause. Many construction companies become insolvent through:

- Bad estimating
- Bad planning
- Ineffective contract control
- Inadequate site cost control”

In discussing cash low problems, Seeley (1997:265-266) states that it “can be reduced if effective procedures can be operated by the contractor in respect of:

- Realistic monthly assessment of preliminaries from fully documented and priced preliminaries schedules;
- Increased costs under contract with fluctuations kept up to date in monthly valuations;
- Variations to the contract accurately assessed and included in valuations;
- Discounts and retention monies properly claimed against the contractor’s own nominated subcontractors and suppliers;
- Collection of all monies properly due to the contractor; and
- Ensuring that all claims for loss and expense are fully documented, properly presented and submitted as soon as possible.”

## Overheads

According to Seeley (1997:269) “on a construction project a distinction is usually drawn between site overheads and company overheads. The contractor is usually reimbursed for his site overheads by means of the contract preliminaries or sometimes by sums added to the rates contained in the bill of quantities. The rate of recovery of revenue consequently may not match the rate at which expenditure is incurred on site overheads.”

Seeley (1997:270) concludes cost control of construction projects with “Good management practice dictates that reliable and regular financial reporting is necessary to control a project effectively and reports should be produced ideally on a monthly basis. A basic financial report of a contract should contain:

- Initial tender figures and expected profit;
- Forecast figures at completion for value and profit;
- Current payment application by contractor;
- Current certified value;
- Adjustments to the certified valuation;
- Costs to date and the accounting period in question; and
- Cash received to date, retention deducted and certified sums unpaid (Barret, 1992, as cited by Seeley,1997;270)



## **Conclusion on section 2.6 - Built environment professionals and definitions**

The concepts in this section were researched in the built environment literature available. Aspects that seem uncommon to accountants are:

### **❑ Measurement and cost to complete**

According to Willis and Trench (1998:3) measurement of the dimensions and the compilation of the descriptions from the drawings and specification are commonly known as taking-off. The preparation of the bill is known as abstracting and billing and the calculation of volumes, areas, etc., is known as squaring the dimensions and is commonly known as working-up. Recently cut and shuffle are common practice.

### **❑ Estimates**

According to (Elhag et al, 2005) cost estimation is an experience-based process. Construction practitioners are aware of uncertainty, incompleteness and unknown circumstances of factors affecting construction costs. According to Willis and Trench (1998:3) every time an estimate is made, the scope is treated as fact and previous estimates are of no influence.

### **❑ Reliability**

Boeschoten (2004) states that the general reliability and accuracy of estimates refers to the closeness of the initial estimated value(s) to the subsequent estimated values, while accuracy refers to the closeness between the estimated value and the (unknown) true value that the statistics were intended to measure.

## **Contextual background to section 2.7 – Using the work of an Expert**

Are Built Environment Professionals considered “experts” and do they need to be consulted as such by the accounting and auditing professionals? Diagram 2.5 was compiled to establish who should be considered to be Built Environment Professionals. The diagram is displayed on page 125.

SAAS620/ISA 620 states that although the auditor is expected to be an expert on business in general, it is not expected of him to be an expert where the knowledge areas of other professions become involved. SAAS620/ISA 620 further states that one such area would be the measurement of work completed and to be completed on contracts in progress.

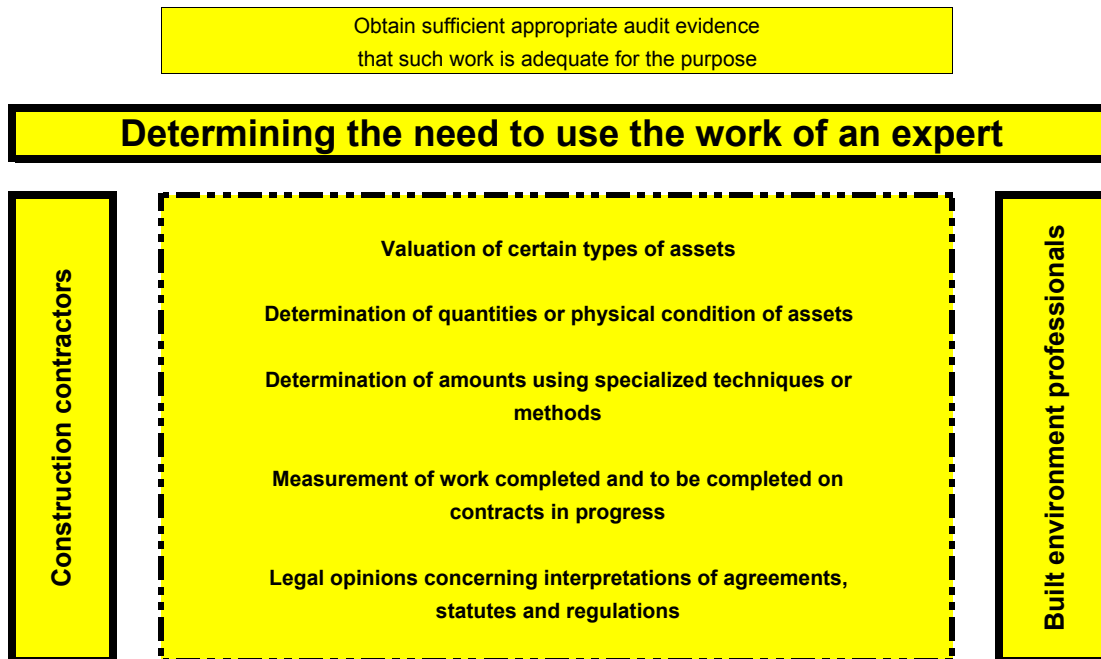
The competence and objectivity of the expert must be determined by the auditor by evaluating the expert’s professional certification or licensing by, or membership in, an appropriate professional body, and his/her experience and reputation in the field in which the auditor is seeking audit evidence. It is required that the auditor should evaluate the objectivity of the expert. This is not as easy as it may seem. The Psychologists will have to assist on this one.

After the expert has completed the assignment, the auditor needs to evaluate the work of the expert. The auditor should evaluate the appropriateness of the expert’s work as audit evidence regarding the assertion being considered. This will involve evaluation of whether the substance of the expert’s findings is properly reflected in the financial statements or supports the assertions, and consideration of source data used; assumptions and methods used and their consistency with prior periods; and results of the expert’s work in the light of the auditor’s overall knowledge of the business and the results of other audit procedures. These requirements by SAAS620/ISA620 sound like normal audit work but it is not.

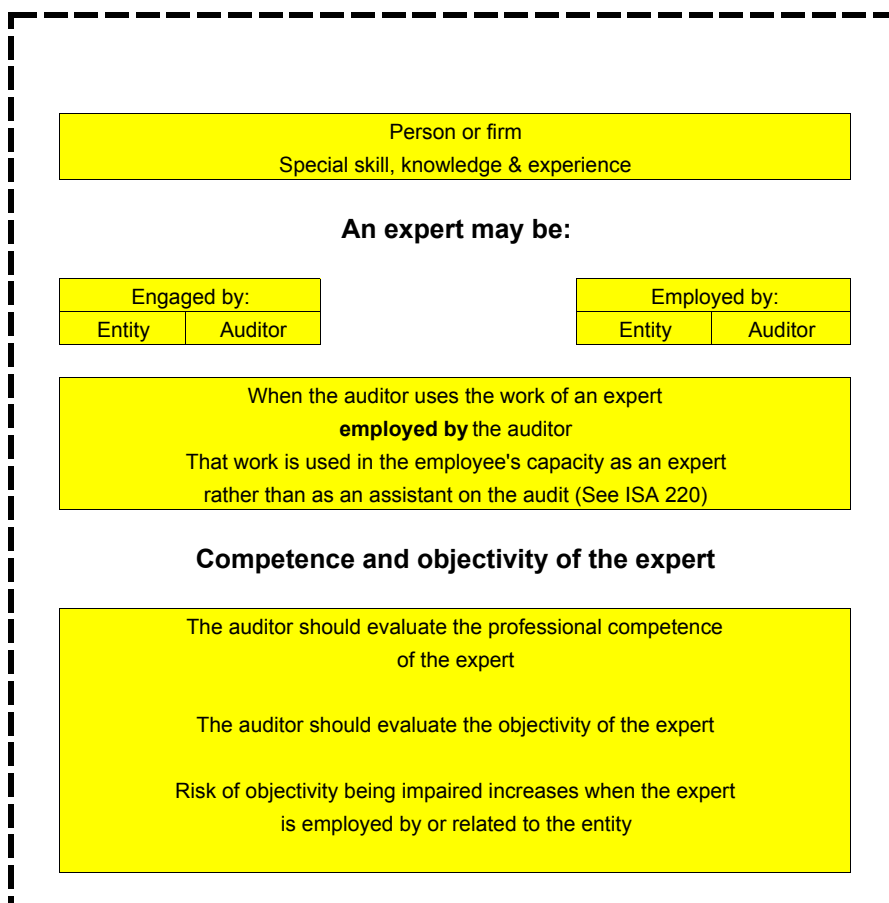
**Diagram 5: The built environment professionals in South Africa**

Profession	Council	Council	Act	Act. No.	Voluntary Associations
	<b>CBE</b>	Council for the Built Environment	Council for the Built Environment Act	43/2000	
<b>Architect</b> <b>Interior Architect</b>	<b>SACA</b>	South African Council for the Architectural Profession	Architectural Profession Act	44/2000	South African Institute of Architects. a.o. <b>(SAIA)</b>
<b>Landscape Architect</b>	<b>SACLA</b>	South African Council for the Landscape Architectural Profession	Landscape Architectural Profession Act	45/2000	South African Institute of Landscape Architects <b>(SAILA)</b>
<b>Property Valuers</b>	<b>SACPVC</b>	South African Council for the Property Valuers Profession	Property Valuers Profession Act	47/2000	South African Institute of Property Valuers <b>(SAIPV)</b>
<b>Construction Manager</b>	<b>SACPCMP</b>	South African Council for the Project and Construction Management Professions	Project and Construction Management Professions Act	48/2000	Chartered Institute of Building <b>(CIOB)</b>
<b>Construction Project Managers</b>	<b>SACPCMP</b>	South African Council for the Project and Construction Management Professions	Project and Construction Management Professions Act	48/2000	Association of Construction Project Managers <b>(ACPM)</b>
<b>Quantity Surveyor</b>	<b>SACQS</b>	South African Council for the Quantity Surveying Profession	Quantity Surveying Professions Act	49/2000	South African Association Quantity Surveyors <b>(ASAQS)</b>
<b>Engineer</b>	<b>ECSA</b>	Engineering Council of South Africa	Engineering Profession Act	46/2000	
<b>Consulting Engineer</b> <b>Civil Engineer</b> <b>Electrical Engineer</b> <b>Mechanical Engineer</b>	<b>ECSA</b> <b>ECSA</b> <b>ECSA</b> <b>ECSA</b>	South African Association of Consulting Engineers South African Institution of Civil Engineering South African Institute of Electrical Engineers South African Institute of Mechanical Engineers			<b>SAACE</b> <b>SAICE</b> <b>SAIEE</b> <b>SAIME</b>
<b>Town and Regional Planner</b>	} <b>Department of Land Affairs</b>				
<b>Land Surveyor</b>					

**Diagram 6: When to use the work performed by an expert - SAAS620/ISA620**



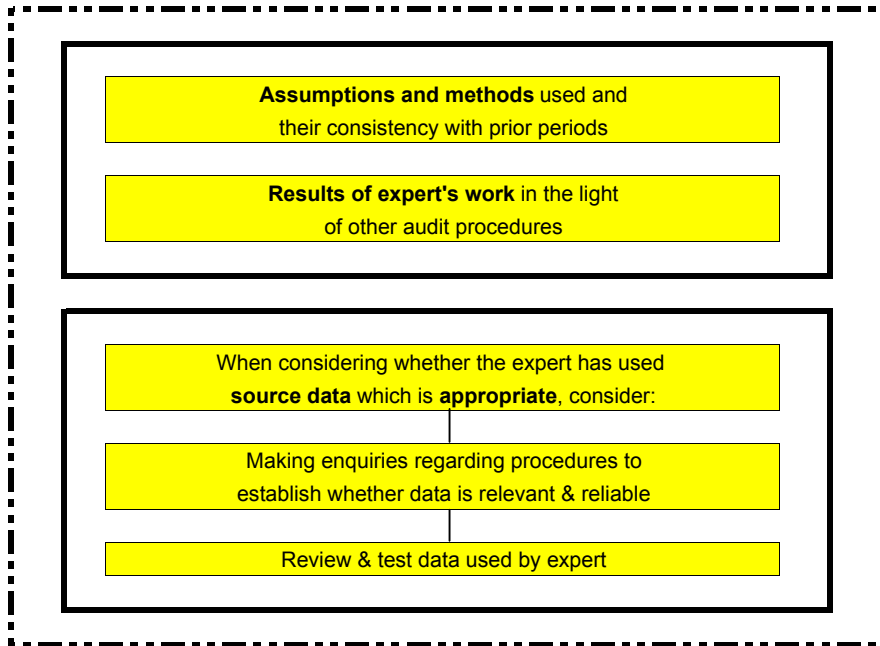
**Who is an expert?**



## Diagram 7: Evaluating the work of the expert - SAAS620/ISA620

The auditor should evaluate the **appropriateness** of the expert's work as audit evidence regarding the assertion being considered  
 Evaluate whether **substance** of expert's findings is properly reflected in the financial statements or supports the assertions, and consideration of:

### Source data used



The appropriateness and reasonableness of assumptions and methods used and their application are the responsibility of the expert.

Auditor to obtain an understanding of the assumptions and methods used to consider their appropriateness & reasonableness (based non-auditors overall knowledge)

If the results of the expert's work do not provide sufficient appropriate audit evidence or if the results are not consistent with other audit evidence, the auditor should resolve the matter.

## 2.7. Using the work of an expert

### 2.7.1. Introduction

The purpose of ISA 620 (International Standard on Auditing 620 and South Africa's document is SAAS 620) is: "To establish standards and provide guidance on using the work of an expert as audit evidence." (ISA 620.01)

An "expert" (referred to in the United States of America's counterpart document, SAS 73, as a "specialist") means:

- a person or firm
- possessing special skill,
- knowledge and
- experience
- in a particular field other than accounting and auditing. (ISA 620.03)

A construction contractor, as such, may be any of the above-mentioned professionals, or none, or any other professional, non-professional or any other legal body. A construction contractor can only be identified by what he does, contracting. It is not a professional career that can be qualified for in an exam. The employees of such a contractor performing certain tasks can only do so if qualified as a professional in the field that the work is performed.

According to Colbert (1999:60) the current published guidelines to auditors concerning the "Use of the Work of an Expert and / or a specialist" are contained in the following documents:

- The Institute of Internal Auditors (IIA) issued guidance on the utilization of outside service providers in the form of Statement on Internal Auditing Standards 18 (SIAS 18), "Use of Outside Service Providers".

- Guidance for external auditors comes in the form of, in the United States, the American Institute of Certified Public Accountants Statement (AICPA) on Auditing Standards 73 (SAS 73), “Using the Work of a Specialist”.
- Globally, International Standard on Auditing 620 (ISA 620), “Using the work of an Expert”, and
- in South Africa, the South African Institute of Chartered Accountants’ Standard on Auditing 620 (SAAS 620),” Using the Work of an Expert”.

Recently published news on the use of the work of an expert by auditors to substantiate the audit evidence, collected from other sources;

- The IAASB’s Technical Director is quoted saying that “Auditors are beginning to recognize that they need to go out and get competent experts. In some cases, that means going outside and hiring their own, and in some cases, it means asking managers (clients) to go out and hire their own.”, and that
- existing international standards were written for experts remote from the accounting process, such as actuaries and engineers. (Cheney,2005:14)
- ISA 620 states that although the auditor is expected to be an expert on business in general it is not expected that he be an expert where the knowledge areas of other professions becomes involved.
- ISA 620 further states that one such area would be ”The measurement of work completed and to be completed on contracts in progress.” (ISA 620.06)

Examples of specialists and the nature of the evidence they might provide are indicated by Colbert (1996:36). The engineer is deemed to be built environment connected and according to Colbert the nature of evidence that an engineer can supply is:

- estimate percentage complete for a construction project, and
- assess percentage of completion for work in progress.

In AC109/IAS11, paragraphs .22 to .24, the following lines appear:

In the case of a fixed price contract the outcome of a construction contract can be estimated reliably when the following conditions are satisfied (to name a few):

- Both the contract *costs to complete* the contract and the *stage of contract completion* at the balance sheet date can be *measured reliably*.
- The contract *costs attributable* to the contract can be *clearly identified and measured reliably* so that *actual contract costs incurred can be compared with prior estimates*.

In the case of a cost plus contract the outcome of a construction contract can be estimated reliably when the following conditions are satisfied (to name a one):

- The *contract costs attributable to the contract*, whether or not specifically reimbursable, can be *clearly identified and measured reliably*.

In the case of a fixed price contract, to measure reliably the contract costs to complete the contract and the stage of contract completion at the balance sheet date and clearly identify and measure reliably the contract costs attributable to the contract so that actual contract costs incurred can be compared with prior



estimates can be beyond the capabilities of the average auditor. It makes no difference whether he calculates it himself or only checks the work of another professional. This also is applicable to the requirement, a cost plus contract, to clearly identify and measure reliably the contract costs attributable to the contract, whether or not specifically reimbursable. No reference in accounting textbooks indicated that this is normal audit procedures or skills taught to audit students before they qualify. It clearly calls for the services of an expert from the built environment.

Certain procedures for using the work of an expert are prescribed and Urbancic (1994:23) states that the qualifications of the specialist have to be evaluated (by the auditor) before the auditor meet with the specialist (and client) to clarify the:

- nature and
- purpose

of the work to be performed by the specialist.

During the above meeting ISA 620, Urbancic (1994:23) and Colbert (1996:37) identified specific requirements to comply with when issues are discussed (and documented) (Note that SAS 73 (or ISA 620) does not require the above (agreement) to be in writing; the understanding may be made orally.):

- A general outline as to the specific matters the auditors expect the expert's report to cover.
- The intended use by the auditor of the expert's work, including the possible communication to third parties of the expert's identity and extent of involvement.
- The extent of the expert's access to appropriate records and files, and confidentiality of the entity's information.

- The objectives and scope of the work to be done by the specialist.
- The specialist's relationship to the client.
- The methods and assumptions to be used by the specialist.
- A comparison of the methods and assumptions used in the current engagement with those used in the preceding engagement.
- The appropriateness of using the specialist's work for the intended purpose.
- A description of the form and content of the specialist's findings that would enable the auditor to use the findings.
- the specialist's understanding of the use of the findings in the audit work.

Further discussions by Urbancic (1994:23) revealed that according to him:

- The specialist is responsible for the methods and assumptions to be used, including their proper allocation.
- The auditor is responsible for obtaining a sufficient understanding of the methods and assumptions used by the specialist to determine the reasonableness of the findings and whether the findings are suitable for corroborating the relevant assertions in the financial statements.

If the auditor believes that the findings are unreasonable, then it will be necessary, for the auditor to

- apply additional procedures, which may include
- obtaining the opinion of another specialist.

When considering the use of the work of the built environment expert the following needs attention:

- “Many CPAs are simply not up to the task of auditing these (internal) controls, so they are relying on contracted experts to help them.” (Cheney,2005:15)
- Chuck Landes (Director of auditing and attestation at the American Institute of CPA’s) asked “What competencies does the CPA (and) auditor of the future need?” (Cheney,2005:15)
- And answers as follows “A firm doesn’t necessarily need to grow these skills in-house, but they will need to have the networks so they have the ability to reach out to the expertise they need on a given engagement.” (Cheney,2005:15)

### **2.7.2. Practice Alert (2000-3) and recognising the need for an expert**

In the Practice Alert (2000-3) issued by the AICPA in 2000 is probably the single most useful document available in the understanding of construction audit and accounting. It provides insight into the intricate aspects of the situation. For convenience and amplification it is repeated in (almost) its entirety.

“This Practice Alert is intended to provide auditors with information that may help them improve the efficiency and effectiveness of their audits and is based on existing professional literature, the experience of the members of the Professional Issues Task Force (PITF) and information provided by SEC Practice Section member firms to their own professional staff.”

The difficulty of construction audits are stressed in stating the following:

“One of the more challenging audits is that of construction companies and other companies using the percentage of completion method of accounting for long-term contracts. (This Practice Alert is intended to serve as a reminder of the important concepts, and provide some best practices for auditing such entities.)

The primary authoritative accounting literature for construction companies, and entities using contract accounting is SOP 81-1, Accounting for Performance of Construction-type and Certain Production-type Contracts.

Auditing construction contractors or entities using contract accounting is complex. Such businesses rely on accurate and reliable estimates to operate their business as well as to prepare financial statements in accordance with generally accepted accounting principles.

Therefore, it is critical that the auditor gain an understanding of the contractor’s significant estimates and assumptions in operating its business.

Remember that the audit of a contractor is an audit of a contractor’s ability to estimate.”

There are several aspects to consider when auditing estimates (also see SAS No.57, Auditing Accounting Estimates):

- understand the internal control structure surrounding the estimate,
- consider the contractor’s history of accurate estimates,
- compare actual to budgeted figures, and
- review subsequent events.

They suggest the following Best Practices: “The PITF has identified certain procedures that should be considered in performing an audit of a construction contractor.” They are summarized as follows:

Read significant contracts.

Identify unique contracts and increase the amount of testing and professional skepticism relating to such contracts.

Understand the company’s cash flow and how it will manage paying out expenses.

Recognize that the longer the contract period, the greater the risk that an estimate will be incorrect.

Confirm the terms and conditions of the contract as well as the normal billing procedures.

Review the unapproved change orders of significant contracts.

Visit construction contract sites.

Meet with project managers.

Identify and understand the significant assumptions and uncertainties on the contract. This procedure is fundamental to performing an effective audit of an entity using contract accounting. Not performing this function results in an audit that does not comply with GAAS.

Test contract costs to make sure that costs are matched with appropriate contracts.

Audit estimated costs to complete.

The focus should be on the key factors and assumptions, such as those that are:

- significant to the estimate,
- sensitive to variation,
- deviate from historical patterns, and are
- subject and susceptible to bias or misstatement.

A review of revised or updated estimates with the actual costs incurred after the balance sheet date is also a useful procedure.

See that losses are recorded as incurred.

(regardless of method of revenue recognition employed by the entity.)

Analytically review contracts completed and in progress.

See that there are appropriate disclosures relating to SOP 94-6, Disclosure of Risks and Uncertainties.

Review the aging of receivables on contracts.

Consider the use of specialists in auditing construction contracts in accordance with SAS No.73, Using the work of a Specialist.” (PITF, 2000-3:1-5)

*The above practice alert lists 16 items of which at least 12 could be considered the domain of a built environment expert.*

### 2.7.3. Determining what constitutes an expert

Determining what constitutes an expert is required by ISA 620 but might prove to be difficult in the light of many approaches that have been used by previous investigators to identify experts and or specialists might not have been adequate.

According to Shanteau (2002:253-263) nine of these traditional approaches, with the advantages and, more importantly, the disadvantages of each approach, will have to be considered:

- *Experience.* The number of years of job-relevant experience is used as a surrogate for expertise. Although the argument can be made that experts almost always have considerable experience, the converse does not necessarily follow. There are many examples of professionals with considerable experience who never become experts.
- *Certification.* In many professions, individuals receive some form of accreditation or title as a reflection of their skill. For instance, doctors may be “board certified” and university faculty may be “full professor.” The problem with certification is more often tied to years on the job than it is to professional performance.
- *Social acclamation.* One method used by many researchers (including the present authors) has been to rely on identification of experts by people working in the field. That is professionals are asked who they consider to be an expert. When there is some agreement about the identification of such an individual, that person is then labeled an expert by “social acclamation.
- *Consistency (within) reliability.* Einhorn (1972, 1974) argued that intra-person (with-in) reliability is a necessary condition for expertise. That is an

expert's judgments should be internally consistent. Conversely, inconsistency would be prima facie evidence that the person is not an expert.

- *Consensus (between) reliability.* Einhorn (1972, 1974) argued that agreement between individuals is a necessary condition for expertise. That is, he believed that experts in a given field should agree with each other (also see Aston, 1985). If there is a disagreement, then it suggests that one, some, or all of the would-be experts are not what they claim to be.
- *Discrimination ability.* Hammond (1996) and others have pointed out that the ability to make fine discriminations between similar, but not equivalent, cases is a defining skill of experts. That is, an expert must be able to perceive and act on subtle differences that a non-expert may often overlook.
- *Behavioral characteristic.* Abdolmohammadi and Shanteau (1992: see also Shanteau, 1989) found that expert auditors share many common behavioral characteristics. Some examples are self-confidence, creativity, perceptiveness, communication skills, and stress tolerance. A complete list of characteristics (along with their definitions) appears in the original paper.
- *Knowledge tests.* In studies of problems solving or game-playing experts are often identified based on tests of factual knowledge. For example, Chi (1978) used knowledge about dinosaurs to separate children into experts and novices. Knowledge of relevant facts is clearly a prerequisite for experts. Someone who knows nothing about a domain will be unable to make competent decisions. Yet, knowledge alone is not sufficient to establish that someone is an expert. The problem is that it takes more



than knowledge of facts for expertise. It is also necessary to see which facts to apply in a given situation. In most domains, that is the hard part.

- *Creation of expert.* In certain contexts, it is possible for experts to be “created” through extensive training by researchers. This approach has significant advantages, including the fact that development of expertise can be studied longitudinally. Moreover, the skills are under direct control of the researchers. Experts can be created in this way for certain narrow tasks, e.g. to play computer games or work in a simulated micro world environment.

The conclusion on the above is that possessing the characteristics of “consistency (within) reliability” and “discrimination ability” was concluded to be the best trademarks of an expert. Within those two characteristics were contained various degrees of accuracy in prediction of a person belonging to an expert group or a novice group.

The competence and objectivity of the expert must be determined by the auditor and ISA 620 requires that:

When planning to use the work of an expert, the auditor should evaluate the professional competence of the expert. This will involve considering the expert’s:

- Professional certification or licensing by, or membership in, an appropriate professional body; and
- Experience and reputation in the field in which the auditor is seeking audit evidence. (ISA620.08)

ISA 620.09 then goes further to require: “The auditor should evaluate the objectivity of the expert. In ISA 620.10 it is stated that the risk that an expert’s objectivity will be impaired increases when the expert is:

- employed by the entity or
- related in some other manner to the entity, for example,
  - by being financially dependent upon or
  - having an investment in the entity.

If the auditor is concerned regarding the competence or objectivity of the expert:

- the auditor needs to discuss any reservations with management and
- consider whether sufficient appropriate audit evidence can be obtained concerning the work of an expert.
- The auditor may need to undertake additional audit procedures or
- seek audit evidence from another expert

After the expert completed the assignment the auditor need to evaluate the work of the expert. This is another tall order in:

- The auditor should evaluate the appropriateness of the expert’s work as audit evidence regarding the assertion being considered.
- This will involve evaluation of whether the substance of the expert’s findings is properly reflected in the financial statements or supports the assertions, and consideration of source data used; assumptions and methods used and their consistency with prior periods; and results of the expert’s work in the light of the auditor’s overall knowledge of the business and the results of other audit procedures. (ISA620.12)

The appropriateness and reasonableness of assumptions and methods used and their application are the responsibility of the expert as:

- The auditor does not have the same expertise, therefore,
- cannot always challenge the expert's assumptions and methods.

However, the auditor will need to

- obtain an understanding of the assumptions and methods used and
- to consider whether they are appropriate and reasonable, based on the auditor's knowledge of the business and the results of other audit procedures." (ISA620.14)

#### **2.7.4. The way forward**

In the near future the following is awaited:

- In 2005 the ASB asked the IAASB to look at the use of specialists in audits.
- "James M. Sylph (IAASB technical director) confirmed that the two boards are working to converge American and international auditing standards. The IAASB would take on the project to avoid duplication of work. (The IAASB project refers to experts rather than specialists)" (Cheney,2005:15)
- "The major issue will be the extent to which auditors, as general practitioners, must take responsibility for the work of experts, Sylph said." (Cheney,2005:15)

In the appendix to the project proposal are the questions the IAASB task force will look into. (IAASB Main Agenda December 2004. pp. 4 and 5 of 8)” the following is included on the agenda:

- Whether the scope of ISA 620 be limited to experts in a field other than accounting and auditing.
- Whether ISA 620 should cover the use of an expert in all phases of an audit.
- Whether employees of the client should be regarded as experts under ISA 620.
- Whether experts contracted by the auditor should be considered to function under ISA 220 and ISA 300.
- Whether the auditor should evaluate the independence of an expert.
- Whether client experts should be subjected to the same treatment under ISA 620 regarding risk considerations, objectivity and reasonableness of findings.
- Whether, under certain circumstances, contracting of experts should become mandatory.
- Whether, under certain circumstances, non-contacting of experts by management should be considered scope limitation.
- Whether an understanding, in writing, should be established between the auditor and expert.

- Whether the auditor should be required to obtain an understanding of the work performed by an expert.
- Whether the auditor should obtain a description of the assumptions, methods, test data and findings of the expert.
- Whether documentation requirements be listed, and
- Whether the expert be mentioned in the audit report.

According to Cheney (2005:14) Landes said that what they (*ASB*) want to do is take away what we (*IASB*) (own insertions) think may be a practice problem in some situations, namely:

- the over-reliance on the use of specialists' work
- without the auditor doing sufficient due diligence and
- applying appropriate professional scepticism.

### **Conclusion on section 2.7 – Using the work of an Expert**

The AICPA's PITF report (2000-3:1-5) by the AICPA states that auditors should remember that the audit of a construction entity is the audit of such an entity's capability on estimates and cash management. They go further and list items (that would require assistance from experienced built environment professionals), for example:

- Read significant contracts,
- Identify unique contracts,
- Understand the company's cash flow,
- Visit construction contract sites and

- ❑ Meet with project managers.
- ❑ Identify and understand the significant assumptions and uncertainties on the contract.
- ❑ Audit estimated costs to complete. The focus should be on the key factors and assumptions such as those that are significant to the estimate.
- ❑ Consider the use of specialists in auditing construction contracts in accordance with SAS No.73, Using the work of a Specialist.

From experience comes the knowledge that the last option should be regarded as an alternative rather than just another option.

The ASB requested the IAASB to look into and rethink the use of specialists / experts in audits. They are aware and cautious of the fact that auditors might be tempted to over-reliance on the use of a specialists' / expert's work without the doing sufficient due diligence and applying their appropriate professional scepticism.

The IAASB task force will consider items that have proved to be problematic in the past, such as:

- Whether the client's experts should be subjected to the same treatment under SAAS620/ISA620 regarding risk, objectivity and reasonableness of findings.
- Whether certain circumstances should be identified where the contracting of experts should become mandatory.
- Whether certain circumstances should be identified where the non-contacting of experts by management should be considered scope limitation.

## **Contextual background to section 2.8 – Auditing of construction contracts**

### **Internal auditing**

Through internal control and internal auditing management expects to determine the validity of their reporting and therefore their financial statements.

Internal auditing should contribute to the eventual validity of external reporting. This is the expectation under normal circumstances.

The question arises whether the auditing of construction contracts can be considered normal circumstances.

The objective of this section is to determine whether internal auditing can produce the same results by qualified accountants or whether the accountants need built environment experience. These answers seem almost impossible to determine.

### **External auditing**

Auditing should contribute to the eventual validity of external reporting. This will be the expectation under normal circumstances.

Internal auditing and external auditing should be done in a planned manner to supplement each other and avoid duplication.

The object would not be to try and prescribe to professionals how to do their work, but rather identify possible difficulties.

## 2.8. Auditing of construction contracts

*One of the ways available to the auditors to determine the stage of completion on the construction contract would be through auditing, internal and external.*

### 2.8.1. Internal auditing

In the United States, and internationally, internal auditing has become widely accepted, except in the construction industry. (Palmer et al, 1995:399)

Most internal audit groups primarily focus on:

- engineering
- procurement
- planning and scheduling
- *the accuracy of cost forecasting, and*
- *computation of percentage of completion. (own emphasis)*

Audit teams would employ experts on the subject matter which they audit. (Palmer et al, 1995:399)

For the majority of smaller construction companies, the only internal auditing is performed by the (chartered) accountant (CPA) and auditor engaged to prepare the year-end financial statements. (Palmer et al, 1995:399)

According to Palmer et al (1995:400) there is a good explanation why a fraud-conscious industry like the construction industry has seen fit to leave auditing to management. Construction and engineering people generally do not hold accounting departments within the construction industry in high esteem. A construction company president recently described his accounting department as “mere clerks”.



This reasoning according to Palmer et al (1995:400) is:

- The major accounting function in a construction company is cost forecasting.
- Cost forecasting, in a construction company, is performed by engineers and construction supervisors.
- Relatively few accountants have the technical knowledge of construction work.

With the larger construction companies there is increased recognition of the need for more of the accounting type auditing tempered by a great deal of technical construction knowledge. (Palmer et al, 1995:400)

Palmer et al (1995:400-401) stressed that in order to be fully effective in doing the internal auditing in a construction company the auditor should be able to:

- review the plans,
- observe the physical progress of the job,
- know what the accounting records “should” show,
- reconcile the records with what he has observed, and
- know the sequence of accomplishment of physical work.

Palmer et al (1995:401) summarizes with:

- most of the auditing done within the construction industry today is performed by engineering-trained management people who are part of the operations of the company.
- accounting personnel are responsible the mathematical accuracy.
- the project manager reviews the documentation for overall reasonableness.
- any additional internal auditing is performed by head office personnel.

The further auditing is removed from the actual point of operations:

- the more it tends to take on the nature of clerical and accounting checks and
- lose the characteristics of critical analysis.

According to Palmer et al (1995:401) there are two important reasons for this tendency:

- the demands on the time of management are so great that there is a tendency to treat internal auditing lightly.
- If the person doing the auditing is an accountant or office engineer who lacks detailed knowledge of the job or jobs in progress, he has no basis for comparison.

He suggests that the internal auditing needs to be done by someone who has direct personal knowledge of the job and by way of elimination, that:

- This step cannot be performed by the individual job managers themselves because they have the primary function of completing the project.
- It cannot be adequately performed by the ordinary accountant or auditor because he usually lacks the construction know-how.
- It cannot be done by the ordinary superintendent or engineer because he lacks knowledge of accounting, taxation, auditing and financial management.
- Individuals who already have this knowledge are hard to find and, if available, carry a salary equal to their abilities.

Palmer et al (1995:402) attempts to pinpoint the responsible person with the following advice. Once an employee is prepared by training and experience to audit construction jobs, he still requires two important tools:

- First, he needs auditable records
- Second, the auditor needs an audit program or checklist.

## 2.8.2. External auditing

According to Adrian and Adrian (1999:300) recent years have seen an increasing interest in management auditing and provide information to the construction firm for its own use about:

- its accounting,
- financial, and
- operational characteristics.

There is no intent to disclose the results of a management audit to external parties such as sureties and lending institutions.

The objectives of management auditing are a process of evaluation. The more we evaluate any set of procedures or practices, the more likely we are able to find inefficiencies that can be reduced or eliminated. We sometimes find it difficult to evaluate ourselves and thus find an external party to evaluate the firm by means of a management audit of its:

- accounting,
- finance, and
- operational characteristics.

(Adrian and Adrian, 1999:300-301)

Adrian and Adrian (1999:301-302) stated that independent of these “art” rather than “science” characteristics of the successful management audit, there are some specific processes and/or procedures used by the management auditor in the evaluation the following practices should be included in the work activities:

- Internal control auditing
- Operational auditing
- Compliance auditing

Consider internal control, operational, and compliance auditing as part of the broader management auditing process.

### 2.8.3. Internal control auditing

According to Adrian and Adrian (1999:302) Internal control auditing is: the evaluation of internal controls used by the construction firm to:

- enhance project control and
- protect its assets.

As noted in the previous chapter, if the construction firm is characterized by poor internal controls the result is:

- a threat of financial loss of assets
- as well as difficulty associated with performing the financial audit.

According to Palmer et al (1995:457) systems of internal control and internal auditing are not well developed within the construction industry and this is primarily due to:

- An overwhelming number of companies in this industry are relatively small family-owned businesses, and
- not many public accountants have enough knowledge of the operational side of construction to evaluate some of the important relationships between job progress as it exists in the field and what the job records show.

Palmer et al also determined to be really effective the auditor must be able to evaluate the figures he sees in terms of what they disclose about the technical construction operations and therefore, auditing on construction jobs is better done either by:

- the employees of the company who are especially trained for the job, or
- employees of an accounting firm whose background includes substantial experience in construction job offices.

A public accounting firm that can supply experienced construction auditors can make a very valuable contribution to its auditing.

- On the functions in the field of internal auditing Palmer et al (1995:457) had the following to add. He indicated that any competent public accountant can do the following:
- know how the data are compiled for each record he examines. With that knowledge, he can evaluate critically the chances of fraud or of error and any weakness in the accounting system can then be discussed with management.
- provide technical supervision over the accounting and carry out tests to see whether procedures are being followed.

Generally Accepted Auditing Standards (GAAS) requires an adequate review of internal control, especially controls which help to preclude defalcations and provide accurate gathering of data, for financial statement purposes. Palmer (1995:458) concluded that the scope of the external auditors' assignment should include the possibility of discovering weaknesses in internal controls, and result in reviews of operational controls.

#### **2.8.4. Internal controls for project estimate and control**

Adrian and Adrian (1999:307) states that the auditor spends considerable time and expense when evaluating the accounting and financial internal controls as part of the financial audit. However, he spends little time on evaluating the construction firm's internal controls as they relate to the firm's:

- estimating,
- bidding, and
- controlling of construction projects.

This is ironic given that poor project estimating/bidding and control are (one of) the most common reasons for construction firm failure.

Adrian and Adrian (1999:307) states that the management audit cannot be expected to:

- disclose information about a construction firm's inability to predict actual costs or
- the (construction) (Own insert) firm's inability to implement the most productive construction method, in a given situation.

Adrian and Adrian (1999:307) bring to our attention the facts that the individual or individuals performing the internal control audit portion of the management audit may not know:

- how many cubic yards of concrete finishers can place in an hour, or
- whether pumping concrete is more productive than using a crane for a given type of construction pour.

Adrian and Adrian (1999:307) points out that the internal control audit can disclose several non-technical inefficiencies that can be as detrimental to the profitability of the construction project and firm as an error in productivity information. Given the large dollar (rand) value of the typical construction project and the resulting potential dollar (rand) loss if a single error is made, it becomes vital to the construction firm to implement estimating and bidding controls on a continual basis.

They conclude:

- All too often a construction firm creates potential for profit on a project by means of a good estimate/bid, only to fail to obtain the profit because of poor project control of time and cost.

- There are certain accounting-related practices that can enhance the project control function.

Adrian and Adrian (1999:308) end the discussion with the objective of internal control auditing as it relates to control of project time and cost. It is considered to be the evaluation of the degree of implementation of preferred practices.

### **2.8.5. Unique construction auditing problems**

Adrian and Adrian (1999:281) give the following warning to all potential and current auditors of construction contractors:

- While all the discussed unique characteristics or processes of the construction firm create audit difficulties, no area creates more problems or uncertainty for the auditor than determining the percentage of completion, which is part of the percentage-of-completion revenue-recognition method.
- The auditing difficulty associated with using this method relates to the fact that the amount of profit recognized for a specific project at a point in time is very dependent on the estimated percentage of completion at that point in time.
- Too often the determination of percentage of completion is made arbitrarily with little or no regard to work actually performed and remaining.
- Determining the percentage of completion usually depends on calculating the cost expended to date and the estimate of costs to complete.

According to Adrian and Adrian (1999:282) both of the percentage of completion and the cost to complete can present problems for the auditor because:

- The lack of good accounting records can prevent the auditor from establishing costs to date. The problem is made more complex and complicated by various possible accounting treatments of project equipment and indirect costs.
- Even more troublesome than the determining of project costs to date is determining a project's cost to complete. Like determining incurred costs to date, it can have a major impact on calculating the percentage of completion.
- Many construction firms cannot give an accurate estimate of the cost to complete at any point in time during the building of a project. This is evidenced in part by the high failure rate in the construction industry. Many uncertain events such as weather, material availability, and labor productivity all affect the costs to complete a project.

Adrian and Adrian (1999:282) saw the corrective measures as:

- The auditor using several different audit steps to assist him in his attempt to establish the stage of completion, for a particular project.
- Evaluating the construction firm's own opinion, by analyzing bids and past costs,
- Obtaining percentage-of-completion confirmations from the project owners, and
- Visiting the project to evaluate its percentage of completion.



- But, In spite of any audit technique used, the percentage of completion remains somewhat of an uncertain variable for the construction firm and auditor.

*It is probably the most challenging area of construction firm auditing.*

On the auditing of work in progress or uncompleted construction contract work Adrian and Adrian (1999:291) made the following remarks:

- The major audit problem encountered in the examining of a construction firm's financial statements is in the audit of contracts in progress.
- It is the percentage-of-completion method that is especially troublesome.
- The audit problem associated with using the completed-contract method centers around the question of completion.
- Because no revenue or expense is identified until a project is complete, the actual date of completion becomes a very important date.
- If a project is near completion at the end of a firm's year end cut-off for financial statements, a few days difference in the completion date can potentially shift significant revenue and expense (and resulting profit or loss) from one year to another.
- The term substantially complete is often used as a guide in assisting the auditor to identify the project-completion date.
- The problem is that the term substantially complete is somewhat subjective.

### 2.8.6. Auditing and cost to complete

According to Defliese et al (1975:265-266) the estimate of cost to complete is the most critical element in accounting for revenue and unbilled receivables under long-term contracts, and also in evaluating the need to provide for estimated losses. He indicated that an auditor should review his client's procedures for preparing estimates of cost to complete; preferably far enough in advance of his examination to suggest changes that might facilitate it.

Defliese et al (1975:265-266) suggest audit procedures, such as:

- ❑ reviewing underlying data:
  - manning tables,
  - labor rate schedules,
  - bills of material, and
  - schedules of material received and still to be received.
  
- ❑ when the compilation of the estimates are tested make analytical reviews and comparisons, such as:
  - comparing the details of the estimate of cost to complete to the detail of the original cost estimate supporting the contract bid, or
  - comparing evidence of physical completion, such as number of units completed, with the percentage of completion indicated by cost estimates.
  
- ❑ He should talk with the engineering and production supervisor who make the critical judgments entering into the estimates so as to understand:
  - The bases for their judgments and
  - The degree of confidence with which they are made.

Defliese et al (1975:265-266) cautions auditors with the following words:

- ❑ *Preparing estimates of cost to complete is one of management's most difficult tasks, and evaluating them is correspondingly difficult for an auditor. (own emphasis).*
- ❑ The better an auditor understands his client's operations and business conditions, the better he will be able to understand the estimate of cost to complete.
- ❑ The better he understands the estimating process, the more efficiently he can complete he evaluation, thus minimizing his own time and inconvenience to the client.
- ❑ If the estimates are diligently and responsibly prepared and communication between auditor and client is open and candid, an auditor can obtain reasonable assurance that the estimates are accurate enough.

According to Miramontes and Rice (2005:12-25/26) "One of the most important phases of the audit of a construction contractor relates to cost to complete on contracts in progress, because that information is used in determining the estimated final gross profit or loss on contracts.

Because of its direct effect on the interim and final gross profit or loss on the contract, the auditor should evaluate the contractor's estimate of cost to complete to determine whether it is reasonable.

The estimate of cost to complete, because of its subjective nature, is one of the easiest ways for a contractor to attempt to change or adjust income.

The auditor should consider using the following information in the review of estimated cost to complete:

- ❑ Summary of the review and evaluation of internal control, with particular emphasis on estimating and bidding; project management and control evaluation; contract cost, claims, extras, and back charges, including a summary of the results of internal audits; and a discussion on the contractor's historical experience. *An analysis of the historical experience of the contractor is an excellent indicator to determine the accuracy of estimated cost to complete. (own emphasis)*
- ❑ Comparison of cost incurred to date and estimated cost to complete against the original bid estimate, and explanation of any unusual variances and any changes in trends.
- ❑ Summary of work performed, to determine that actual or expected contract price and estimated cost to complete include price and quantity increases, penalties for termination or late completion, warranties or contract guarantees, and related items.
- ❑ Review of project engineer's reports and interim financial data, including reports and data issued after the balance sheet date, with explanations for unusual variances or changes in projections. Particularly important would be a review of revised or updated estimates of cost to complete and a comparison of the estimates with the actual costs incurred after the balance sheet date. The latest estimates prior to issuance of the report should always be reviewed.

- ❑ Review of information received from owners or other third parties in confirmations and conversations about disputes, contract guarantees, and so forth that could affect total contract revenue and estimated cost to complete.
  
- ❑ *Discussions with the contractor's engineering personnel and project managers who are familiar with, and responsible for, the contract in process. (own emphasis)*
  
- ❑ *Review of the reports of independent architects and engineers. (own emphasis)*
  
- ❑ Review of information received from the contractor's attorney that relates to disputes and contingencies.

The auditor's objective is to test the overall reasonableness of the estimated cost to complete in light of the information obtained from these and other available sources. Because estimated cost to complete change daily, the documentation should be the latest available prior to the issuance of the audit report. The support for these costs requires a combination of many different types of procedures and inquiries, as noted. The schedule for testing the estimated cost to complete in Exhibit 12-8 can assist the auditor to review estimated costs to complete for major contract costs."

Exhibit 12-8, above, is included in its entirety to place in context items 2, 5, 9 and 13. A short instruction is given in those items but they are short and to the point. They express what is to be done but not how it is to be done. This is a shortcoming in most of the other accounting textbooks consulted in this study. The facts are stated but no indication is supplied on the manner of attainment or its execution.

## **Exhibit 12-8:**

### **Analytical Review**

#### **Testing Estimated Cost to complete**

##### **Labor**

1. Review the amounts of the weekly payrolls for the last quarter of the year and for all payrolls subsequent to the balance sheet date, noting any trends.
2. Based on this information, project estimated cost to complete.
3. Obtain explanations for any significant differences between the projections and the contractor's estimate.

##### **Materials**

4. Review client's records of materials used to date and their cost.
5. Try to determine a denominator (square feet of concrete, number of floors, etc.) on which to base a projection of estimated cost to complete.
6. Obtain explanations for any significant differences between the projections and the contractor's estimate.

##### **Equipment**

7. Review previous equipment charges to the job.

8. Estimate completion date and type of equipment needed for completion of the project.
9. Based on this information, project estimated cost to complete.
10. Obtain explanations for any significant differences between the projections and the contractor's estimate.

### **Overhead**

11. Determine overhead costs incurred during the past months or quarters.
12. Note identifiable relationships between job overhead costs and other types of job costs (e.g. direct labor costs and indirect labor costs).
13. Given the estimated completion date, project estimated cost to complete.
14. Obtain explanations for any significant differences between the projections and the contractor's estimate.

### **Subcontract Costs**

15. Review contractor's subcontract register for estimated costs to complete on significant subcontracts. (Miramontes and Rice, 2005:12-28)

(The above exhibit is included in its entirety to place items 2, 5, 9 and 13 in context.)

## **Conclusion on section 2.8 – Auditing of construction contracts**

In this section the emphasis is placed on audit difficulties originating from the construction environment as well as possible solutions to ambiguous situations contained in AC109/IAS11.

### **Internal auditing**

There is a tendency to treat internal auditing lightly in the construction industry. Added to that is the dilemma that if the person doing the auditing lacks detailed knowledge of the jobs in progress, he has no basis for comparison. It is suggested by Palmer et al (1995:401) that internal auditing needs to be done by someone who has direct personal knowledge of the job. If this is not possible the following situations might give rise to problems, namely:

1. The internal audit cannot be performed by job managers as they are concerned with completing the project.
2. Internal audit of construction entities should not be performed by the ordinary accountant or auditor because they lack the construction knowledge and experience.
3. It should not be undertaken by the built environment professionals because they lack knowledge of accounting, taxation, auditing and financial management.

### **□ External auditing**

The preparation of estimates of cost to complete is one of management's most difficult tasks and evaluating them is equally difficult for any auditor. Meticulously prepared estimates can be reasonably accurate.



## **Contextual background to section 2.9 – Reporting**

The reporting activities for construction contractors could either be a nightmare or a fluent process without major obstacles.

In practice the situation is normally that contractors employ accountants, but they are usually not qualified in built environment practices and procedures. The best solution would be to find a student who wants to become a construction accountant from the outset. He must then first qualify as an accountant and then add construction knowledge to be able to relate that information to accounting and reporting.

The current situation is such that the smaller contractor does not employ a qualified accountant. The only “accounting” that takes place is the accumulation of information and some estimating and “on site cost control”. These contractors are to a large extent excluded from the application of AC109/IAS11.

To a large group of contractors their external auditors and accountants become their “internal” accountants. These auditors have a double responsibility to ensure the requirements of AC109/IAS11 are adhered to. In these circumstances the experience needed to understand and evaluate the work normally done by built environment professionals cannot be assumed.

The financial statements are the responsibility of the directors whether the statements are drawn up by a suitably qualified person or not.

As indicated, the term “qualified” takes on a new meaning in construction accounting.

## 2.9. REPORTING

### 2.9.1. A conceptual framework

Enterprises should comply with the AC100 series if their financial statements claim to be prepared in compliance with statements of GAAP.

According to Vorster et al (2003:3) “a lack of a conceptual framework in the past the accounting profession lay down a set of rules prescribing the accounting treatment for specific aspects of record keeping. Although these rules are usually only a description of the methods used most often they are known in South Africa as Statements of Generally Accepted Accounting Practice. These statements do not constitute a conceptual framework as they do not embrace all aspects of accounting processing and disclosure, but instead deal only with specific aspects.”

The emergence of an accounting framework is explained by Everingham and Watson (2003:5) in:

- “It is a well known fact that accounting standard setters struggled to produce acceptable statements of GAAP because of failure to agree on the fundamental principles of accounting.
- In the United States the collapse of the Accounting Practices Board (APB) led to the formation of the Financial Accounting Standards Board (FASB) in 1973.
- The FASB completed a conceptual framework project in 1985.
- The International Accounting Standards Committee (IASC), now the International Accounting Standards Board (IASB), issued its framework in 1989.
- The South African framework is called Statement AC000 and follows the international one.
- There is, however, still much debate concerning fundamental issues.”

According to Vorster et al (2003:3) the statements of generally accepted accounting practice would continue to serve as a useful second best in attempts to improve the accounting communication process until such time that a generally accepted conceptual framework is developed.”

“Once such a conceptual framework is in place:

- all statements would be drafted in accordance with the conceptual framework,
- internal consistency would be maintained and
- the communication process would be enhanced.
- Individual statements would then only focus on particular aspects of the conceptual framework.”

According to AC000 the following must be kept in mind:

- There may be exceptional circumstances in which a Statement of GAAP is not strictly applicable, as it would fail to yield fair presentation. Thus, to comply would be misleading. (AC100:08)
- Some specialised activities cannot be fully catered for in a general standard. (AC100:09)
- It is thus recognised that practical problems will arise in the application of Statements of GAAP. “The APB believes that many of the problems of implementation will fall away if the spirit rather than the letter of Statements of GAAP is applied.”
- Bear in mind that the overriding requirement is fair presentation. (AC100:10)

According to Vorster et al (2003:10) if no statements exist the matter should be treated in the generally accepted manner but to recognise the generally accepted manner are not always easy.

The directors should select its primary basis of accounting and should disclose the adopted basis in the financial statements. The existence of unpromulgated gaap as a reporting framework may result in the adoption of unsound accounting practices merely because a number of entities are applying such practices.

### **2.9.2. Non- compliance and prominent disclosure**

Vorster et al (2003:12-13) further states that the following must be kept in mind:

- Following the requirements of statements of GAAP blindly is not advocated as such an approach does not necessarily guarantee a fair presentation.
- What constitutes fair presentation in particular circumstances still rests on professional judgement.
- Such circumstances should arise very seldom, however, and when they do, full disclosure should be made of the circumstances.
- It should not be concluded that non-compliance with GAAP is acceptable in all circumstances as long as full disclosure is made in the notes.
- A vital principle of disclosure is that complete disclosure does not rectify an incorrect treatment.
- Accounting is a communication process that is referred to as the language of business and has its grammatical rules to ensure that the communication process runs smoothly. Accounting has its own “grammatical rules”. This “grammar” is called generally accepted accounting practice (GAAP).

### 2.9.3. Summary on GAAP

Von Well and Wingard (2004:1) comments on non-compliance and prominent disclosure and states that:

- Schedule 4 of the Companies act was amended to allow departing from statements of generally accepted accounting practice but particulars of the departure, the effects and reasons for it shall be given.
- “Circular 08/99, issued by the South African Institute of Chartered Accountants (SAICA), addresses the issue of generally accepted accounting practice”.

Von Well and Wingard (2004:1 – 2) states that in the opinion of senior counsel that compliance with a statement of gaap meets the requirements of the Companies Act non-compliance may constitute a contravention of the act but not necessarily do so.

Von Well and Wingard (2004:2) states that in order for directors to meet the requirements of the Companies Act, the financial statements should be prepared and presented in accordance with gaap. The responsibility to compile financial statements that comply with gaap is stated by the Companies Act in Section 286(3). It is the responsibility of the directors to comply with the above.

According to Everingham and Watson (2003:1) it is stated that in terms of the Companies Act, in section 300 (i), it shall be the duty of the auditor of a company to examine the accounting records of the company in order to satisfy himself that the annual financial statements fairly present the financial position of the company and the results of its operations in conformity with generally accepted accounting practice (gaap).

## **Conclusion on section 2.9 - Reporting**

Because it is possible that external auditors and accountants may act as the internal accountants of an entity, the following aspects are sometimes overlooked:

### **Internal accountants**

The directors of the company are responsible for the selection of the primary basis of accounting which should be disclosed in the financial statements.

Von Well and Wingard (2004:1-2) comment on non-compliance and prominent disclosure thereof. The facts relevant are:

- The Companies act does allow departing from statements of GAAP but particulars, effects and reasons for it must be given.
- Circular 08/99, issued by the South African Institute of Chartered Accountants (SAICA) addresses this issue.
- Non-compliance may constitute a contravention of the act but not necessarily does so.
- The responsibility of the directors to compile financial statements is stated by the Companies Act in Section 286(3).

### **□ External auditors**

The Companies Act, in Section 300 (i), states that it shall be the duty of the auditor of a company to examine the accounting records of the company in order to satisfy himself that the annual financial statements fairly present the financial position of the company and the results of its operations in conformity with generally accepted accounting practice. He is not held responsible for the compilation of such statements and must be requested, by the shareholders in the case of a private company, to do so.

## 2.10. Summary on literature study

The literature review can be summarized as follows:

It was clear material encountered would be based upon one of the following:

- Deductions based on Statements of GAAP or
- Interpretations of requirements contained in Statements of GAAP.

Various textbooks directed at specifically targeted readers, i.e. mostly candidates for accounting and auditing examinations, provided the main source of information.

A literature search at the library indicated that resources were roughly divided into:

- Accounting Statements of GAAP and
- Auditing Statements of GAAS

These statements were mostly quoted directly in textbooks. Only a few discussions could be found. It was therefore decided to start off with determining exactly what constitutes GAAP. The objective was to define the concept and determine whether possible misinterpretations or contradictions existed.

AC109/IAS11: Construction contracts, which is an accounting Statement of GAAP was consulted in the original text. The objective was to identify the paragraphs and / or phrases that could cause ambiguity.

The compilation of the diagram containing the requirements of AC109/IAS11 proved to be the breakthrough. It contributed to the identification of the paragraphs that formed the core of the statement and showed the logical sequence in accounting for construction contracts.

In the review of the relevant South African textbooks the diagram of AC109/IAS11 assisted with focusing on the important concepts.

IAS11: Construction contracts, the international accounting Statement of GAAP was consulted in the original text, with the same objectives in mind as with AC109. It is not surprising that the same results were obtained. The documents are considered to be equal in all respects and again literature is scarce. All other construction contracts statements are clones of IAS11 except the construction contracts statements from the United States of America.

Although the American statements cannot be considered to be GAAP in South Africa they were expected to cast some light on the statements AC109/IAS11 in as much as they might clarify confusing and / or inadequate wording in the South African and international statements. It was also anticipated that certain additional definitions and discussions would be included in the American statements, as their documentation has proved to be more comprehensive.

This was the case especially with document SOP 81-1. Most of the key concepts included in the hypotheses were identified and defined in SOP 81-1. SOP 81-1 contains the same concepts and principles, but is more comprehensive than its South African counterpart. SOP 81-1 not only discusses what the statement is all about, but also what it is not. A lot more attention is given to the measurement part of accounting estimates. It gives a clearer picture of the role of the built environment professionals and the division of duties and responsibilities.



The research next addressed textbooks and additional literature from the USA. The books by Adrian and Adrian (1999) and Palmer et al (1995) contributed to the understanding of the relationship between the contractor and his auditor and emphasized that this is an area where ambiguities could originate. Books similar to the above are not available in South Africa. Adrian and Palmer indicated that the remedy to the problem is not the mere identification of the problem.

The literature study then focused on a different aspect of construction auditing, namely “Using the work of an expert”. In the USA they refer to an expert as a specialist. The same procedure was followed with the auditing statements as with the accounting statements. First the original statements were consulted, then attention was directed at the textbooks and finally opinions expressed on the subject by American and international authors were taken into account.

The IAASB will be considering this topic “Using the work of an expert” in the near future and therefore it would be improper to anticipate their discussions.

It is clear, from literature, that auditors consider it very important to keep their members’ keen sense of inquisitiveness. They would probably not want their members to contact the built environment professional, receive a certificate of work-in-progress or cost-to-complete and stop right there. The auditor’s regulating body needs the auditors to be inquisitive and investigative and to take active part in valuations, calculations, verifications and other judgments made by the experts.

They need to be seen to take an active part in proceedings considered as integral to the audit. The literature revealed that this is a bigger issue than most auditors might suspect. The business world is becoming more and more complex.

Nobody can be an expert on everything!

## CHAPTER 3 - RESEARCH DESIGN AND METHODOLOGY

### 3.1. Introduction

After deciding on the topic and completing the literature review it transpired that the study would be influenced by:

- Lack of literature on the subject.
- Poor infrastructure on the side of the contractor could result in a shortage in qualified and experienced contractors' accountants to question on their interpretation of AC109/IAS11.
- Contractors' lack of knowledge of AC109/IAS11 would hamper any enquiry.

Many external auditors assist contractors to compile their financial statements either through physical work by agreement with the shareholders or by consultation when the directors compile the statements. External auditors are also academically equipped to understand the nature, background, implication and general direction of enquiries.

A few phone calls made to external auditors with contractors as clients confirmed the above presumptions. It was therefore decided to approach contractors and obtain their permission to communicate with their external auditors and accountants and request them to complete a questionnaire.

The next step was the selection of contractors. It was decided to select a group that would qualify on size of contracts and duration thereof to be able to apply AC109/IAS11. Thus, the contractors would have to be selected on a basis that would ensure that their constant application of AC109/IAS11 is almost guaranteed. It was therefore decided to select the contractors registered with the local builders' associations.

Having decided on the topic, the sample group and the method of communication, and after completing the literature review, it transpired that the study would have to focus on the original AC109/IAS11 document. The main reason for this is the lack of information on the subject.

Literature on AC109/IAS11 applicable to the South African context, such as the textbooks by Von Well and Wingard, Vorster et al and Everingham and Watson, are primarily aimed at the education of and preparation of aspirant chartered accountants. These textbooks contain no new information, except for a few theoretical examples to explain certain key principles contained in AC109/IAS11. There is little or no practical guidance included assisting practitioners in solving problems encountered in construction accounting.

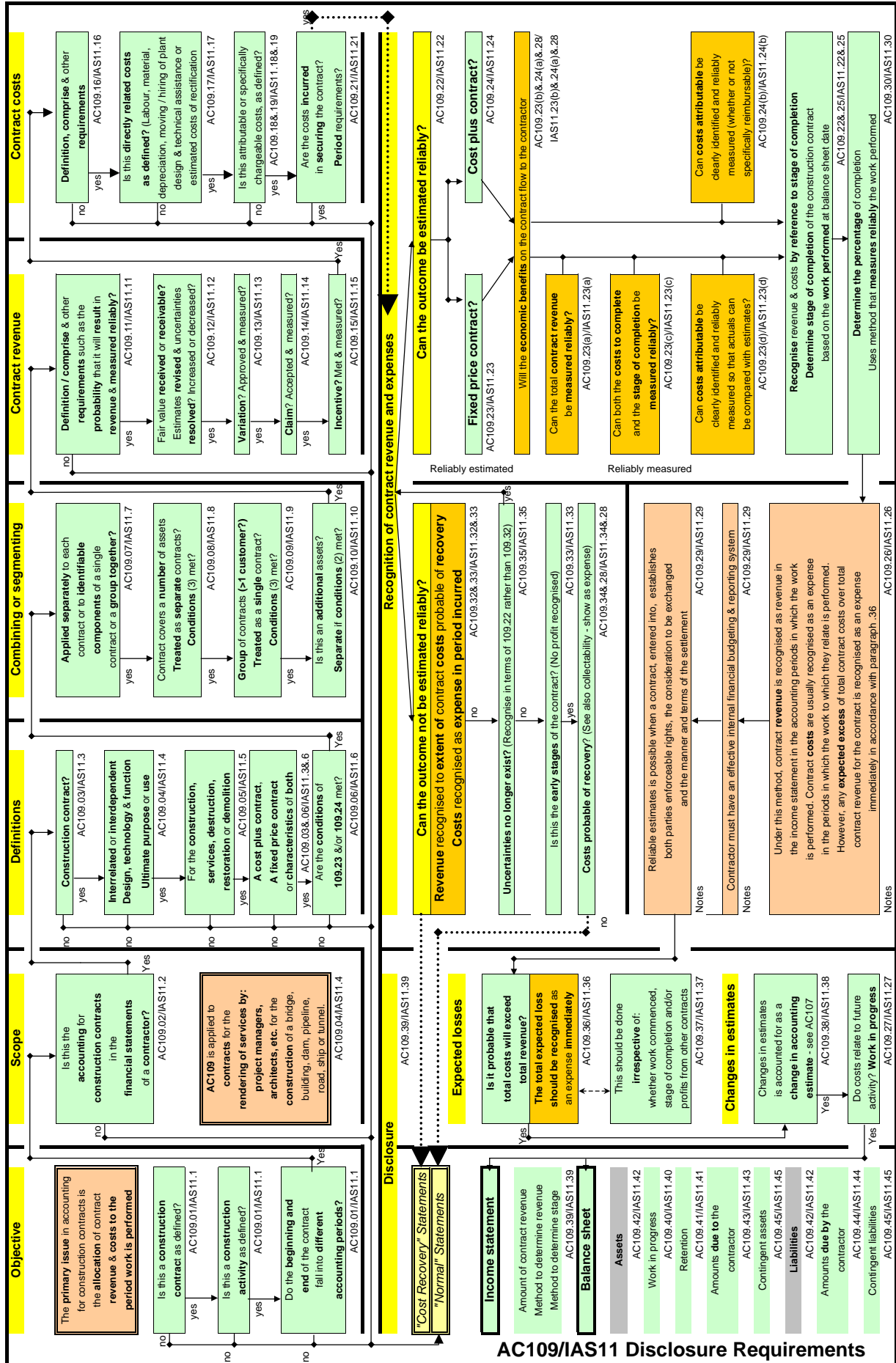
Some of the difficulties that most construction accountants encounter, in South Africa, are the lack of guidelines on effective construction contract bookkeeping to facilitate general accepted accounting practice and on site cost control reporting, accounting and the eventual verification thereof by the external auditors.

Taking this into account, AC109/IAS11 was analysed to determine whether possible ambiguity could exist in the interpretation of AC109/IAS11, and also the extent to which there is common ground among AC109/IAS11, cost accounting and general built environment practices, should interpretation prove to be a problem.

The analyses done are presented in diagram 8 on page 212. (This is a duplication of diagram 2 on page 61)

From the diagram the conclusion was reached that if any ambiguity does exist, it would rather be as a result of the varying backgrounds and perspectives of the various professionals reading the document than the document itself.

Diagram 8: Diagram of the requirements contained in AC109/IAS11: Construction contract (Statement of GAAP)



The diagram clearly indicated that:

The primary issue in accounting for construction contracts is the allocation of contract revenue and costs to the period that the work is performed (AC109.01 / IAS11.01).

The recognition of contract revenue and expenses is dependent on whether the outcome of the contract can be estimated reliably or not (AC109.22 / IAS11.22)

In order to determine whether the outcome can be estimated reliably, the following prerequisites must be met:

**For a fixed price contract:**

- a. Will the economic benefits on the contract flow to the contractor?
- b. Can the contract revenue be *measured reliably*?
- c. Can both the cost to complete and the stage of completion be *measured reliably*?
- d. Can costs attributable be clearly identified and *reliably measured* so that actuals can be compared with estimates? (AC109.23/IAS11.22)

**For a cost plus contract:**

- a. Will the economic benefits on the contract flow to the contractor?
- b. Can costs attributable be clearly identified and *reliably measured*? (whether or not specifically reimbursable) (AC109.24/IAS11.22)

Built Environment Professionals indicated that they would have the following viewpoint on the above issue: If you can measure, you can estimate. If you can estimate, you can determine the outcome of a construction contract. If you can determine the outcome of a construction contract, you can allocate contract revenue and costs to the period that the work is performed. If you can allocate contract revenue and costs to the period that the work is performed, you have complied with the primary issue in accounting for construction contracts. The question that emerged was: If it all starts with measurement, then it should be the most important, or at least, one of the most important/fundamental concepts contained in AC109/IAS11.

The above reasoning is that of a built environment professional, but the question arises whether accountants would interpret the conditions contained in AC109/IAS11 in the same way.

The only way to determine whether there is ambiguity in the interpretation of phrases contained in AC109/IAS11 would be to establish how the document is interpreted and applied in practice. To ensure conformity to a standard, it was decided to approach a group of professionals that would give access to guaranteed, consistent and informed responses. The group selected was the registered public auditors and accountants of major construction contractors. It was assumed that accountants might not agree with the built environment professional's interpretation of AC109/IAS11. The solution was to enquire from the registered auditors and accountants how they interpret AC109/IAS11 on this issue. The hypothesis evolved that they did not agree and it was formulated as:

**3.1.1. “Reliable measurement” and “reliable estimates” are not clearly identified in AC109/IAS11 as the most fundamental concepts.**

To determine whether registered auditors and accountants agree with the statement their opinion was solicited in question 4 of the questionnaire.

If the accountants and auditors agree with the first statement, the next step in determining whether some ambiguity exists would be enquire how they interpret the wording or how they define the concepts contained in AC109/IAS11, on the subject.

Thus the second hypothesis is formulated as:

**3.1.2. No definitions of “Reliable measurement” or “reliable estimates” are given in AC109/IAS11**

To determine whether registered auditors and accountants agree with the second statement would again be to ask them.

The next deduction is that if the auditors and accountants agree with the first two statements, namely that to measure reliably is the most important concept in AC109/IAS11 and that it is not defined adequately, it implies that there is some degree of ambiguity in the document AC109/IAS11. This led to the formulation of the third hypothesis. Hypothesis three brings into consideration the fact/expectation that that registered auditors and accountants would focus on facts and figures and that their first reaction would be to interpret any definition within their frame of reference.

The third hypothesis reads as follows:

**3.1.3. The context within which “reliable measurement” and “reliable estimates” are used in AC109/IAS11 is such that it does not seem to imply more than arithmetical correctness**

To determine whether registered auditors and accountants agree with the second statement would again be to ask them.

With “measurement” adequately covered, other aspects such as “estimating” and, eventually, the “recognition of revenue and expenses” on the contract, came under scrutiny.

Recognition of revenue and expenses related to a construction contract inevitably leads to the determination of the stage of completion on the construction contract and the use of the so-called “percentage of completion method”.

Thus the fourth hypothesis on the possible ambiguity in the application of the percentage-of-completion method is formulated as:

**3.1.4. AC109/IAS11 leaves the choice of the basis and method, to be used to determine the stage of completion and therefore the recognition of profit on incomplete construction contracts, to the professional opinion of the accountants involved.**

To determine whether registered auditors and accountants agree with the second statement would again be to ask them. At this point it was determined without a doubt that a questionnaire would be the vehicle to collect the data on the research of the topic.

It was further reasoned that if the concept of “measuring reliably” was indicated as the most important in AC109/IAS11, defined adequately, clearly meant and understood to be more than an arithmetical exercise, then the registered auditors and accountants would be of the opinion that they would need to make use of the work of experts. This could refer to making use of experts in the audit team, employing experts on a permanent basis, etc. The alternative would be that they consider themselves to be the experts with regard to the determination of the stage of completion on construction contracts.



Therefore the fifth hypothesis is:

**3.1.5. There is no existing and feasible practice for the use of the work of independent, objective, qualified and experienced Built Environment Professionals (BEPs) by Registered Auditors and Accountants of construction contractors.**

To determine whether registered auditors and accountants agree with the second statement would again be to ask them. This led to the questions on the using and employment of Built Environment Professionals on construction contracts.

**3.2. Using measuring instruments: validity and reliability assessment**

A questionnaire of own design and construction was used in the collection of data. After compilation of the questionnaire it was checked for possible problems and ambiguities with the assistance of the Department of Statistics of the University of Pretoria.

The piloting and pre-testing method was to hand the questionnaire to a qualified chartered accountant in practice and partner in a reputable firm of chartered accountants in Pretoria with the request to complete with the aim of estimating the duration and determine the clarity of thee questions.

The feedback was that the questionnaire might take more than the indicated time allowed, but it was possible to do in 30 minutes.

To avoid ambiguous or vague items, some questions were altered to eliminate:

- assuming too much about respondents
- using specific rather than general questions and
- using short and simple questions and
- avoiding questions of fictitious constructs and
- leading questions

The sequence of questions was intentionally altered to determine whether accountants and auditors contradicted themselves. It was not expected to affect response accuracy.

The questionnaire was then handed to two built environment professionals for comment and discussion. Their comments, corrections and suggestions were all accommodated, in the final version of the questionnaire.

### **3.3. Sample design, sample method and data collection methods.**

Construction contracting is perceived as a straightforward type of business and is attractive to a variety of entrepreneurs because the work is “uncomplicated” and “huge” profits can be made. The question of profits is normally a sensitive issue to most businesses, and construction is no exception.

Determining profit on something that is not completed creates additional skepticism as a result of the uncertainty of the situation. To determine the stage of completion on a construction contract means strict accounting controls on not only the work completed to date but also the work to completion from that same date.

AC109/IAS11 provides guidelines on most of the above problems. There exist certain factors that contribute to the problematic nature associated with determining the stage of completion that is not addressed by AC109/IAS11.

Some factors that contribute to the problematic nature associated with determining the stage of completion on construction contracts may include one or more of the following:

- The smaller the business of the contractor, the less likely it is that he would employ a qualified accountant. A qualified accountant can be

regarded is a person that can apply the requirements of Statements of GAAP with ease.

- The infrastructure of the business is kept “lean” as profits are viewed as more or less equal to cash flow, and therefore determined at the completion of a contract. This puts the accountant under pressure to produce a variety of statements and forces him to focus on the most important aspects, namely management reports. The compilation of statements according to AC109/IAS11 is a low priority on his “to do” list.
- Financial statements are in some cases compiled by the registered external auditors and accountants, by agreement with the shareholders of the company, during or after the annual audit and used for tax and other purposes. These statements are normally not part of the internal accountant’s daily, monthly or yearly duties. The registered external auditors and accountants will eventually be the only respondents that could complete the questionnaire as they determine to a large extent the content of the financial statements. The smaller the contractor’s business, the less sophisticated his needs for highly qualified external accountants, and therefore the expertise on application of AC109/IAS11 is further diminished.

The above circumstances indicate that any investigation and research into the application of AC109/IAS11 will have to be limited to a large extent or totally on the larger contractors. It will be dictated by contract size, volume and duration.

In Gauteng the Gauteng Master Builders Association (GMBA) has a category “Large General Contractors” with twenty-five registered members. Their contact information is listed on the Internet at the GMBA website.

These companies were contacted by e-mail and telephone to obtain the names and contact details of their registered external auditors and accountants. Permission to contact the external auditors was obtained from the contractors.

Seventeen of the twenty-five companies were prepared to supply their auditors' details and consented that they could be contacted, albeit under very strict conditions. (The letter of consent and other correspondence are included as appendices)

The seventeen registered external auditors and accountants were contacted in a variety of ways (post, telephone, fax and e-mail) and eventually thirteen answered the request for the return of the questionnaire. Three of the thirteen respondents requested to submit a joint questionnaire, as they were from the same audit firm that was auditors to three of the contractors. The rest (four), declined to reply, telephonically or by e-mail.

### **3.4. Summary**

The responsibilities of internal accountants, who can also be the directors of the company and ultimately built environment professionals, are totally different than those of external accountants and auditors. It is also clear that they have totally different viewpoints of the same problems. The focus of external professionals are fixed on internal controls, compliance thereto, statements and guidelines, whereas the internal professionals are focused on cost control, production, cash flow and ultimate profit. This might not seem like much but they are almost worlds apart.

Professionals from the built environment are known to indicate that they do not believe that accountants can be "doing it right" and that they are not following the correct procedures. They are referring to the fact that accountants do not possess the skills of a built environment professional and when they read AC109/IAS11 it appears as if the accountants are not following their own guidelines and statements.

The attached diagram 9 on page 221 was used to dissect the flow of research reasoning.

**Diagram 9: Reasoning towards the research problem**

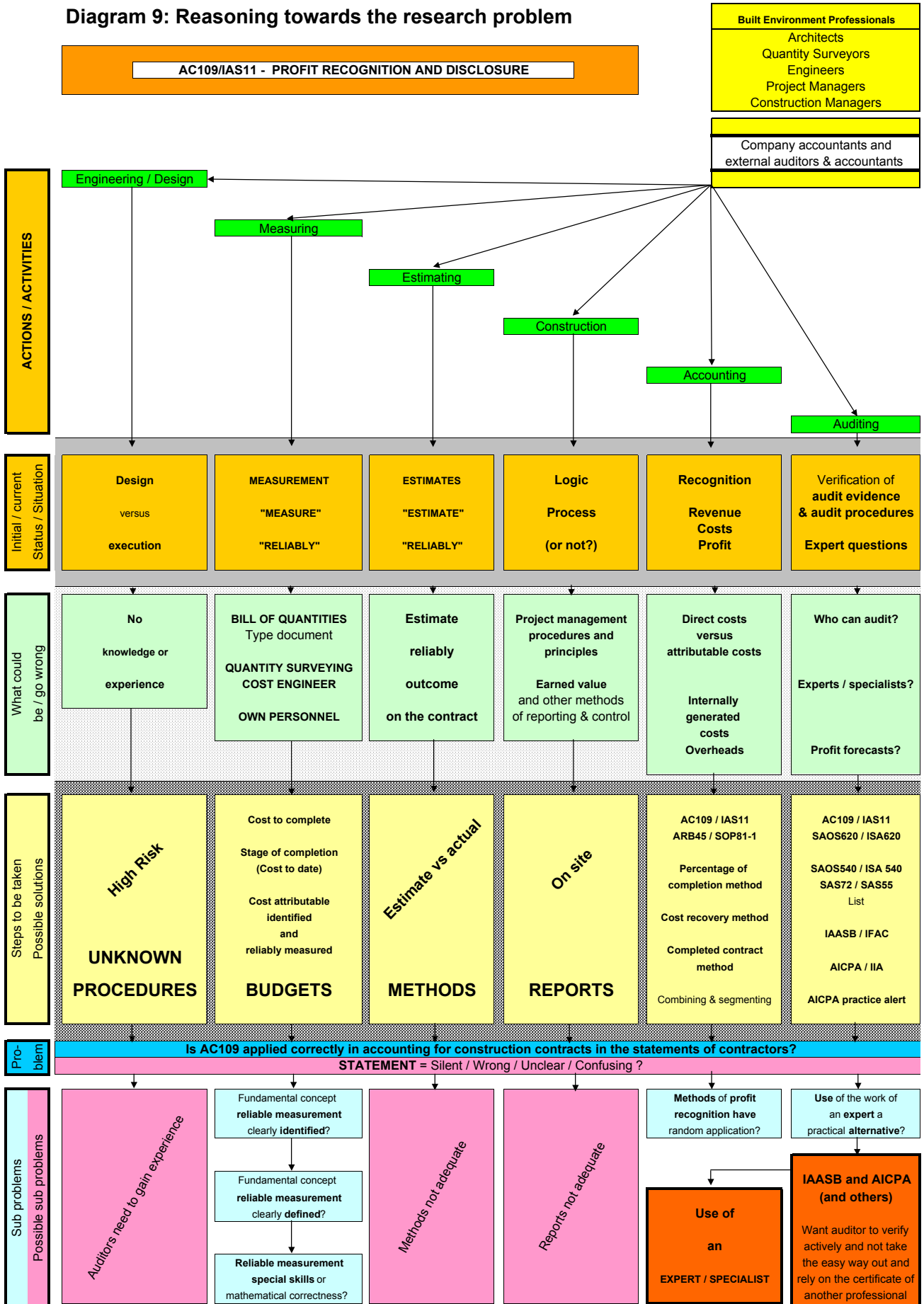


Diagram 3.2 also considers the possible reasons for including registered external auditors and accountants in the survey. Starting at the top right hand part of the page, with the built environment professionals, the intention was to scrutinize the activities of accountants in verifying, checking and enquiring the accuracy of calculations and estimates in determining the stage of completion on construction contracts.

Six activities where accountants are taking part from their own environment or within the built environment were identified, namely: engineering and design, measuring, estimating, construction, accounting and auditing. Each of the activities was then scrutinized under the following headings of initial situation and/or current status, what could possibly be problematic, possible steps to rectify or possible solutions to the problems, identification of the problem and possible sub-problems.

The activities were contemplated under the heading of sub-problems and the reasoning evolved along the following lines:

- **Engineering and design**

The accountants need more experience. They should be aware of this. The built environment professionals should also be aware of this. The situation can be verified by including this issue in the questionnaire. It was not anticipated that further pursuit of this topic would yield new or surprising results apart from the uncertainty as to exactly how the accountants view this issue and whether they consider it an issue at all.

- **Measuring**

The concept of reliable measurement appears in AC109/IAS11. Reliable measurement means the culmination of all the skills that the quantity surveyor or cost engineer acquired in their training. The built environment professionals know that the accountant will not be capable of complying with the requirements as interpreted by the built environment professionals. The question that arose was whether measurement is

clearly identified and/or defined in AC109/IAS11 as being important to accountants. The next question was where the built environment professional stand on the issue and whether it would require special skills to measure. This led to the first three hypotheses.

- **Estimating**

Estimating techniques could be suspect or inadequate. The concept of reliable estimates is a requirement of AC109/IAS11, but as in the case of measurement, it might not be clearly identified and/or defined in AC109/IAS11 and, like measurement, it will mean that the built environment professional might consider it to require special skills. This led to the three hypotheses that include measurement.

- **Accounting**

The methods for recognition of revenue and expenses on the construction contract might be suspect or not, or open to questions and debate. This is not the focus of this research. Recognition should be something that accountants should decide on. It does not concern the built environment professionals. It might or might not concern the contractor. This was never established during the research. This is an excellent topic for further research. This led to the fourth hypothesis.

- **Auditing**

The usual procedure for auditing a client is to focus on his accounting records and for that you need accounting and auditing skills. Built environment professionals would argue that when you audit a construction contractor it might prove difficult if you do not possess built environment skills. It is therefore contemplated that if you have trouble doing it yourself you might need to ask an independent expert's opinion on the situation or transaction. Whether accountants share this view is best tested by obtaining their opinion of the issue. Whether they consider lack of built environment skills an issue and whether they consider employing an expert a viable option/alternative? These questions led to the last hypothesis.

## CHAPTER 4 - PRESENTATION AND DISCUSSION OF THE RESULTS

### 4.1. INTRODUCTION

The contractor sample selected to complete the research questionnaire consisted of those contractors registered in 2005 with the Gauteng Master Builders' Association (GMBA), in the category "Large General Contractors". (According to Brummer (2006:8) it included all the construction companies rated in the top 200 companies in South Africa, in the 2006 survey.) The sample included the entities that would apply the principles contained in AC 109/IAS11.

It was also assumed that the above companies' external auditors and accountants would at least be consulted or otherwise exercise a major influence on the contractors' accounting and reporting policies, and therefore the external auditors were the best equipped to complete the questionnaire. (The sample also included the well known "big four" international audit and accounting firms.)

Concerning the above mentioned contractors and their auditors, the sample structure turned out as follows:

- Six of the large contractors selected for the survey employ "big four" auditors.
- Three of the six employ the same audit firm and the other three each employ the remaining members of the "big four" auditors group.
- The auditors (three different audit teams from different branch offices) that have three of the contractors as clients completed one questionnaire only.
- Of the other three "big four" firms, two completed the questionnaire but one declined in writing, stating personnel transfers as the reason.
- Therefore, although only three questionnaires were received, it represents five contractors and was therefore treated as a group of five.
- The "other" group comprises eight (different) external audit and accounting firms representing eight contractors.



Seventeen external auditors, selected through their contractor clients to complete the questionnaire, were contacted in a variety of ways and eventually eleven completed the questionnaire. Two respondents who stated that they did complete the questionnaire requested, at the last moment, that the response submitted by their colleague be accepted as their own and that brought the total responses received to thirteen.

The questionnaires were first sent out in July/August 2005 and except for one respondent everybody had to be followed up on numerous occasions. Those that did not respond either declined in writing or never submitted despite (numerous) promises to do so.

**Table 5: The final analysis of the research sample.**

Completed questionnaires	10
Plus: Respondents who submitted a joint questionnaire	3
<b>Total respondents</b>	<b>13</b>
Plus: Respondents that declined in writing	1
Plus: Respondents that promised to complete but did not	2
Plus: Respondents that could not be reached personally	1
<b>Total questionnaires sent out</b>	<b>17</b>
Plus: Contractors that declined participation in writing	2
Plus: Contractors where it was impossible to speak to management	3
Plus: Contractors where it was impossible to speak to anybody	3
<b>Total sample chosen</b>	<b>25</b>

The questionnaire is a self-administered questionnaire.

The results of the questionnaire are displayed on the following pages.

**Firstly, the answers are divided up into two groups.**

**The first group** contains the short “yes” and “no” type answers. The first group of answers was the more successful of the two because of the direct questions and answers. There are no doubts about the results.

**The second group** contains the answers where respondents were required to comment on certain questions. These answers require interpretation and in some cases it was not possible to come to a definite conclusion.

*It is possible to consider the second group of answers as further explanation only and determine from the first group of answers whether the information received from the respondents support or reject the hypotheses.*

**Secondly, the audit firms (respondents) were also divided into two groups.**

**The first group** consists of those firms that belong to the “big four international” auditing and accounting firms. Five of the respondents belong to this group, which is identified as being “**International**”.

**The second group** consists of those respondents that belong to local audit and accounting firms and are not known as “International” firms. There are eight of them and they are identified as “**Others**”.

*A distinction was made because traditionally there has been a perceived difference in method and application of auditing between the “big four” and other firms. This is also with regard to infrastructure and resources and although difficult to define, it exists. The response to the questionnaire again pointed to its existence.*

The results are displayed as follows:

- The heading “Audit firms” refer to the respondents, divided into “Internationals” and “Others”, as a percentage of the total population.
- The heading “Audit firms as a group” refers to the percentages of the two groups that responded, as a group, to a certain question.

As an example the following result is displayed and should be read as follows:

- 69.2% of the total population decided not to answer, thus a “No answer”. This response comprised 30.8% “international” auditing firms and 38.5% “other” auditing firms.
- The 30.8% “international” response comprised 80% of the “international” firms that took part in the survey.
- The 38.5% “other” votes comprised 62.5% of the “other” firms.

	No answer	AC109 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
	<b>0.01</b>				
Audit firms:					
TOTAL	69.2		23.1	7.7	0
INTERNATIONAL	30.8		7.7	0.0	0
OTHER	38.5		15.4	7.7	0
Audit firms as a group:					
INTERNATIONAL	80		20	0	0
OTHER	62.5		25	12.5	0

### Conclusion:

(Comments on the results are displayed directly below the results.)

**The index to questions and answers follows on the next three pages.**

**Table 6: INDEX TO QUESTIONS AND ANSWERS (see note at bottom)**

No.	NB	Notes	Type of answer	Supports hypothesis	Page/s
1	No	Prefer to receive results	Short	1 - 5	382
2	No	Are you an auditor	Short	1 - 5	382
3	Yes	<b>Any previous experience</b>	<b>Short</b>	<b>5</b>	336
4	Yes	<b>Recognise professionals</b>	<b>M / S</b>	<b>5</b>	337 - 343
5	Yes	<b>Important concept &amp; defined</b>	<b>M / S</b>	<b>1</b>	233 - 245
6	Yes	<b>POC determined accurately</b>	<b>Short</b>	<b>4</b>	301
7	No	Using 6.1 to 6.5 (Q6)	Short	4	302
8	No	Elaborate on Q7	Long	4	303
9	No	Using 6.6 (Q6)	Short	4	304
10	No	Elaborate on Q9	Long	4	305
11	Yes	<b>Acceptable alternatives</b>	<b>Short</b>	<b>4</b>	306
12	No	Most frequently used 6.1-6.6	M / S	4	307 - 308
13	No	Any other than 6.1 to 6.6	Long	4	309
14	No	Change from year to year	Short	4	310
15	No	Elaborate on Q14	Long	4	311
16	No	Client change policy	Short	4	312
17	No	Did you agree	Short	4	313
18	No	Client consult auditor	Short	4	314
19	No	POC > recognize profit	Long	4	315 - 317
20	No	No profit = completed	Short	4	318
21	No	Requirements defined	M / S	2 & 3	250 - 256 272 - 278
22	No	Measure reliably defined	Long	2 & 3	257 - 258 279 - 280
23	No	Estimate reliably defined	Long	2 & 3	259 / 281
24	Yes	<b>Formal training in BE skills</b>	<b>M / S</b>	<b>3</b>	282 - 283
25	Yes	<b>Visit site &amp; interview</b>	<b>Short</b>	<b>5</b>	344
26	Yes	<b>Identify &amp; understand the assumptions &amp; uncertainties</b>	<b>Short</b>	<b>5</b>	345

No.	NB	Notes	Type of answer	Supports hypothesis	Page/s
27	No	BEPs unique contracts	Short	5	346
<b>28</b>	<b>Yes</b>	<b>Construction contract law</b>	<b>Short</b>	<b>5</b>	347
<b>29</b>	<b>Yes</b>	<b>Detect from drawings</b>	<b>M / S</b>	<b>3 &amp; 5</b>	284 – 287 348 - 351
<b>30</b>	<b>Yes</b>	<b>Measure reliably defined</b>	<b>Short</b>	<b>2 &amp; 3</b>	260 / 288
31	No	Measure reliably meaning	Long	2 & 3	261 / 289
32	No	Measure & estimate skills	Short	2 & 3	262 / 290
33	No	Elaborate on Q32	Long	2 & 3	263 / 291
<b>34</b>	<b>Yes</b>	<b>Measure by clerk</b>	<b>Short</b>	<b>3 &amp; 5</b>	292 / 352
<b>35</b>	<b>Yes</b>	<b>Audit of measure by clerk</b>	<b>Short</b>	<b>3 &amp; 5</b>	293 / 353
<b>36</b>	<b>Yes</b>	<b>Elaborate on Q35</b>	<b>Short</b>	<b>3 &amp; 5</b>	294 / 354
37	No	Elaborate on Q36	Long	3 & 5	295 / 355
<b>38</b>	<b>No</b>	<b>Calculations of BEP arithmetical of nature</b>	<b>Short</b>	<b>3 &amp; 5</b>	296 / 356
39	No	Elaborate on Q38	Long	3 & 5	297 / 357
40	No	BEPs independent	Short	5	358
41	No	Measure verify own clerks	Short	5	359
42	No	Elaborate on Q41	Long	5	360
43	No	Attributable & overheads	Short	4 & 5	319 - 361
44	No	Direct costs & BOQ	Short	4 & 5	320 - 362
45	No	Elaborate on Q44	Long	4	321
<b>46</b>	<b>Yes</b>	<b>Make use of work of expert</b>	<b>Short</b>	<b>5</b>	363
<b>47</b>	<b>Yes</b>	<b>Employ BEPs in audit</b>	<b>M / S</b>	<b>5</b>	364 - 368
48	No	BEPs = audit evidence	Long	5	369
49	No	Not without BEPs	Short	5	370
50	No	Elaborate on Q49	Long	5	371
<b>51</b>	<b>Yes</b>	<b>Audit without BEPs</b>	<b>Short</b>	<b>5</b>	372
<b>52</b>	<b>Yes</b>	<b>BEPS on payroll of client</b>	<b>Short</b>	<b>5</b>	372

No.	NB	Notes	Type answer	Supports hypothesis	Page/s
53	Yes	BEPs employed permanently	Short	5	373
54	Yes	AC 109 be manipulated	Short	4	322
55	No	Elaborate on Q54	Long	4	322
56	No	Audit program design prevent	Short	4	323
57	No	Elaborate on Q56	Long	4	324
58	No	Audit program design detect	Short	4	325
59	No	Elaborate on Q58	Long	4	326
60	No	Cost to date = estimated	Short	4	327
61	No	Elaborate on Q60	Short	4	327
62	No	Costs to complete = estimated	Short	4	328
63	No	Elaborate on Q62	Long	4	328
64	No	Estimate or cash flow	Short	1 - 5	376
65	No	Accounting bodies & activities	Short	1 - 5	377 - 380
66	No	Interested in CPD	Short	1 - 5	381 - 382

**Note to table 6:**

The above index is displayed according to the sequence of the question numbers. Under the discussions of the five hypotheses the “index per hypothesis” is displayed and discussed. The index above is therefore more of a summary than an indication of the sequence to questions and answers. The table above is divided into:

- question numbers and
- the “NB” indicates importance to the particular hypothesis with
- short notes to identify the question and an
- indication of the type of question (M/S meaning multiple short questions) and a reference to
- the hypothesis supported by the question with its page number.

### 4.3. PRESENTATION AND DISCUSSION OF RESULTS ACCORDING TO THE RESPECTIVE HYPOTHESES

#### 4.3.1. HYPOTHESIS ONE

##### The research problem:

- Does **AC109/IAS11: CONSTRUCTION CONTRACTS** provide clear and feasible guidelines for the determination of the stage of completion on a construction contract for disclosure in the financial statements of contractors?

##### The sub-problem:

- Are “reliable measurement” and “reliable estimates”, as contained in AC109/IAS11, clearly identified as the most fundamental concepts?

##### The hypothesis:

- “Reliable measurement” and “reliable estimates” are not clearly identified in AC109/IAS11 as the most fundamental concepts.

In **question number five** the respondents were asked whether any concept can be identified as being more important than the others and whether its definition could be considered to be complete and adequate, or whether it needed some guidelines and further definition.

It was expected that the respondents would notice that “estimate” and “measurement” are included in the recognition of revenue and expenses and are the more important concepts contained in AC109/IAS11. It should be noted that the built environment professionals are of the opinion that; if you can measure you can estimate. Recognition can then be done with more confidence.

**Table 7: Hypothesis one supporting questions and answers**

<b>No.</b>	<b>Notes to the questions</b>	<b>Notes to the answers</b>	<b>Page</b>
5.1	The objective	<p>The questions are directed at determining which of the paragraphs listed are more important than the others and whether definitions and descriptions are adequate and clear.</p> <p>The respondents opted for wording like “<b>recognition</b>” as being more important rather than “<b>measure</b>”, “<b>estimate</b>” and “<b>identify</b>”. They consider the last three concepts as routine accounting.</p> <p>The respondents are of the opinion that as far as identifying, allocation and measurement of costs and revenue are concerned, it is an accounting problem.</p>	233
5.2	The scope		234
5.3	Definitions		235
5.4	Combine & Segment		236
5.5	Contract revenue		237
5.6	Contract costs		238
5.7	<b>Recognition of revenue &amp; costs.</b> The respondents were in agreement that this is the most important concept contained in AC109/IAS11.		239
5.8	<b>Estimate reliably.</b> Built environment professionals would expect estimate to be a prerequisite for recognition		240
5.9	<b>Measure reliably.</b> The same comment as in the above is applicable where measure is concerned.		241-242
5.10	Expected losses		243
5.11	Changes in estimates		244
5.12	Disclosure requirements		245

Question five is divided into twelve shorter questions almost along the lines of the headings to paragraphs contained in AC109/IAS11.







### 5.3. DEFINITIONS

	No answer	AC 109 / IAS 11 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
		<b>.03 - .06</b>			
Audit firms:					
TOTAL	53.8		30.8	15.4	0
INTERNATIONAL	23		15	0	0
OTHER	30.8		15.4	15.4	0
Audit firms as a group:					
INTERNATIONAL	60		40	0	0
OTHER	50		25	25	0

#### Discussion:

“A construction contract is a contract specifically negotiated for the construction of an asset (such as a bridge, building, dam, pipeline, road, ship or tunnel) or a combination of assets that are closely interrelated or interdependent in terms of their design, technology and function or their ultimate purpose or use.” (AC109.03/IAS11.03)

“Construction contracts are formulated in a number of ways that, for the purposes of this statement, are classified as fixed price contracts and cost plus contracts. Some construction contracts may contain characteristics of both a fixed price contract and a contract plus contract, for example in the case of a cost plus contract with an agreed maximum price.” (AC109.06/IAS11.06)

The fact that a ship is considered as construction is not well known and the classification of contracts in two categories is at the least debatable. This should have led to the requirement of clearer guidelines by the respondents.

#### Conclusion:

Respondents did not consider the definitions paragraphs to be more important.

or the clarification on / of:

#### 5.4. when to COMBINE and when to SEGMENT

	No answer	AC 109 / IAS 11 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
<b>.07 - .10</b>					
Audit firms:					
TOTAL	61.5		23.1	7.7	15.4
INTERNATIONAL	31		8	0	0
OTHER	30.8		15.4	7.7	15.4
Audit firms as a group:					
INTERNATIONAL	80		20	0	0
OTHER	50		25	12.5	25

#### Discussion:

Paragraph .07 is clear that “The requirements of this statement are usually applied separately to each contract. However, in certain circumstances, it is necessary to apply the statement to the separately identifiable components of a single contract or to a group of contracts together in order to reflect the substance of a contract or a group of contracts.” (AC109.07/IAS11.07)

The headings to paragraphs .08 and .09 states:

“When a contract covers a number of assets, the construction of each asset should be treated as a separate construction contract” (AC109.08/IAS11.08)

“A group of contracts, whether with single customer or with several customers, should be treated as a single construction contract” (AC109.09/IAS11.09)

#### Conclusion:

It is clearly not considered to be an important concept although much attention is paid to paragraph .09 in international debates on the subject.

## 5.5. *what is to be considered as CONTRACT REVENUE*

	No answer	AC 109 / IAS 11 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
		.11 - .15			
Audit firms:					
TOTAL	15.4		69.2	7.7	15.4
INTERNATIONAL	0		23	8	8
OTHER	15.4		46.2	0	7.7
Audit firms as a group:					
INTERNATIONAL	0		60	20	20
OTHER	25		75	0	12.5

### Discussion:

“Contract revenue should comprise:

- The initial amount of revenue agreed in the contract, and
- variations in contract work,
- claims and
- incentive payments:

to the extent that it is probable that they will result in revenue, and they are capable of being reliably measured.” (AC109.11/IAS11.11)

In most industries the determination of revenue is not considered to be an aspect of dispute but that is seldom the case in construction.

### Conclusion:

The question of *what is to be considered as contract revenue* is considered by 60% of “international” auditors and accountants and 75% of “other” auditors and accountants to be *the third most important concept* contained in AC109/IAS 11.

## 5.6. what is to be considered as CONTRACT COSTS

	No answer	AC 109 / IAS 11 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
		<b>.16 - .21</b>			
Audit firms:					
TOTAL	23.1		76.9	0	7.7
INTERNATIONAL	8		31	0	0
OTHER	15.4		46.2	0	7.7
Audit firms as a group:					
INTERNATIONAL	20		80	0	0
OTHER	25		75	0	12.5

### Discussion:

“Contract costs should comprise:

- costs that relate directly to the specific contract,
- costs that are attributable to contract activity in general and can be allocated to the contract, and
- such other costs as are specifically chargeable to the customer under the terms of the contract.” (AC109.16/IAS11.16)

“Costs that may be attributable to contract activity in general and can be allocated to specific contracts include construction overheads. Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics. The allocation is based on the normal level of construction activity. “(AC109.18/IAS11.18) This needed clarification.

### Conclusion:

The question of contract costs is considered by 80% of “international” auditors and accountants and 75% of “other” auditors and accountants to be the second most important concept contained in AC109/IAS11.

## 5.7. when and how to RECOGNISE REVENUE and EXPENSES

	No answer	AC 109 / IAS 11 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
<b>.22 - .32</b>					
Audit firms:					
TOTAL	7.7		84.6	7.7	0
INTERNATIONAL	0		38	0	0
OTHER	7.7		46.2	7.7	0
Audit firms as a group:					
INTERNATIONAL	0		100	0	0
OTHER	12.5		75	12.5	0

### Discussion:

“When the outcome of a construction contract can be estimated reliably, contract revenue and contract costs associated with the construction contract should be recognised as revenue and expenses respectively by reference to the state of completion of the contract activity at the balance sheet date. The stage of completion should be determined based on the work performed on the contract at the balance sheet date.” (AC109.22/IAS11.22)

“In the case of a fixed price contract, the outcome of a construction contract can be estimated reliably when all of the following conditions are satisfied” and “In the case of a cost plus contract, the outcome of a construction contract can be estimated reliably when both of the following conditions are satisfied.” (AC109.23 & .24/IAS11.23 & .24)

### Conclusion:

When and how to recognise revenue and expenses is considered by 100% of the “international” firms and 75% of the “other” firms to be the most important concept contained in AC109/IAS11.

### 5.8. *whether the outcome can be ESTIMATED RELIABLY or not*

	No answer	AC 109 / IAS 11 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
<b>.22 &amp; .32</b>					
Audit firms:					
TOTAL	23.1		61.5	7.7	23.1
INTERNATIONAL	8		31	0	0
OTHER	15.4		30.8	7.7	23.1
Audit firms as a group:					
INTERNATIONAL	20		80	0	0
OTHER	25		50	12.5	37.5

### Discussion:

In AC109.23/IAS11.23 it is stated that in the case of a fixed price contract the outcome of a construction contract can be estimated reliably when the following conditions are satisfied:

- Total contract revenue can be measured reliably.
- It is probable that the economic benefits associated with the contract will flow to the enterprise.
- Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be measured reliably.
- The contract costs attributable to the contract can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates.

*This paragraph and AC109.24/IAS11.24 can be considered the most important paragraphs in AC109/IAS11.*

### Conclusion:

This answer should be read with the answer to question 5.9.



## 5.9. when and how to MEASURE RELIABLY or not

	No answer	AC 109 / IAS 11 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
		<b>.23 &amp; .30</b>			
Audit firms:					
TOTAL	15.4		53.8	15.4	23.1
INTERNATIONAL	0		23	8	8
OTHER	15.4		30.8	7.7	15.4
Audit firms as a group:					
INTERNATIONAL	0		60	20	20
OTHER	25		50	12.5	25

### Discussion:

“Costs that may be attributable to contract activity in general and can be allocated to specific contracts include construction overheads. Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics. The allocation is based on the normal level of construction activity.” (AC109.18/IAS11.18)

In AC109.23/IAS11.23 it is stated that in the case of a fixed price contract, the use of “to measure reliably” is a prerequisite for estimating reliably in that:

- Total contract revenue can be measured reliably.
- Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be measured reliably.
- The contract costs attributable to the contract can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates.

In AC109.23/IAS11.23 it is stated that in the case of a cost plus contract, the use of “to measure reliably” is a prerequisite for estimating reliably in that:

- The contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and measured reliably.

That which must be measured reliably is:

- Total contract revenue.
- Contract cost to complete.
- Stage of contract completion.
- Contract cost attributable to the contract.

This cannot be done by your “average” auditor and accountant as determined and confirmed by the registered auditors and accountants who agreed to be respondents to the questionnaire.

That which must be clearly identified is:

- Contract cost attributable to the contract.

This can be done by your “average” auditor and accountant as determined and confirmed by the auditors and accountants who agreed to be respondents to the questionnaire.

### **Conclusion:**

60% of the “international” auditors feels that “When and how to measure reliably” is important. Only 50% of the “other” auditors and accountant firms agreed. It is therefore not rated by the respondents as being a “very” important concept. If the recognition of revenue and expenses is rated as the most important concept contained in AC109/IAS11, then surely the cornerstone of “being able to recognise” must be even more important. Without it nothing can be done.

## 5.10. when and how to recognise EXPECTED LOSSES

	No answer	AC 109 / IAS 11 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
<b>.36 - .37</b>					
Audit firms:					
TOTAL	15.4		53.8	15.4	23.1
INTERNATIONAL	0		31	8	0
OTHER	15.4		23.1	7.7	23.1
Audit firms as a group:					
INTERNATIONAL	0		80	20	0
OTHER	25		37.5	12.5	37.5

### Discussion:

“When it is probable that total contract costs will exceed total contract revenue, the expected loss should be recognised as an expense immediately.” (AC109.36/IAS11.36)

“The amount of such a loss is determined irrespective of:

- whether or not work has commenced on the contract.
- the stage of completion of contract activity, or
- the amount of profits expected to arise on other contracts that are not treated as a single construction contract in accordance with paragraph .09.” (AC109.37/IAS11.37)

The registered auditors and accountants of the larger contractors should be in agreement on the above question, which they are not.

### Conclusion:

When and how to recognise expected losses received an 80% vote from “international” firms but only 37.5% of the “other” firms agree.

### 5.11. when and how to recognise **CHANGES IN ESTIMATES**

	No answer	AC 109 / IAS 11 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
		<b>0.38</b>			
Audit firms:					
TOTAL	53.8		15.4	15.4	15.4
INTERNATIONAL	31		0	8	0
OTHER	23.1		15.4	7.7	15.4
Audit firms as a group:					
INTERNATIONAL	80		0	20	0
OTHER	37.5		25	12.5	25

#### Discussion:

“The method set out in this statement is applied on a cumulative basis in each accounting period to the current estimates of contract revenue and contract costs. Therefore, the effect of a change in the estimate of contract revenue or contract costs, or the effect of a change in the estimate of the outcome of a contract, is accounted for as a change in accounting estimate (see the statement on net profit or loss for the period, fundamental errors and changes in accounting policies). The changed estimates are used in the determination of the amount of revenue and expenses recognised in the income statement in the period which the change is made and is subsequent periods.” (AC109.38/IAS11.38)

“Changes in estimates” refers to the accounting concepts and not changes to estimated costs on construction contracts in the normal sense.

#### Conclusion:

“Changes in estimates” is viewed by the respondents as a general accounting problem and do not need further attention.

## 5.12. how to comply with the DISCLOSURE REQUIREMENTS

	No answer	AC 109 / IAS 11 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines
	<b>.39 - .45</b>				
Audit firms:					
TOTAL	38.5		38.5	15.4	15.4
INTERNATIONAL	23		8	0	8
OTHER	15.4		30.8	15.4	7.7
Audit firms as a group:					
INTERNATIONAL	60		20	0	20
OTHER	25		50	25	12.5

### Discussion:

“An enterprise should disclose:

- the amount of contract revenue recognised as revenue in the period.
- the methods used to determine the contract revenue recognised in the period, and
- the methods used to determine the stage of completion of contracts in progress.” (AC109.39/IAS11.39)

There is a trend in the disclosure of financial statements to describe in detail how the above is dealt with in practice. This is a new development.

It was anticipated that the above would raise doubts with the respondents.

### Conclusion:

This answer was surprising. The “other” audit firms might still have the notion that “all is well if disclosed adequately”. The “international” firms clearly disagree.

#### 4.3.1.2. DISCUSSION AND CONCLUSION TO HYPOTHESIS ONE

The hypothesis:

- *“Reliable measurement” and “reliable estimates” are not clearly identified in AC109/IAS11 as the most fundamental concepts.*

No concept tested in the questionnaire is identified in AC109/IAS11 as being the “most fundamental/important”.

However, the primary issue in accounting for construction contracts is the allocation of contract revenue and contract costs to the accounting periods in which construction work is performed. (AC109.01/IAS11.01)

The recognition of contract revenue and expenses is dependent on the fact whether the outcome of the contract can be estimated reliably or not. (AC109.22/IAS11.22)

In order to determine whether the outcome can be estimated reliably, the following prerequisites must be met:

- For a fixed price contract:
  - a. Will the economic benefits on the contract flow to the contractor?
  - b. *Can the contract revenue be measured reliably?*
  - c. *Can both the cost to complete and the stage of completion be measured reliably?*
  - d. *Can costs attributable be clearly identified and reliably measured so that actuals can be compared with estimates?* (AC109.23/IAS11.23)
- For a cost plus contract:
  - a. Will the economic benefits on the contract flow to the contractor?
  - b. *Can costs attributable be clearly identified and reliably measured (whether or not specifically reimbursable)* (AC109.24/IAS11.24)

Although it is never explicitly stated it could be argued that the following implication is at least a possibility:

- If you can measure, you can estimate (reliably of course), or
- you will not be able to estimate unless you first measure.
- If you can estimate, you can determine the outcome of a construction contract.
- When you can determine the outcome of a construction contract, you can allocate contract revenue and costs to the period that the work is performed.
- If you can allocate contract revenue and costs to the period that the work is performed, you have complied with the primary issue in accounting for construction contracts.
- Therefore, you cannot do anything unless you start with measurement.

It all starts with measurement. Accounting measurement and built environment measurement differs but both seek the answer to the question: “What is the stage of completion of the work on a construction site?”

Question five was included to determine whether hypothesis one is correct. The expected answer was to “measure reliably”. The respondents, however, were more concerned with recognition of revenue and expenses and the classification thereof.

Perhaps they should have given more thought to concepts such as “measuring”, “estimating” and “stage of completion”. When these aspects are dealt with in a correct manner, the rest (correct recognition) should follow automatically.

### **Conclusion:**

*This answer supports hypothesis one.*

### 4.3.2. HYPOTHESIS TWO

#### ***The research problem:***

- *Does AC109/IAS11: CONSTRUCTION CONTRACTS provide clear and feasible guidelines for the determination of the stage of completion on a construction contract for disclosure in the financial statements of contractors?*

#### ***The sub-problem:***

- *Are “reliable measurement” and “reliable estimates”, as contained in AC109/IAS11, clearly defined?*

#### ***The hypothesis:***

- No definitions of “reliable measurement” or “reliable estimates” are given in AC109/IAS11.

#### **The key issues to support or reject hypothesis two is:**

- **“Reliability”, “measurement” and “reliability of measurement”** are defined in AC000/Framework: Framework for the Preparation and Presentation of Financial Statements and not in AC109/IAS11.
- AC109/IAS11 refers to these definitions by referring to the Framework. The definitions contained in AC000 do not define “reliable measurement” in the same way that the Built Environment Professionals would have and it might be a debatable point if it defines the real essence of “reliable measurement” as contained in AC109/IAS11. The question is whether the accounting definitions actually define the above measurements?



Table 8: Hypothesis two supporting questions and answers.

No.	Notes on the questions	Notes on the answers	Page
21	This is a direct question to determine whether the respondents are of the opinion that the important concepts contained in AC109/IAS11 are properly defined and / or described.	The respondents were of the opinion that the definitions and descriptions contained in AC109/IAS11 are adequate. <i>The answer supports the hypothesis.</i>	250 - 256
22	Measure reliably defined	The respondents are not in total agreement on the topic.	257 - 258
23	Estimate reliably defined	The respondents are not in total agreement on the topic	259
30	This was a direct question to determine whether the respondents are of the opinion that the concept “reliable measurement”, contained in AC109/IAS11, is properly defined and / or described.	The response to the question is a direct contradiction of question 21 and might imply other problems such as more misconceptions and too hasty conclusions drawn. <i>The answer supports the hypothesis.</i>	260
31	Measure reliably meaning	The respondents are not in total agreement on the topic	261
32	Estimate and measure the same skills	The respondents are not in total agreement on the topic <i>The answer supports the hypothesis.</i>	262
33	Elaborate on Q32	<i>See page 15</i>	263

### 4.3.2.1. DISCUSSIONS OF ANSWERS TO HYPOTHESIS TWO

#### Question 21

Are the requirements for the following clearly defined?

#### 21.1. *measuring reliably*

	yes	unsure	no
Audit firms:			
TOTAL	61.5	23.1	15.4
INTERNATIONAL	38.5	0	0
OTHER	23.1	23.1	15.4
Audit firms as a group:			
INTERNATIONAL	100	0.0	0.0
OTHER	37.5	37.5	25

#### Discussion:

“Measuring” or “reliably” are not defined in AC109/IAS11, but in AC000.

**Table 9: The use of the word “measure” in AC109/IAS11**

No.	Heading to the paragraph	Paragraph numbers	Times that the word is used in AC109/IAS11
1	Contract revenue	.11 - 15	7
2	Contract costs	.16 - .21	1
3	Recognition of contract revenue and contract costs	.22 - .35	5

The word measure is used 13 times throughout AC109/IAS11. (Reliably: 21 times)

#### Conclusion:

Question 30 determined that “measuring reliably” is never defined in AC109/IAS11. The above is a direct contradiction of the results of question 30.

## 21.2. *estimating reliably*

	yes	unsure	no
Audit firms:			
TOTAL	46.2	23.1	30.8
INTERNATIONAL	38.5	0	0
OTHER	7.7	23.1	30.8
Audit firms as a group:			
INTERNATIONAL	100	0	0
OTHER	12.5	37.5	50

### Discussion:

Estimating or reliably are not defined in AC109/IAS11, but in AC000.

**Table 10: The use of the word “estimating” in AC109/IAS11**

No.	Heading to the paragraph	Paragraph numbers	Times that the word is used in AC109/IAS11
1	Index	-	1
2	Contract revenue	.11 - 15	1
3	Contract costs	.16 - .21	1
4	Recognition of contract revenue and contract costs	.22 - .35	14
5	Changes in estimates	.38	6

The word estimate is used 23 times throughout AC109/IAS11. (Reliably: 21 times)

### Conclusion:

The response to the question is almost identical to the previous one, although it seems that the “other” auditors have their doubts. (Refer to questions 6 to 12)

### 21.3. *attributable costs to construction contracts*

	yes	unsure	no
Audit firms:			
TOTAL	53.8	30.8	15.4
INTERNATIONAL	23.1	15.4	0
OTHER	30.8	15.4	15.4
Audit firms as a group:			
INTERNATIONAL	60	40	0
OTHER	50	25	25

#### **Discussion:**

“Costs that may be attributable to contract activity in general and can be allocated to specific contracts include:

- insurance
- costs of design and technical assistance that are not directly related to a specific contract, and
- construction overheads.

Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics. The allocation is based on the normal level of construction activity. Construction overheads include costs, such as the preparation and processing of construction personnel payroll. Costs that may be attributable to contract activity in general and can be allocated to specific contracts also include borrowing costs when the contractor adopts the allowed alternative treatment in the statement on borrowing costs.”  
(AC109.18 / IAS11.18)

#### **Conclusion:**

In a Statement of GAAP like AC109/IAS11, the expectation would be that no uncertainty exists about the requirements and definition of such a basic accounting concept as attributable costs. (Refer to questions 43 and 21.4)

## 21.4. overheads to construction contracts

	yes	unsure	no
Audit firms:			
TOTAL	76.9	7.7	15.4
INTERNATIONAL	30.8	7.7	0
OTHER	46.2	0	15.4
Audit firms as a group:			
INTERNATIONAL	80	20	0
OTHER	75	0	25

### Discussion:

“Construction overheads”

“Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics. The allocation is based on the normal level of construction activity. Construction overheads include costs, such as the preparation and processing of construction personnel payroll. Costs that may be attributable to contract activity in general and can be allocated to specific contracts also include borrowing costs when the contractor adopts the allowed alternative treatment in the statement on borrowing costs.”  
 (AC109.18 / IAS11.18)

The definition of construction overheads is important in defining the recognition criteria for revenue and expenses under AC109/IAS11. Vaguely defining construction overheads leaves the door wide open for construction company accountants to manipulate overheads and influence the percentage of construction completion and ultimately the profit recognition in the financial statements.

### Conclusion:

When question 21.4 is read together with question 21.3, the results are contradictory and indicate that overheads are subject to personal interpretation.  
 (Refer to question 43)

## 21.5. *non-allowable/non-attributable costs to construction contracts*

	yes	unsure	no
Audit firms:			
TOTAL	15.4	46.2	38.5
INTERNATIONAL	0	30.8	7.7
OTHER	15.4	15.4	30.8
Audit firms as a group:			
INTERNATIONAL	0	80	20
OTHER	25	25	50

### Discussion:

“Costs that cannot be attributed to contract activity or cannot be allocated to a contract are excluded from the costs of a construction contract.

Such costs include:

- general administration costs for which reimbursement is not specified in the contract,
- selling costs,
- research and development costs for which reimbursement is not specified in the contract, and
- depreciation of idle plant and equipment that is not used on a particular contract.”(AC109.20 / IAS11.20)

### Conclusion:

AC109/IAS11 is clear on the requirements for this category of costs. There should not be this high a degree of uncertainty. (Refer to questions 43, 44, 21.3, 21.4 and 21.6)

## 21.6. *cost allocation on construction contracts in general*

	yes	unsure	no
Audit firms:			
TOTAL	53.8	30.8	15.4
INTERNATIONAL	23.1	15.4	0
OTHER	30.8	15.4	15.4
Audit firms as a group:			
INTERNATIONAL	60	40	0
OTHER	50	25	25

### Discussion:

“Contract costs should comprise:

- costs that relate directly to the specific contract
- costs that are attributable to contract activity in general and can be allocated to the contract, and
- such other costs as are specifically chargeable to the customer under the terms of the contract
- costs that cannot be attributed to contract activity or cannot be allocated to a contract *are excluded from the costs of a construction contract.*”  
(AC109.16 & .20 / IAS11.16 & .20)

*See question 21.4 i.r.o. “undefined costs” and the possibility of “wrong” allocations. This is and could be considered a “problematic” situation.*

### Conclusion:

This could be considered a continuation of uncertainty already established in the previous responses to similar type questions.

**21.7 identifying whether the contract is in an early stage of completion  
and that no profit can be taken on the construction contract to date**

	yes	unsure	no
Audit firms:			
TOTAL	15.4	30.8	53.8
INTERNATIONAL	0	7.7	30.8
OTHER	15.4	23.1	23.1
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	25	38	37.5

**Discussion:**

“During the early stages of a contract it is often the case that the outcome of the contract cannot be estimated reliably. Nevertheless, it may be probable that the enterprise will recover the contract costs incurred. Therefore, contract revenue is recognised only to the extent of costs incurred that are expected to be recoverable. As the outcome of the contract cannot be estimated reliably, no profit is recognised. However, even though the outcome of the contract cannot be estimated reliably, it may be probable that total contract costs will exceed total contract revenues. (In such cases, any expected excess of total contract costs over total contract revenue for the contract is recognised as an expense immediately in accordance with paragraph .36.)” (AC109.33 / IAS11.33)

**Conclusion:**

In question 5.7 the respondents indicated that the requirements for the recognition of revenue and expenses need no clarification. Here they feel different. Something must be amiss.

*This answer supports the hypothesis.*



## Question 22

Paragraphs .23 & .24 of AC109/IAS11 state that the outcome of a construction contract can be "*estimated reliably*" when certain conditions are fulfilled. An integral part of fulfilling the conditions is being able to:

- Measure reliably: *the contract cost to complete the contract and the stage of contract completion.*
- Measure reliably and identify clearly: *the contract costs attributable to the contract so that contract cost incurred can be compared with prior estimates.*

Please define the following terms according to your understanding of them in the application of your audit techniques and procedures:

### **Discussion from a USA perspective:**

With regard to input and output measures, SOP (81-1:46 & 47) states that several approaches to measuring progress on a contract can be grouped into:

- *Input measures*

"Input is used to measure progress toward completion indirectly, based on an established or assumed relationship between a unit of input and productivity. A significant drawback of input measures is that the relationship of the measures to productivity may not hold, because of inefficiencies or other factors."

- *Output measures*

"Output is used to measure results directly and is generally the best measure of progress toward completion in circumstances in which a reliable measure of output can be established. However, output measures often cannot be established, and input measures must then be used. The use of either type of measure requires the exercise of judgment and the careful tailoring of the measure to circumstances."

## ***Measure reliably***

- 1 How accurate predictions were in the past to actuals.  
How detail the budget processes i.e. using CAD & costings
- 2
- 3 Measure - have an accurate (as far as possible) arithmetical figure with regards to costs
- 4 Measurement of reasonable (not materially incorrect) accuracy.  
Obtaining 'fair and reasonable' evidence from the client to support their representations as far as measurement is concerned.
- 5
- 6 When adequate systems and controls exist to accurately record costs & revenue and when personnel are properly qualified and experienced
- 7 Being able to measure work done accurately based on accurate information
- 8 Due to the nature of the accounting entries it is possible to determine what costs were incurred & what income was received in relation to a contract.
- 9 All costs to be incurred in the project to point of completion
- 10 Determine & quantify the costs incurred to date on the project accurately
- 11
- 12 Compare actual cost with QS certificate and determine/calculate "future" cost with budgets and after year-end expenses
- 13 Verify the supporting documentation

## **Discussion:**

The answers vary with reference to the definition of “reliably”. Unfortunately the respondents ignored the term “measure”. The question arises whether they ignore this term in practice. They should have been able to identify the missing link, namely who is responsible or able to “measure reliably”.

## **Conclusion:**

*This answer supports the hypothesis.*

## Question 23

### *Estimate reliably*

- 1 Actual to support the costs in the cost ledger together costs accruals etc.
- 2
- 3 To estimate the costs involved by reference to current costs/trends
- 4 An estimate that shouldn't be materially different from the final outcome.
- 5 Where estimates are used - considering the reason for estimation (versus factual), comparison with similar contracts (current or prior years) and fully substantiating the estimate (audit evidence)
- 6 Same as above, with more emphasis on "qualified, experienced" personnel.
- 7 Being able to project the costs to completion as accurately as possible based on available information
- 8 The overall indication of the costs and benefits on the contract as measured above (give) a result in a total estimate for the project
- 9 Costings on project
- 10 Determine and estimate the costs still to be incurred in completing the project accurately
- 11
- 12 /?
- 13 Agree to budgets, management reports, QS & engineers certificates as to completion etc.

### **Discussion:**

The answers ranged from “Where estimates are used - considering the reason for estimation (versus factual), comparison with similar contracts (current or prior years) and fully substantiating the estimate (audit evidence)” to “Agree to budgets, management reports, QS & engineers certificates as to completion etc.” and “Costings on project”. It is thus difficult to identify a trend.

### **Conclusion:**

A definition of reliable estimates in AC109/IAS11 would have been helpful.

*The answer supports the hypothesis*

### Question 30

The wording "*measure reliably*" (and other synonyms) are used throughout the guideline but is never defined. Do you agree with this statement?

	Yes	No
Audit firms:		
TOTAL	84.6	15.4
INTERNATIONAL	38.5	0
OTHER	46.2	15.4
Audit firms as a group:		
INTERNATIONAL	100	0
OTHER	75	25

### Discussion:

Question 21.1 reads: Are the requirements for the following clearly defined?

#### 21.1. *measuring reliably*

The "international" auditors and accountants were quite sure and gave a 100% "yes" answer. The "other" auditors and accountants were divided on the issue and 37.5% answered "yes", 37.5 % answered that they were "unsure" and 25% answered "no".

When the same question was slightly differently phrased, the response by the respondents was the opposite.

### Conclusion:

The response to this question is in direct contradiction to that of question 21.

*Question 30 supports the hypothesis.*

### Question 31

What do you understand the meaning of "*measure reliably*" to be?

- 1 Defined in Framework
- 2
- 3
- 4 Measurement of reasonable accuracy
- 5 To measure with a significant degree of accuracy (however not 100%)
- 6 Measure reliably generally involves the use of professionals to determine revenue and good accounting systems and controls to determine expenses.
- 7 Refer 22
- 8 For audit purpose I need to obtain an indication of a fair measurement of costs and revenue. This is done by means of what is accounted for in the accounting records compared to third party input.
- 9 Assumptions must be clear, outcome rand value with supporting documentation, bill of quantities & .....
- 10 When you can accurately determine the quantities & materials used in the project up to a certain point in time.
- 11
- 12 To compare income/fees with external documentation such as QS reports.  
If QS reports are not available to compare with budgets, after year-end procedures etc.
- 13 With reasonable assurance.

#### Discussion:

“Defined in Framework” refers to AC000. “Measurement of reasonable accuracy” is a direct reference in the attempt to explain its meaning (that is not what was intended by the question) “To compare income/fees with external documentation such as QS reports. If QS reports are not available to compare with budgets, after year-end procedures etc.” (This is the type of response intended)

#### Conclusion:

The respondents view measurement in accounting terms but there is uncertainty.

*The answer supports the hypothesis.*

### Question 32

Do “estimate reliably” and “measure reliably” require the same skills?

	Yes	No
Audit firms:		
TOTAL	30.8	69.2
INTERNATIONAL	0	38.5
OTHER	30.8	30.8
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	50	50

### Discussion:

Quantity Surveyors and Cost Engineers will have a totally different viewpoint if they were consulted on this issue.

The built environment professionals involved in cost estimating will hardly be able to distinguish between the two skills. When doing what they are qualified in their profession to do they will not even know when they pass from one skill to the other in performing their tasks. You need to be able to measure reliably in order to estimate reliably. To individuals not used to estimating and measuring this would definitely be two different skills, with two different training programmes aimed at two different outcomes.

To the respondents this is again an application of their accounting skills. They do consider something else as there is a measure of uncertainty amongst them.

### Conclusion:

The respondents clearly view measurement in accounting terms.

*The answers support the hypothesis.*

### Question 33

Do “*estimate reliably*” and “*measure reliably*” require the same skills?

Please elaborate.

- 1 When we estimate we use QS certificates & past experience.  
The facts are stated in the QS report.
- 2
- 3
- 4 Measurement is tangible  
Estimate is intangible
- 5 Measuring is simpler requiring inputs from available information to arrive at mathematical measurement  
Estimation is more complex as the inputs will not necessarily be available requiring professional judgement,  
Business sense and a host of other factors.
- 6 Estimate reliably implies a greater degree of subjectivity and therefore  
requires greater judgement and experience
- 7 Estimate - to look into future  
- to predict  
Measure - to measure what is already there
- 8 In terms of the statement the estimates are the results of what has been measured.
- 9
- 10 To estimate reliably you require experience & knowledge to determine what would be required to  
complete the assignment. This is more difficult than purely measuring what has been used to date.
- 11
- 12 Same audit procedures can be used.
- 13 One is estimate, other is not.

#### Discussion:

The response “When we estimate we use QS certificates & past experience. The facts are stated in the QS report.” Do not indicate who are the “we” referred to? Are they allowed to do so?

**Conclusion:** *The answers support the hypothesis.*

#### **4.3.2.2. DISCUSSION AND CONCLUSION TO HYPOTHESIS TWO**

The hypothesis:

- “Reliable measurement” and “reliable estimates” are not clearly identified in AC109/IAS11 as the most fundamental concepts

#### **DEFINED IN AC109/IAS11 OR NOT?**

In the Introduction to AC109/IAS11 it is stated that the provisions of the statement should be read in conjunction with AC000/Framework: Framework for the Preparation and Presentation of Financial Statements. The reference is repeated in the Index part of AC109/IAS11.

The objective paragraph in AC109/IAS11 places it beyond argument with the wording: the objective of this statement (AC109.01/IAS11.01) is to prescribe the accounting treatment of revenue and costs associated with construction contracts. It also states that AC109/IAS11 uses the recognition criteria established in the above framework and that AC000/Framework provides practical guidance on the application of these criteria.

According to AC000.100 different bases of measurement are employed in the financial statements, in different degrees and varying combinations. Included are historical cost, current cost, realisable (settlement) value and present value. Examples and some background information on each are given to assist in applying or determining the appropriateness in various circumstances.

Distinction is made between assets and liability recognition but both are limited to historic and present costs. It is stated in AC000/Framework that in many cases, cost or value must be estimated and that the use of reasonable estimates is an essential part of the preparation of financial statements and does not undermine their reliability.



## “Reliable measurement” and “reliable estimates” - a final analysis.

According to AC109.23 & .24/IAS11.23 & .24 in order to “determine whether the outcome can be estimated reliably”, the following are prerequisites:

**For a fixed cost contract (AC109.23/IAS11.23):**

a) *The total contract revenue must be measured reliably.*

To be able to accomplish this, the contract must be interpreted to be able to establish the fact and amount of the claim that can be invoiced by the contractor.

b) *The probability that the economic benefits associated with the contract will flow to the enterprise.*

To a large extent the revenue associated with a construction contract determines estimating reliability. To be more exact, probability of revenue inflow determines the reliability of estimates on outcome. The distinction is made between probability of revenue flows and the eventual collectability of the amount. If not collectable it should be handled as bad debts. (AC109.28/IAS11.28)

c) *The contract costs to complete the contract **and** the stage of contract completion at the balance sheet date can be measured reliably.*

Adrian and Adrian (1999:291-293) points out that:

- “The major audit problem encountered in the examining of a construction firm’s financial statements is in the audit of contracts in progress” and

- “Undoubtedly, determining the accuracy of the construction firm’s computed cost to complete causes the auditor the most difficulty.”

d) *The contract costs attributable to the contract can be clearly identified and measured reliably **so that** actual contract costs incurred can be compared with prior estimates.*

The interpretation of this paragraph is very important. The wording “so that” determines the way in which the costs attributable must be identified and measured?

**For a cost plus contract (AC109.24/IAS11.24):**

(a) *Whether it is probable that the economic benefits associated with the contract will flow to the enterprise.*

This is a repeat of the second precondition for a fixed price contract, above.

(b) *The contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and measured reliably.*

This appears to be a repeat of the fourth precondition for a fixed price contract, above. The words “so that actual contract costs incurred can be compared with prior estimates” is substituted by “whether or not specifically reimbursable”.

**Reliable estimates** (AC109.29/IAS11.29) is further required to be:

- *An enterprise is generally able to make reliable estimates after it has agreed to a contract that establishes; each party's enforceable rights regarding the asset to be constructed, the consideration to be exchanged and the manner and terms of settlement.*
- *It is also usually necessary for the enterprise to have an effective internal financial budgeting and reporting system. The enterprise reviews and, when necessary, revises the estimates of contract revenue and contract costs as the contract progresses. The need for such revisions does not necessarily indicate that the outcome of the contract cannot be estimated reliably.*

**The alternative** (AC109.32/IAS11.32) is where the outcome cannot be estimated reliable and then contract cost must be recognised in the period that it is incurred. Revenue should be recognised to the extent that profit percentage will be equals to nil percentage or the expected recovery of costs, whichever the lowest.

Although “reliable measurement” is defined in AC 000, “reliable measurement of costs on a construction contract” (to date or to complete) is not explicitly defined or explained in either AC109/IAS11 or AC000/Framework.

It would have made matters simpler if the term “estimate the outcome of a contract” were defined in AC109/IAS11.

Perceived complexities revolve around the use of words that feature in the built environment professional's training and literature but hold significantly different interpretations and skills by the accounting orientated professions.

The key aspects that will require consensus before clarity can be reached are:

- **the attributes attached to**
  - ❖ reliable measuring *and* reliable estimating
- **the fundamental difference between measuring**
  - ❖ costs to date *and* costs to complete
- **after identifying clearly and measuring reliably**
  - ❖ the contract costs attributable to the contract
- **and after comparing**
  - ❖ actual contract costs incurred with prior estimates
- **both essential in estimating**
  - ❖ the expected outcome *and* the stage of contract completion
- **and then determine the expected**
  - ❖ profit / loss on the construction contract.

The key aspects on contract revenue already enjoy consensus between accountant and built environment professionals on the clarity of preconditions contained in AC109/IAS11. **Only then all conditions are satisfied.**

*The answers to the questions support the hypothesis.*

### 4.3.3. HYPOTHESIS THREE

#### The research problem:

- *Does AC109/IAS11: CONSTRUCTION CONTRACTS provide clear and feasible guidelines for the determination of the stage of completion on a construction contract for disclosure in the financial statements of contractors?*

#### The sub-problem:

- *Do the terms “reliably measurement” and “reliably estimates” refer to the mathematical correctness of calculations, or do they refer to the use of special skills and experience of specific professionals?*

#### The hypothesis:

- *The context within which “reliable measurement” and “reliable estimates” are used in AC109/IAS11 is such that it does not seem to imply more than arithmetical correctness.*

**QUESTION 38:** Do you regard the calculations done in verifying the estimates made by the contractor as arithmetical in nature which can be checked by a clerk with the necessary experience? Response:

	Yes	No
Audit firms:		
TOTAL	84.6	15.4
INTERNATIONAL	30.8	7.7
OTHER	53.8	7.7
Audit firms as a group:		
INTERNATIONAL	80	20
OTHER	87.5	12.5

**Table 11: Hypothesis three supporting questions and answers**

No.	Notes to the questions	Notes to the answers	Page
21	This is a direct question to determine whether the respondents are of the opinion that the important concepts contained in AC109/IAS11 are properly defined and / or described.	The respondents were of the opinion that the definitions and descriptions contained in AC109/IAS11 are adequate. The answer supports the hypothesis.	272 - 278
22	Measure reliably defined	The respondents are not in total agreement on the topic.	279 - 280
23	Estimate reliably defined	The respondents are not in total agreement on the topic.	281
24	The question determines whether the respondents had any formal training in built environment skills	The answers indicate none. The answer supports the hypothesis.	282 - 283
29	The question determines whether the respondents had built environment skills in reading design drawings	The answers indicate none at all. The answer supports the hypothesis.	284 - 287

**Table 11: Hypothesis three supporting questions and answers**

<b>No.</b>	<b>Notes on the questions</b>	<b>Notes on the answers</b>	<b>Page</b>
30	This is a direct question to determine whether the respondents are of the opinion that the concept “reliable measurement”, contained in AC109/IAS11, are properly defined and / or described.	The response to the question is a direct contradiction of question 21 and might imply other problems such as more misconceptions and too hasty conclusions drawn. <i>The answer supports the hypothesis.</i>	288
31	Measure reliably meaning	The respondents are not in total agreement on the topic.	289
32	Measure & estimate skills	The answer supports the hypothesis.	290
33	Elaborate on Q32	See page 21	291
34	Measure by clerk	Respondents believe anybody can do it	292
35	Audit of measure by clerk	Respondents believe anybody can do it	293
36	Elaborate on Q35	See page 24	294
37	Elaborate on Q36	See page 25	295
38	Calculations of BEP arithmetical of nature	Respondents believe anybody can do it	296
39	Elaborate on Q38	See page 38	297

#### 4.3.3.1. DISCUSSIONS OF ANSWERS TO HYPOTHESIS THREE

##### Question 21

Are the requirements for the following clearly defined?

##### 21.1. *measuring reliably*

	yes	unsure	no
Audit firms:			
TOTAL	61.5	23.1	15.4
INTERNATIONAL	38.5	0	0
OTHER	23.1	23.1	15.4
Audit firms as a group:			
INTERNATIONAL	100	0.0	0.0
OTHER	37.5	37.5	25

##### Discussion:

“Measuring” or “reliably” are not defined in AC109/IAS11, but in AC000.

**Table 9: The use of the word “measure” in AC109/IAS11**

No.	Paragraphs	Paragraph numbers	Times used
1	Contract revenue	.11 - 15	7
2	Contract costs	.16 - .21	1
3	Recognition of contract revenue and contract costs	.22 - .35	5

The word measure is used 13 times throughout AC109/IAS11.

##### Conclusion:

Question 30 verified that measuring reliably is never defined. The respondents agreed. This result is a direct contradiction of the result of question 30.



## 21.2. *estimating reliably*

	yes	unsure	no
Audit firms:			
TOTAL	46.2	23.1	30.8
INTERNATIONAL	38.5	0	0
OTHER	7.7	23.1	30.8
Audit firms as a group:			
INTERNATIONAL	100	0	0
OTHER	12.5	37.5	50

### Discussion:

Estimating or reliably are not defined in AC109/IAS11, but in AC000.

**Table 10: The use of the word “estimating” in AC109/IAS11**

No.	Paragraphs	Paragraph numbers	Times used
1	Index	-	1
2	Contract revenue	.11 - 15	1
3	Contract costs	.16 - .21	1
4	Recognition of contract revenue and contract costs	.22 - .35	14
5	Changes in estimates	.38	6

The word estimate is used 23 times throughout AC109/IAS11.

### Conclusion:

The response to the question is almost identical to the previous one, although it seems that the “other” auditors have their doubts.

### 21.3. *attributable costs to construction contracts*

	yes	unsure	no
Audit firms:			
TOTAL	53.8	30.8	15.4
INTERNATIONAL	23.1	15.4	0
OTHER	30.8	15.4	15.4
Audit firms as a group:			
INTERNATIONAL	60	40	0
OTHER	50	25	25

#### Discussion:

“Costs that may be attributable to contract activity in general and can be allocated to specific contracts include:

- insurance
- costs of design and technical assistance that are not directly related to a specific contract, and
- construction overheads.

Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics. The allocation is based on the normal level of construction activity. Construction overheads include costs, such as the preparation and processing of construction personnel payroll. Costs that may be attributable to contract activity in general and can be allocated to specific contracts also include borrowing costs when the contractor adopts the allowed alternative treatment in the statement on borrowing costs.”  
(AC109.18 / IAS11.18)

#### Conclusion:

On a Statement of GAAP such as AC109/IAS11, the expectation would be that there is no uncertainty about the requirements and definition of a basic accounting concept such as attributable costs.

## 21.4. overheads to construction contracts

	yes	unsure	no
Audit firms:			
TOTAL	76.9	7.7	15.4
INTERNATIONAL	30.8	7.7	0
OTHER	46.2	0	15.4
Audit firms as a group:			
INTERNATIONAL	80	20	0
OTHER	75	0	25

### Discussion:

Construction overheads.

“Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics. The allocation is based on the normal level of construction activity. Construction overheads include costs, such as the preparation and processing of construction personnel payroll. Costs that may be attributable to contract activity in general and can be allocated to specific contracts also include borrowing costs when the contractor adopts the allowed alternative treatment in the statement on borrowing costs.”  
 (AC109.18 / IAS11.18)

### Conclusion:

When question 21.4 is read together with question 21.3 the results do not make much sense.

Overheads are normally open for discussion and more so for construction companies.

## 21.5. *non-allowable / non-attributable costs to construction contracts*

	yes	unsure	no
Audit firms:			
TOTAL	15.4	46.2	38.5
INTERNATIONAL	0	30.8	7.7
OTHER	15.4	15.4	30.8
Audit firms as a group:			
INTERNATIONAL	0	80	20
OTHER	25	25	50

### Discussion:

“Costs that cannot be attributed to contract activity or cannot be allocated to a contract are excluded from the costs of a construction contract.

Such costs include:

- general administration costs for which reimbursement is not specified in the contract,
- selling costs,
- research and development costs for which reimbursement is not specified in the contract, and
- depreciation of idle plant and equipment that is not used on a particular contract.”(AC109.20 / IAS11.20)

### Conclusion:

AC109/IAS11 is clear on the requirements for this category of costs. It is not expected to encounter this degree of uncertainty.

## 21.6. *cost allocation on construction contracts in general*

	yes	unsure	no
Audit firms:			
TOTAL	53.8	30.8	15.4
INTERNATIONAL	23.1	15.4	0
OTHER	30.8	15.4	15.4
Audit firms as a group:			
INTERNATIONAL	60	40	0
OTHER	50	25	25

### Discussion:

“Contract costs should comprise:

- costs that relate directly to the specific contract
- costs that are attributable to contract activity in general and can be allocated to the contract, and
- such other costs as are specifically chargeable to the customer under the terms of the contract
- costs that cannot be attributed to contract activity or cannot be allocated to a contract are excluded from the costs of a construction contract.”  
(AC109.16 & .20 / IAS11.16 & .20)

### Conclusion:

This could be considered a continuation of uncertainty already established in the previous responses to similar type questions.

**21.7 identifying whether the contract is in an early stage of completion and that no profit can be taken on the construction contract to date**

	yes	unsure	no
Audit firms:			
TOTAL	15.4	30.8	53.8
INTERNATIONAL	0	7.7	30.8
OTHER	15.4	23.1	23.1
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	25	38	37.5

**Discussion:**

During the early stages of a contract it is often the case that the outcome of the contract cannot be estimated reliably. Nevertheless, it may be probable that the enterprise will recover the contract costs incurred. Therefore, contract revenue is recognised only to the extent of costs incurred that are expected to be recoverable. As the outcome of the contract cannot be estimated reliably, no profit is recognised. However, even though the outcome of the contract cannot be estimated reliably, it may be probable that total contract costs will exceed total contract revenues. (In such cases, any expected excess of total contract costs over total contract revenue for the contract is recognised as an expense immediately in accordance with paragraph .36.)

**Conclusion:**

In question 5.7 the respondents indicated that the requirements for the recognition of revenue and expenses need no clarification. Here the recognition of profits receives a different treatment. The initial profits on a contract cannot be material. Something else must be amiss.

*This answer supports the hypothesis.*

## Question 22

Paragraphs .23 & .24 of AC109/IAS11 state that the outcome of a construction contract can be "*estimated reliably*" when certain conditions are fulfilled. An integral part of the conditions is being able to:

**Measure reliably:** *the contract cost to complete the contract and the stage of contract completion.*

**Measure reliably and identify clearly:** *the contract costs attributable to the contract so that contract cost incurred can be compared with prior estimates.*

Please define the following terms according to your understanding of them in the application of your audit techniques and procedures:

### **Discussion from an USA perspective:**

With regard to input and output measures SOP (81-1:46 & 47) states that several approaches to measuring progress on a contract can be grouped into:

#### **Input measures**

- Input is used to measure progress toward completion indirectly, based on an established or assumed relationship between a unit of input and productivity. A significant drawback of input measures is that the relationship of the measures to productivity may not hold, because of inefficiencies or other factors.

#### **Output measures**

- Output is used to measure results directly and is generally the best measure of progress toward completion in circumstances in which a reliable measure of output can be established. However, output measures often cannot be established, and input measures must then be used. *The use of either type of measure requires the exercise of judgment and the careful tailoring of the measure to circumstances.*

## **Measure reliably**

- 1 How accurate predictions were in the past to actuals.  
How detail the budget processes i.e. using CAD & costings
- 2
- 3 Measure - have an accurate (as far as possible) arithmetical figure with regards to costs
- 4 Measurement of reasonable (not materially incorrect) accuracy.  
Obtaining 'fair and reasonable' evidence from the client to support their representations as far as measurement is concerned.
- 5
- 6 When adequate systems and controls exist to accurately record costs & revenue and when personnel are properly qualified and experienced
- 7 Being able to measure work done accurately based on accurate information
- 8 Due to the nature of the accounting entries it is possible to determine what costs were incurred & what income was received in relation to a contract.
- 9 All costs to be incurred in the project to point of completion
- 10 Determine & quantify the costs incurred to date on the project accurately
- 11
- 12 Compare actual cost with QS certificate and determine/calculate "future" cost with budgets and after year-end expenses
- 13 Verify the supporting documentation

## **Discussion:**

The answers vary with reference to the definition of “reliably”. Unfortunately the respondents ignored the term “measure”. The question arises whether they ignore this term in practice. They should have been able to identify the missing link, namely who is responsible or able to “measure reliably”.

## **Conclusion:**

*This answer supports the hypothesis*



## Question 23

### *Estimate reliably*

- 1 Actual to support the costs in the cost ledger together costs accruals etc.
- 2
- 3 To estimate the costs involved by reference to current costs/trends
- 4 An estimate that shouldn't be materially different from the final outcome.
- 5 Where estimates are used - considering the reason for estimation (versus factual), comparison with similar contracts (current or prior years) and fully substantiating the estimate (audit evidence)
- 6 Same as above, with more emphasis on "qualified, experienced" personnel.
- 7 Being able to protect the costs to completion as accurately as possible based on available information
- 8 The overall indication of the costs and benefits on the contract as measured above (give) a result in a total estimate for the project
- 9 Costings on project
- 10 Determine and estimate the costs still to be incurred in completing the project accurately
- 11
- 12 /?
- 13 Agree to budgets, management reports, QS & engineers certificates as to completion etc.

### **Discussion:**

The answers ranged from “ Where estimates are used - considering the reason for estimation (versus factual), comparison with similar contracts (current or prior years) and fully substantiating the estimate (audit evidence)” to “Agree to budgets, management reports, QS & engineers certificates as to completion etc.” and “Costings on project”. It is thus difficult to identify a trend.

### **Conclusion:**

A definition of reliable estimates in AC109/IAS11 would have been helpful.

*The answer supports the hypothesis.*

## Question 24

Did you do any course and/or receive formal training in any of the following fields?

- 24.1. Architectural designs and drawings
- 24.2. Engineering designs and drawings
- 24.3. Geological reports
- 24.4. Quantifying builder's quantities
- 24.5. The compilation of the bill of quantities
- 24.6. The different measurement systems
- 24.7. The ordering methods and procedures pertaining building materials
- 24.8. The quantifying of specialist procedures such as electrical / mechanical.
- 24.9. The specification of preliminaries on a construction contract

The answers (24.1 to 24.9) are all identical to the one underneath:

	Yes	No
Audit firms:		
TOTAL	0	100
INTERNATIONAL	0	38.5
OTHER	0	61.5
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	0	100

## Discussion:

This answer means that if the respondents are able to read architectural designs and drawings one or more of the following situations must be applicable:

- They picked it up auditing construction companies.
- They received informal training.
- No training is needed.

Whatever the case it is probably not one of the above or all of the above. There is no formal training other than that of the built environment professional's training. Individuals in the building industry that teach themselves to read drawings run a risk of making mistakes. In question 3 respondents answered that they had no prior experience.

The process of auditing construction companies in general and estimates in particular is exactly as the AICPA indicated:

- “Such businesses rely on accurate and reliable estimates to operate their business as well as to prepare financial statements in accordance with generally accepted accounting principles.” (PITF,2000-3:1)
- “Therefore, it is critical that the auditor gain an understanding of the contractor's significant estimates and assumptions in operating its business.” (PITF,2000-3:1)
- “Remember that the audit of a contractor is an audit of a contractor's ability to estimate.” (PITF,2000-3:1)

### **Conclusion:**

It might be a good idea for auditors and accountants of construction companies to give attention to this aspect. It is difficult to gain an overall impression of the construction project from a few hundred technical drawings. There is no real difference between the drawings mentioned in questions 24.1 and 24.2. To be able to audit estimates of expected profit one must not only be able to verify the expected revenue but also the expected costs. One of the main sources of information would be the correctness of the quantifying of builder's quantities.

If you want to claim that you can verify it, you must be able to do it (or the other way round). This question was included to determine if external experts are used to do verification and checks. The answer is self-explanatory.

*The answer supports the hypothesis.*

## Question 29

Will you be able to detect the following when reading building drawings?

### 29.1 a mistake in design

	yes	unsure	no
Audit firms:			
TOTAL	0	23.1	76.9
INTERNATIONAL	0	7.7	30.8
OTHER	0	15.4	46.2
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	0	25	75

### 29.2. a major problem in the execution of a design

	yes	unsure	no
Audit firms:			
TOTAL	0	23.1	76.9
INTERNATIONAL	0	7.7	30.8
OTHER	0	15.4	46.2
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	0	25	75

### 29.3. a significant part of the contract and / or design

	yes	unsure	no
Audit firms:			
TOTAL	15.4	23.1	61.5
INTERNATIONAL	0	7.7	30.8
OTHER	15.4	15.4	30.8
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	25	25	50

#### 29.4. a difficult price estimation of the design

	yes	unsure	no
Audit firms:			
TOTAL	0	38.5	61.5
INTERNATIONAL	0	7.7	30.8
OTHER	0	30.8	30.8
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	0	50	50

#### 29.5. non-standard material contained in the design

	yes	unsure	no
Audit firms:			
TOTAL	7.7	30.8	61.5
INTERNATIONAL	0	7.7	30.8
OTHER	7.7	23.1	30.8
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	12.5	37.5	50

#### 29.6 new and/or controversial building methods or procedures

	yes	unsure	no
Audit firms:			
TOTAL	0	30.8	69.2
INTERNATIONAL	0	7.7	30.8
OTHER	0	23.1	38.5
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	0	37.5	62.5

#### 29.7. safety and or other execution risks inherent to the design

	yes	unsure	no
Audit firms:			
TOTAL	0	23.1	76.9
INTERNATIONAL	0	7.7	30.8
OTHER	0	15.4	46.2
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	0	25	75

**Discussion:**

**Table 12: Response to question 29 (A summary)**

<b>Are you able to detect the following on building drawings?</b>	<b>Yes</b>	<b>Unsure</b>	<b>No</b>	<b>International auditors as part of the no answer</b>	<b>Others auditors as part of the no answer</b>
Design error	0%	23.1%	76.9%	80%	75%
Major problem in execution	0%	23.1%	76.9%	80%	75%
Significant part of design	15.4%	23.1%	61.5%	80%	50%
Difficult price estimation	0%	38.5%	61.5%	80%	50%
Non-standard material contained	7.7%	30.8%	61.5%	80%	50%
New or controversial building methods	0%	30.8%	69.2%	80%	62.5%
Safety or execution risks	0%	23.1%	76.9%	80%	75%

The process of auditing construction companies in general and estimates in particular is exactly as indicated by the AICPA:

- “Such businesses rely on accurate and reliable estimates to operate their business as well as to prepare financial statements in accordance with generally accepted accounting principles.” (PITF,2000-3:1)
- “Therefore, it is critical that the auditor gain an understanding of the contractor’s significant estimates and assumptions in operating its business.” (PITF,2000-3:1)
- “Remember that the audit of a contractor is an audit of a contractor’s ability to estimate.” (PITF,2000-3:1)

Identify and understand the significant assumptions and uncertainties on the contract. This procedure is fundamental to performing an effective audit of an entity using contract accounting. Not performing this function results in an audit that does not comply with GAAS. (PITF, 2000-3:1)

The focus should be on the key factors and assumptions, such as those that are:

- significant to the estimate,
- sensitive to variation,
- deviate from historical patterns, and are
- subject and susceptible to bias or misstatement.

A review of revised or updated estimates with the actual costs incurred after the balance sheet date is also a useful procedure. (PITF, 2000-3:1)

### **Conclusion:**

*This answer supports the hypothesis.*

### Question 30

The wording "*measure reliably*" (and other synonyms) are used throughout the guideline but is never defined. Do you agree with this statement?

	Yes	No
Audit firms:		
TOTAL	84.6	15.4
INTERNATIONAL	38.5	0
OTHER	46.2	15.4
Audit firms as a group:		
INTERNATIONAL	100	0
OTHER	75	25

### Discussion:

Question 21.1 reads: Are the requirements for the following clearly defined?

#### 21.1. *measuring reliably*

The "international" auditors and accountants were quite sure and a 100% gave a "yes" answer. The "other" auditors and accountants were divided on the issue and 37.5% answered "yes", 37.5 % answered that they were "unsure" and 25% answered "no".

When the same question was slightly differently phrased the result was the opposite.

### Conclusion:

The response to this question is in direct contradiction to that of question 21.

*Question 30 supports the hypothesis.*



### Question 31

What do you understand the meaning to "*measure reliably*" to be?

- 1 Defined in Framework
- 2
- 3
- 4 Measurement of reasonable accuracy
- 5 To measure with a significant degree of accuracy (however not 100%)
- 6 Measure reliably generally involves the use of professionals to determine revenue and good accounting systems and controls to determine expenses.
- 7 Refer 22
- 8 For audit purpose I need to obtain an indication of a fair measurement of costs and revenue. This is done by means of what is accounted for in the accounting records compared to third party input.
- 9 Assumptions must be clear, outcome rand value with supporting documentation, bill of quantities & .....
- 10 When you can accurately determine the quantities & materials used in the project up to a certain point in time.
- 11
- 12 To compare income/fees with external documentation such as QS reports. If QS reports are not available to compare with budgets, after year-end procedures etc.
- 13 With reasonable assurance.

### Discussion:

"Defined in Framework" refers to AC 000. That is not correct. "Measurement of reasonable accuracy" is a direct reference to explain its meaning. That is not what was intended by the question. "To compare income/fees with external documentation such as QS reports. If QS reports are not available to compare with budgets, after year-end procedures etc." This is the response intended.

### Conclusion:

The respondents view measurement in accounting terms.

*The answers support the hypothesis.*

### Question 32

Do “*estimate reliably*” and “*measure reliably*” require the same skills?

	Yes	No
Audit firms:		
TOTAL	30.8	69.2
INTERNATIONAL	0	38.5
OTHER	30.8	30.8
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	50	50

### Discussion:

Quantity Surveyors and Cost Engineers will have a totally different viewpoint if they were consulted on this issue.

The built environment professionals involved in cost estimating will hardly be able to distinguish between the two skills. When doing what they are qualified in their profession to do they will not even know when they pass from one skill to the other in performing their tasks.

To individuals not used to estimating and measuring this would definitely be two different skills, with two different training programmes aimed at two different outcomes.

This is again an indication that accountants are not sure where the built environment professionals fit into the picture.

### Conclusion:

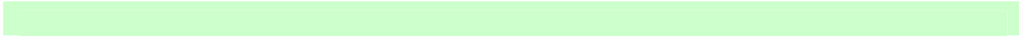
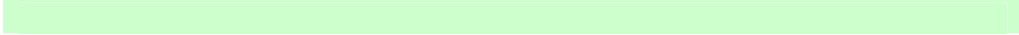
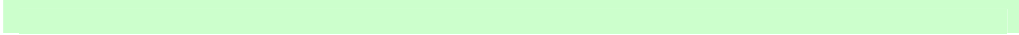
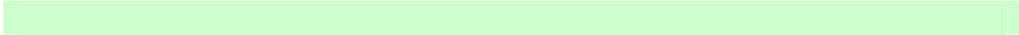
The respondents clearly view measurement in accounting terms.

*The answers directly support the hypothesis.*

### Question 33

Do “*estimate reliably*” and “*measure reliably*” require the same skills?

Please elaborate

- 1 When we estimate we use QS certificates & past experience.  
The facts are stated in the QS report.
- 2 
- 3 
- 4 Measurement is tangible  
Estimate is intangible
- 5 Measuring is simpler requiring inputs from available information to arrive at mathematical measurement  
Estimation is more complex as the inputs will not necessarily be available requiring professional judgement,  
Business sense and a host of other factors.
- 6 Estimate reliably implies a greater degree of subjectivity and therefore requires greater judgement and experience
- 7 Estimate - to look into future  
- to predict  
Measure - to measure what is already there
- 8 In terms of the statement the estimates are the results of what has been measured.
- 9 
- 10 To estimate reliably you require experience & knowledge to determine what would be required to complete the assignment. This is more difficult than purely measuring what has been used to date.
- 11 
- 12 Same audit procedures can be used.
- 13 One is estimate, other is not.

#### Discussion:

The response “When we estimate we use QS certificates & past experience. The facts are stated in the QS report.” Do not indicate who are the “we” referred to? Can they do it?

**Conclusion:** *The answers support the hypothesis.*

### Question 34

Can "*reliable measurements*" be made by any audit clerk or only by senior or qualified personnel?

	Any audit clerk	Only senior or qualified personnel
Audit firms:		
TOTAL	38.5	61.5
INTERNATIONAL	23.1	15.4
OTHER	15.4	46.2
Audit firms as a group:		
INTERNATIONAL	60	40
OTHER	25	75

### Discussion:

The measurement referred to is:

- "Total contract revenue can be *measured reliably*."
- Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be *measured reliably*."
- The contract costs attributable to the contract can be clearly identified and *measured reliably* so that actual contract costs incurred can be compared with prior estimates." (AC109.23/IAS11.23)
- "The contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and *measured reliably*." (AC109.23/IAS11.23)

### Conclusion:

It is obvious that the respondents view measurement in accounting terms. They are again not in agreement.

*This answer supports the hypothesis*

### Question 35

Can the audit of "*reliable measurement*" be done by a clerk, a senior clerk or an audit manager only?

	Clerk	Senior clerk	Audit manager
Audit firms:			
TOTAL	20	40	40
INTERNATIONAL	0	15.4	23.1
OTHER	23.1	30.8	23.1
Audit firms as a group:			
INTERNATIONAL	0	40	60
OTHER	37.5	50	37.5

### Discussion:

The measurement referred to is:

- "Total contract revenue can be *measured reliably*."
- Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be *measured reliably*."
- The contract costs attributable to the contract can be clearly identified and *measured reliably* so that actual contract costs incurred can be compared with prior estimates." (AC109.23 / IAS11.23)
- "The contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and *measured reliably*." (AC109.23 / IAS11.23)

### Conclusion:

It is obvious that the respondents view measurement in accounting terms. They are not in agreement.

*This answer supports the hypothesis.*

### Question 36

If you answered that the audit can be done by any of the above persons in Question 35 would you best describe such a person? Someone with at least:

	1 year	2 years	3 years or more	qualified professional
Audit firms:				
TOTAL	0	15.4	76.9	7.7
INTERNATIONAL	0	0	38.5	0
OTHER	0	15.4	38.5	7.7
Audit firms as a group:				
INTERNATIONAL	0	0	100	0
OTHER	0	25	62.5	12.5

### Discussion:

The measurement referred to is:

- “Total contract revenue can be *measured reliably*.”
- Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be *measured reliably*.
- The contract costs attributable to the contract can be clearly identified and *measured reliably* so that actual contract costs incurred can be compared with prior estimates.” (AC109.23 / IAS11.23)
- “The contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and *measured reliably*.” (AC109.23 / IAS11.23)

It is obvious that the respondents view measurement in accounting terms. They are in agreement. The above paragraphs refer to work normally done by Quantity Surveyors and Cost Engineers. It would not be reasonable to expect an audit clerk to be able to manage it, irrespective of his experience in auditing.

### Conclusion:

*This answer supports the hypothesis*

### Question 37

If you answered "a qualified professional" in Question 36, how would you describe him/her?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9 CA(SA)
- 10
- 11
- 12
- 13

#### Discussion:

The reason why this question yielded only one answer is that the respondents are of the opinion that an unqualified person or clerk can audit the work. Quantity Surveyors and Cost Engineers normally do the work. The notion that you can audit work that you were not trained to do is foreign, to say the least. The respondent answering "a qualified professional" referred to a Chartered Accountant.

**Conclusion:** *The answer supports the hypothesis*

### Question 38

Do you regard the calculations done in verifying the estimates made by the contractor as arithmetical in nature which can be checked by a clerk with the necessary experience?

	Yes	No
Audit firms:		
TOTAL	84.6	15.4
INTERNATIONAL	30.8	7.7
OTHER	53.8	7.7
Audit firms as a group:		
INTERNATIONAL	80	20
OTHER	87.5	12.5

### Discussion:

“When the outcome of a construction contract can be *estimated reliably*, contract revenue and contract costs associated with the construction contract should be recognised as revenue and expenses respectively by reference to the state of completion of the contract activity at the balance sheet date.”(AC109.22 / IAS11.22)

In the case of a fixed price contract, the outcome of a construction contract can be estimated reliably when all of the following conditions are satisfied and in the case of a cost plus contract, the outcome of a construction contract can be estimated reliably when both of the following conditions are satisfied.” (AC109.23 & 24 / IAS11.23 & .24)

### Conclusion:

The most important answer relating to hypothesis three is answer 38. If ever there were any question as to the respondents’ thinking, it should now be removed. Measurement is regarded only in accounting terms. It makes no difference who performs it.

*The answer supports the hypothesis*



### Question 39

What would you deem to be "*necessary experience*" referred to in question 38?

- 1 Independent - QS with industry registration
- 2
- 3 Experience in auditing construction companies.
- 4 Some experience in the construction audit environment.
- 5 The ability to understand the nature of construction contracts (CC's), the clauses in specific contracts and their financial implications, at least 2-3 years auditing experience of cc's and a critical mind to assess data and results of analytical reviews.
- 6
- 7 Prior experience in this process. Access to other individuals with experience.
- 8 Previously worked together with a senior staff member (manager or partner) on sections of similar assignments and do the work under direct supervision of such senior staff member.
- 9 B Com degree & 1 year articles
- 10 A person with at least 2 years experience of working on construction contracts & projects
- 11
- 12 3 years plus
- 13 Previous experience in construction audits

### Discussion:

Answers ranged from "Independent - QS with industry registration" to "The ability to understand the nature of construction contracts (CC's), the clauses in specific contracts and their financial implications, at least 2-3 years auditing experience of cc's and a critical mind to assess data and results of analytical reviews." The second person is a special individual.

**Conclusion:** *The answer supports the hypothesis*

#### 4.3.3.2. DISCUSSION AND CONCLUSION TO HYPOTHESIS THREE

The hypothesis:

- *The context within which “reliable measurement” and “reliable estimates” are used in AC109/IAS11 is such that it does not seem to imply more than arithmetical correctness.*

AC000 clearly refers to elements in the financial statements.

AC109/IAS11, on the other hand, states:

- *Can both the cost to complete and the stage of completion be measured reliably?*
- *Can costs attributable be clearly identified and reliably measured so that actuals can be compared with estimates? (AC 109.23 / IAS11.23)*
- *Can costs attributable be clearly identified and reliably measured (whether or not specifically reimbursable) (AC 109.24 / IAS11.24)*

It is also clear that reference is made to more than an arithmetical calculation because the text would have sufficed with “identified” or “calculated” or something similar. The text, however, not only mentions “measured” but also assume a degree of uncertainty by adding “reliably”. This means that more is implied than general arithmetic.

The respondents agree with this statement but for some or other reason seem to believe that they can do it. They must be interpreting the text differently.

*The answers support the hypothesis.*

#### 4.3.4. HYPOTHESIS FOUR

##### The research problem:

- *Does AC109/IAS11: CONSTRUCTION CONTRACTS provide clear and feasible guidelines for the determination of the stage of completion on a construction contract for disclosure in the financial statements of contractors?*

##### The sub-problem:

- *Can each of the alternative methods of calculating the stage of completion, that are provided for in AC109/IAS11, only be used in a specific set of circumstances, or can any method be used in any given set of circumstances?*

##### The hypothesis:

- *AC109/IAS11 leaves the choice of the basis and method, to be used to determine the stage of completion and therefore the recognition of profit on incomplete construction contracts, to the professional opinion of the accountants involved.*

To support hypothesis four there are two important questions, namely:

##### **Question 11**

- Are the above options acceptable alternatives for any given set of circumstances i.e. does the contractor have a free choice among them?

##### **Question 54**

- Are you of the opinion that the requirements of AC109/IAS11 can be "*manipulated*" in any way by the accountants of construction contractors?

**Table 13: Hypothesis four supporting questions and answers**

<b>No.</b>	<b>Notes to the questions</b>	<b>Notes to the answers</b>	<b>Page</b>
6	POC determined accurately	Maybe it can be done	301
7	Using 6.1 to 6.5 (Q6)	It is always costs	302
8	Elaborate on Q7	See page 5	303
9	Elaborate on Q8	See page 6	304
10	Elaborate on Q9	See page 7	305
11	Acceptable alternatives	Wrong answer?	306
12	Most frequently used 6.1-6.6	It is always costs	307-308
13	Any other than 6.1 to 6.6	It is always costs	309
14	Change from year to year	Wrong answer?	310
15	Elaborate on Q14	See page 13	311
16	Client change in progress	It do happen	312
17	Did you agree	Prepare for change	313
18	Client consult auditor	Clients want to change	314
19	POC > recognize profit	Difficult situation	315-317
20	No profit = completed	Possible confusion?	318
43	Attributable & overheads	Possible confusion?	319
44	Direct costs & BOQ	Possible confusion?	320
45	Elaborate on Q44	See page 21	321
54	AC109/IAS11 manipulated	Difficult situation	322
55	Elaborate on Q54	See page 23	322
56	Audit program prevent	“Abnormal” audit procedures	323
57	Elaborate on Q56	See page 25	324
58	Audit program detect	“Normal” audit procedures	325
59	Elaborate on Q58	See page 27	326
60	Cost to date = estimated	“Normal” audit procedures	327
61	Elaborate on Q60	See page 28	327
62	Costs to complete	“Normal” audit procedures	328
63	Elaborate on Q62	See page 30	328

#### 4.3.4.1. DISCUSSIONS OF ANSWERS TO HYPOTHESIS FOUR

##### Question 6

AC109/IAS11 require recognition of revenue and costs with reference to the stage of completion of a construction contract. It further requires the stage of completion of a construction contract to be based on the work performed on the balance sheet date.

The following options to determine the stage of completion are given:

- 6.1 Costs to date compared with total expected costs.
- 6.2 Work certified compared with total expected income.
- 6.3 Completion of a physical part of the contract.
- 6.4 Surveys of work done to date.
- 6.5 Hours worked to date compared with total expected hours (IAS11), or
- 6.6 any other basis that will reliably indicate the stage of completion.

In your opinion, can the stage of completion on a construction contract be determined accurately?

	Yes	Unsure	No
Audit firms:			
TOTAL	61.5	23.1	15.4
INTERNATIONAL	23.1	15.4	0
OTHER	38.5	7.7	15.4
Audit firms as a group:			
INTERNATIONAL	60	40	0
OTHER	62.5	12.5	25

##### Conclusion:

The respondents are sure that they can verify cost. The enquiry is whether the records are complete.

There should not be a difference of opinion among the respondents. It should be a cause for concern if the stage of completion cannot be determined “accurately”, since it influences the core of the financial statements of construction contractors. (Refer to questions 43, 44 and 21)

## Question 7

To narrow it down:

Can it be done by using the options as contained in 6.1 to 6.5 above?

	Yes	Unsure	No
Audit firms:			
TOTAL	92.3	7.7	0
INTERNATIONAL	30.8	7.7	0
OTHER	61.5	0	0
Audit firms as a group:			
INTERNATIONAL	80	20	0
OTHER	100	0	0

## Discussion:

“The stage of completion of a contract may be determined in a variety of ways. The enterprise uses the method that measures reliably the work performed. Depending on the nature of the contract, the methods may include:

- the proportion that contract costs incurred for work performed to date bear to the estimated total contract costs
- surveys of work performed, or
- completion of a physical proportion of the contract work

Progress payment and advances received from customers often do not reflect the work performed.” (AC109.30/IAS11.30)

## Conclusion:

This is an additional question to verify the answer to question 6.

## Question 8

Please elaborate.

- 1 With engineers (not construction) there is a serious problem. Buy all the steel upfront and labour to complete insignificant portion of costs recognize most profit upfront which is not correct.
- 2 No answer
- 3 No answer
- 4 No answer
- 5 Assists but is not conclusive. Most figures are based on estimates. Although costs incurred say 80% complete, the practical % complete may be higher or lower depending on the circumstances
- 6 Generally require some significant judgement.
- 7 Certification together with cost of work already done. Relying on only one may make things difficult.
- 8 Option 6.3 should give an accurate indication and 6.4 should also be fairly accurate. Other options should give reasonable accurate indication.
- 9 No answer
- 10 Stage of completion is not always easily determinable using 6.1 to 6.5. Complexity of various stages will also impact stage of completion & effort required to complete contract.
- 11 No answer
- 12 It all depends on what kind of 'records' are kept.
- 13 No answer

### Conclusion:

This is an additional question to verify the answers to questions 6 and 7.

As with most other answers where it was expected of the respondents to give detailed answers (in their own words), these responses are not conclusive as to clarity and completeness. Some answers also imply that the question might have been misunderstood.

It is fortunately not a critical question and can therefore be considered as fulfilling the aim stated in the first paragraph.

## Question 9

or can it be done using the alternatives in option 6.6 only?

	Yes	Unsure	No
Audit firms:			
TOTAL	23.1	30.8	46.2
INTERNATIONAL	23.1	0	15.4
OTHER	0	30.8	30.8
Audit firms as a group:			
INTERNATIONAL	60	0	40
OTHER	0	50	50

### Discussion:

“In practice, a number of methods are used to measure the extent of progress toward completion. They include:

- the cost-to-cost method,
- variations of the cost-to-cost method,
- efforts-expended methods,
- the units-of-delivery method, and the
- units-of-work-performed method.

Methods used in practice measures progress toward completion in terms of:

- costs,
- some in terms of units of work,
- and some in terms of values added.

All three of these measures of progress are acceptable in appropriate circumstances. (However, the method or methods selected should be applied consistently to all contracts having similar characteristics.)

The several approaches to measuring progress on a contract can be grouped as:

- input and
- output measures.” (SOP81-1:44-46)

**Conclusion:** The respondents were divided on the issue.



## **Question 10**

### **Please elaborate on question 9**

- 1 Qs certificates cost money & are not necessarily issued on every job  
i.e. build yourself a building in a office park - do not need to know stage of completion
- 2 No answer
- 3 No answer
- 4 No answer
- 5 Any other basis opens up too many loopholes that may be used to manipulate % complete.  
A standard is required to assist with financial reporting and comparison across companies within the industry.
- 6 No answer
- 7 Method must be able to measure % of completion.
- 8 No answer
- 9 No answer
- 10 No answer
- 11 No answer
- 12 No answer
- 13 No answer

### **Discussion:**

This is an additional question to verify the answer to question 9. The aim was to establish whether other formulae are used in practice. The answers were vague. Answers ranged from “QS certificates cost money & are not necessarily issued on every job”, to “A standard is required to assist with financial reporting and comparison across companies within the industry. Both show a lack of understanding of applications in practice and AC109/IAS11 requirements.

**Conclusion:** *The answer supports the hypothesis.*

### Question 11

Are the above options acceptable alternatives for any given set of circumstances?

i.e. does the contractor have a free choice between them?

	Yes	Unsure	No
Audit firms:			
TOTAL	61.5	7.7	30.8
INTERNATIONAL	15.4	0	23.1
OTHER	46.2	7.7	7.7
Audit firms as a group:			
INTERNATIONAL	40	0	60
OTHER	75	12.5	12.5

### Discussion:

Respondents should be aware that the answer is “no”.

The question might not have placed enough emphasis on the words “any given circumstances”. There should not have been a difference of opinion among the respondents.

The basis used should comply with the prerequisite of “indicating the correct stage of completion”.

*The answer of “fixed policy for group” is to be avoided!*

“The stage of completion of a contract may be determined in a variety of ways.

The enterprise uses the method that measures reliably the work performed. “

(AC109.30 / IAS11.30)

### Conclusion:

*This answer supports hypothesis four.*

## Question 12

Which of the options indicated below as 6.1 to 6.6 are used more frequently to determine the stage of completion? Please order the options in terms of frequency of use from 1 to 6 without repeating an order. Use 1 for most frequently used and 6 for least frequently used.

### 6.1. Costs to date compared with total expected costs

	Ranked	1	2	3	4	5	6
Audit firms:							
TOTAL		69.2	23.1	7.7	0	0	0
INTERNATIONAL		30.8	7.7	0	0	0	0
OTHER		38.5	15.4	7.7	0	0	0
Audit firms as a group:							
INTERNATIONAL		80	20	0	0	0	0
OTHER		62.5	25	12.5	0	0	0

### 6.2. Work certified compared with total expected income.

	Ranked	1	2	3	4	5	6
Audit firms:							
TOTAL		30.8	46.2	15.4	7.7	0	0
INTERNATIONAL		7.7	30.8	0	0	0	0
OTHER		23.1	15.4	15.4	7.7	0	0
Audit firms as a group:							
INTERNATIONAL		20	80	0	0	0	0
OTHER		37.5	25	25	12.5	0	0

### 6.3. Completion of a physical part of the contract

	Ranked	1	2	3	4	5	6
Audit firms:							
TOTAL		0	23.1	7.7	53.8	15.4	0
INTERNATIONAL		0	0	0	38.5	0	0
OTHER		0	23.1	7.7	15.4	15.4	0
Audit firms as a group:							
INTERNATIONAL		0	0	0	100	0	0
OTHER		0	37.5	12.5	25	25	0

#### 6.4. Surveys of work done to date.

	Ranked	1	2	3	4	5	6
Audit firms:							
TOTAL		0	7.7	61.5	23.1	7.7	0
INTERNATIONAL		0	0	38.5	0	0	0
OTHER		0	7.7	23.1	23.1	7.7	0
Audit firms as a group:							
INTERNATIONAL		0	0	100	0	0	0
OTHER		0	12.5	37.5	37.5	12.5	0

#### 6.5 Hours worked to date compared with total expected hours (IAS11), or

	Ranked	1	2	3	4	5	6
Audit firms:							
TOTAL		0	0	7.7	15.4	38.5	38.5
INTERNATIONAL		0	0	0	0	7.7	30.8
OTHER		0	0	7.7	15.4	30.8	7.7
Audit firms as a group:							
INTERNATIONAL		0	0	0	0	20	80
OTHER		0	0	12.5	25	50	12.5

#### 6.6 any other basis that will reliably indicate the stage of completion

	Ranked	1	2	3	4	5	6
Audit firms:							
TOTAL		0	0	0	0	38.5	61.5
INTERNATIONAL		0	0	0	0	30.8	7.7
OTHER		0	0	0	0	7.7	53.8
Audit firms as a group:							
INTERNATIONAL		0	0	0	0	80	20
OTHER		0	0	0	0	12.5	87.5

#### Conclusion:

With reference to question 6 and taking into account the background of the respondents, the answer was anticipated.

(It is understood that international contractors and project managers now opt for the “hours worked” option.)

### Question 13

If, in Question 12, you chose 6.6 as the most frequently used option, which other options or techniques are used with success?

No responses were given.

#### **Discussion:**

“In practice, a number of methods are used to measure the extent of progress toward completion. They include:

- the cost-to-cost method,
- variations of the cost-to-cost method,
- efforts-expended methods,
- the units-of-delivery method, and the
- units-of-work-performed method.

Methods used in practice measures progress toward completion in terms of:

- costs,
- some in terms of units of work,
- and some in terms of values added.

All three of these measures of progress are acceptable in appropriate circumstances. (However, the method or methods selected should be applied consistently to all contracts having similar characteristics.)

The several approaches to measuring progress on a contract can be grouped as:

- input and
- output measures.” (SOP81-1:44-46)

#### **Conclusion:**

This question was aimed at establishing whether possible changes in construction accounting can be anticipation. of future relating to clearer guidelines on percentage of completion calculations.

## Question 14

Can the stage of completion of contract A, in year one, be determined by using one of the above options in 6.1 to 6.6 and in year two by changing and using one of the other?

	Yes	Unsure	No
Audit firms:			
TOTAL	30.8	7.7	61.5
INTERNATIONAL	15.4	0	23.1
OTHER	15.4	7.7	38.5
Audit firms as a group:			
INTERNATIONAL	40	0	60
OTHER	25	12.5	62.5

### Discussion:

“The stage of completion of a contract may be determined in a variety of ways. The enterprise uses the method that measures reliably the work performed.” (AC109.30 / IAS11.30)

“The stage of completion should be determined based on the work performed on the contract at the balance sheet date.” (AC109.22 / IAS11.22)

### Conclusion:

The aim of choosing a basis for the calculation of the stage of completion on a construction contract is to ensure the most correct end result. No indication is given that the method needs to be consistent. If there is a change from one year to another, then it must be recorded as such.

The respondents should not be divided on this issue.

## Question 15

If your answer to Question 14 is “No” please elaborate.

- 1 If you are building lots of buildings it becomes exceedingly difficult. Figures are not comparable.
- 2 Outcomes can be manipulated.
- 3 The policy used must be consistently applied.
- 4
- 5
- 6
- 7 Should be consistent. Method used may influence amount of revenue recognised.
- 8
- 9 If change in contract.
- 10
- 11
- 12 One method should be considered to compare with previous year.
- 13 Should be consistent.

### Conclusion:

This question was aimed at substantiating question 14. It turned out not to be a very effective question, but it did yield the word “consistent”. Correctness, not “consistency”, is the key issue here. The answer of “consistency” is to be avoided! This might be where possible manipulation of financial statements of construction contractors originates.

*This answer supports hypothesis 4.*

## Question 16

Did the situation ever arise where one of your clients had to change from one option to another during the progress of the contract?

	Yes	No
Audit firms:		
TOTAL	15.4	84.6
INTERNATIONAL	7.7	30.8
OTHER	7.7	53.8
Audit firms as a group:		
INTERNATIONAL	20	80
OTHER	12.5	87.5

### Discussion:

“The stage of completion of a contract may be determined in a variety of ways. The enterprise uses the method that measures reliably the work performed. Depending on the nature of the contract, the methods may include:

- (a) the proportion that contract costs incurred for work performed to date bear to the estimated total contract costs
- (b) surveys of work performed, or
- (c) completion of a physical proportion of the contract work”  
(AC109.30/IAS11.30)

The answer indicates that the situation does arise where it is necessary to use alternative methods to determine the percentage of completion.

### Conclusion:

*This answer supports the hypothesis.*



## Question 17

Did you agree with them?

	No answer	Yes	Unsure	No
Audit firms:				
TOTAL	46.2	38.5	7.7	7.7
INTERNATIONAL	30.8	7.7	0	0
OTHER	15.4	30.8	7.7	7.7
Audit firms as a group:				
INTERNATIONAL	80	20	0	0
OTHER	25	50	12.5	12.5

### Discussion:

“The stage of completion of a contract may be determined in a variety of ways.

The enterprise uses the method that measures reliably the work performed.” (AC109.30 / IAS11.30)

### Conclusion:

This answer is in support of the discussions on question 15 and question 16.

The respondents either did not fully understand the question or they were unsure whether it was correct to change the bases for calculating the stage of completion. There is no exact guideline apart from the above text.

The basis to be used should be the one that all parties (including BEPs) agree upon!

## Question 18

Does the client consult with you when choosing the best possible option to determine the stage of completion of construction contracts?

	Yes	Unsure	No
Audit firms:			
TOTAL	69.2	23.1	7.7
INTERNATIONAL	38.5	0	0
OTHER	30.8	23.1	7.7
Audit firms as a group:			
INTERNATIONAL	100	0	0
OTHER	50	37.5	12.5

### Discussion:

This proves the validity of the choice of research design and methodology.

The current practice in construction accounting and reporting is that the company's own internal accountants spend their time reporting to the board of directors, in what could be considered management accounts or cost accounting. The external auditors and accountants have a major influence on the decision making involving accounting policies in the presentation of the annual financial statements. If the auditors do not influence the decisions they must at least agree with them in order to sign their audit report.

Small contractors would mainly fall outside the definition of AC109/IAS11's construction contractors because of size, duration and internal accounting knowledge and expertise.

### Conclusion:

This question is related to the previous questions, 12 to 17.

### Question 19

At what stage do you feel that the contract has progressed to the extent that you feel comfortable that the client can start recognising profits and/or losses?

1	Construction	From percentage to percentage	
		25	100
	Engineering	From percentage to percentage	
		90	100
2		From percentage to percentage	
		0	100
3		From percentage to percentage	
		50	60
4		From percentage to percentage	
		40	100
5		From percentage to percentage	
		25	35
6		From percentage to percentage	
		20	100
7		From percentage to percentage	
		0	100
8		From percentage to percentage	
		10	100
9		From percentage to percentage	
		1	100
10		From percentage to percentage	
		20	30
11		From percentage to percentage	
		0	100
12		From percentage to percentage	
		20	30

13

From percentage to percentage	
40	100

**Discussion:**

This is a question of judgment and experience rather than exact percentages. The built environment experts and / or professionals should be able to give valuable assistance in similar circumstances.

**Visit construction contract sites.**

“Consideration of a site visit might include significant contract sites, in which the work is in the very early stages of a contract. Such a visit may identify the complexities of performing the contract” (PITF, 2000-3:3)

**Meet with project managers.**

“Project managers play an important role in controlling and reporting job site costs. They are also close to the facts and are likely to get more prompt and accurate information than the accounting personnel.” (PITF, 2000-3:3)

**Identify and understand the significant assumptions and uncertainties.**

“This procedure is fundamental to performing an effective audit of an entity using contract accounting.” (PITF, 2000-3:3)

**After the expert has completed the assignment the auditor needs to evaluate the work of the expert.**

- The auditor should evaluate the appropriateness of the expert’s work as audit evidence regarding the assertion being considered.

- This will involve evaluation of whether the substance of the expert's findings is properly reflected in the financial statements or supports the assertions, and consideration of source data used; assumptions and methods used and their consistency with prior periods; and results of the expert's work in the light of the auditor's overall knowledge of the business and the results of other audit procedures. (ISA620.12)

**The appropriateness and reasonableness of assumptions and methods used and their application are the responsibility of the expert as:**

- The auditor does not have the same expertise, therefore,
- cannot always challenge the expert's assumptions and methods.

**However, the auditor will need to**

- obtain an understanding of the assumptions and methods used and
- to consider whether they are appropriate and reasonable, based on the auditor's knowledge of the business and the results of other audit procedures. " (ISA620.14)

**Conclusion:**

"It is the practice of contractors to take credit for estimated profit on incomplete contracts other than those which have recently commenced and on which the expenditure to date is small." (Puttick, 2004:535)

*This answer supports the hypothesis.*

## Question 20

When the outcome of a construction contract cannot be estimated reliably, it is suggested that no profit be taken till such time that reliable estimates are again possible. Do you regard this as being equal to the completed contract method of profit recognition?

	Yes	Unsure	No
Audit firms:			
TOTAL	23.1	15.4	61.5
INTERNATIONAL	0	0	38.5
OTHER	23.1	15.4	23.1
Audit firms as a group:			
INTERNATIONAL	0	0	100
OTHER	37.5	25	37.5

### Discussion:

The respondents should know that the two methods are by no means the same. They might appear similar, but they are not.

With the completed – contract method balances are carried on the balance sheet to the next period until the completion of the contract. With the cost – recovery method (as it is known), profit and loss are shown at a 0% profit margin, which has an influence on the balance sheet and income statement.

Is this an indication that the respondents are not sure what “estimate reliably” entails or that they have never been involved in this kind of situation?

### Conclusion:

*This answer supports hypothesis four.*

### Question 43

Do you regard "*attributable costs*" and "*overheads*" as synonyms?

	Yes	Unsure	No
Audit firms:			
TOTAL	7.7	15.4	76.9
INTERNATIONAL	7.7	0	30.8
OTHER	0	15.4	46.2
Audit firms as a group:			
INTERNATIONAL	20	0	80
OTHER	0	25	75

### Discussion:

"Costs that may be attributable to contract activity in general and can be allocated to specific contracts include:

- construction overheads." (AC109.18 / IAS11.18)

Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics. The allocation is based on the normal level of construction activity. Construction overheads include costs, such as the preparation and processing of construction personnel payroll. Costs that may be attributable to contract activity in general and can be allocated to specific contracts also include borrowing costs when the contractor adopts the allowed alternative treatment in the statement on borrowing costs." (AC109.18 / IAS11.18)

### Conclusion:

This might indicate possible manipulation of financial statements of construction Contractors. *There should not be any doubt.* (See questions 44, 21.3 and 21.4)

*This answer supports the hypothesis.*

### Question 44

In your opinion, are the costs included in the "*Bill of Quantities*" and the costs identified as "*Direct Costs*" exactly the same?

	Yes	Unsure	No
Audit firms:			
TOTAL	15.4	23.1	61.5
INTERNATIONAL	0	7.7	30.8
OTHER	15.4	15.4	30.8
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	25	25	50

### Discussion:

“Costs that relate directly to a specific contract include:

- site labour costs, including site supervision
- costs of materials used in construction
- depreciation of plant and equipment used on the contract
- costs of moving plant, equipment and materials to and from the contract site
- costs of hiring plant and equipment
- costs of design and technical assistance that is directly related to the contract
- the estimated costs of rectification and guarantee work, including expected warranty costs, and
- claims from third parties” (AC109.17 / IAS11.17)

### Conclusion:

This might indicate possible manipulation of financial statements of construction Contractors. *There should not be any doubt.* (See questions 43, 21.3 and 21.6)

*This answer supports the hypothesis.*



## Question 45

Please elaborate

- 1 Specific staff are allocated to each project. If they have no work it is allocated elsewhere.  
Cost relating to project are charged to project.
- 2 [REDACTED]
- 3 [REDACTED]
- 4 Certain direct costs are not in the bill of quantities
- 5 Direct costs are all attributable costs not just labour and materials.  
May include site specific administration costs (a broader meaning)  
BoQ's generally relate to labour and materials (a narrower meaning)
- 6 [REDACTED]
- 7 Bill of quantities would include indirect cost
- 8 The bill of quantities gives a very clear indication of the direct materials required,  
but does not reflect all the necessary direct costs
- 9 Hire of certain equipment is not in bill but direct costs
- 10 Bill of quantities refer to the original estimate of labour, materials & overheads required.  
Other direct costs may become evident which had not been included / foreseen  
when bill of quantities were prepared.
- 11 [REDACTED]
- 12 [REDACTED]
- 13 All direct costs may not be on bill of quantities, but all costs on bill of quantities are direct costs

### Conclusion:

Although some of the answers are valid, they indicate experience gained in specific circumstances. Again, this might be where possible manipulation of financial statements of construction contractors originates. There should not be any doubt.

*This answer supports the hypothesis.*

## Question 54

Are you of the opinion that the requirements of AC109/IAS11 can be "*manipulated*" in any way by the accountants of construction contractors and still comply with the guideline in general?

	Yes	Unsure	No
Audit firms:			
TOTAL	46.2	53.8	0
INTERNATIONAL	38.5	0	0
OTHER	7.7	53.8	0
Audit firms as a group:			
INTERNATIONAL	100	0	0
OTHER	12.5	87.5	0

### Discussion:

**"Intentional errors by the management** are seldom made to conceal misappropriations of assets but are for the purpose of manipulating income statement accounts in order to present an over- or understatement of profits earned to achieve some benefit". (Puttick, 2004:35)

The following are an example for the potential circumstances:

"The directors of a public company may deliberately overstate or understate the profits shown in the financial statements for the purpose of increasing or reducing the market value of the company's shares." (Puttick, 2004:37)

**Conclusion:** *This is a serious issue. This answer supports all hypotheses.*

## Question 55

If your answer to question 54 is "No", do you have any suggestions on how to Prevent "manipulation" from happening?

1 Estimate of outcome of contract. Contracts have add-ons not specified in original contract.

This question was phrased incorrectly.

## Question 56

Are your audit programmes specifically designed to prevent “*manipulation*”?

	Yes	Unsure	No
Audit firms:			
TOTAL	61.5	30.8	7.7
INTERNATIONAL	30.8	7.7	0
OTHER	30.8	23.1	7.7
Audit firms as a group:			
INTERNATIONAL	80	20	0
OTHER	50	37.5	12.5

### Discussion:

#### Detection and prevention of errors and fraud

“The auditor is not and cannot be held responsible for the prevention of fraud and error. This responsibility rests with management...” and “The detection of errors made innocently or fraudulently is incidental to the auditor’s main duty of reporting on the financial statements.” (Puttick, 2004:35)

#### According to Puttick (2004:35) errors can be classified as:

##### *First classification:*

- Intentional
- Unintentional

##### *Second classification:*

- of commission
- of omission

##### *Third classification:*

- of principle
- clerical

“**Intentional errors by the management** are seldom made to conceal misappropriations of assets but are for the purpose of manipulating income statement accounts in order to present an over- or understatement of profits earned to achieve some benefit”. (Puttick, 2004:35)

## Question 57

Please elaborate

- 1 We compare to prior years and ask why estimates were inaccurate. We look at independent QS certificates, etc
- 2
- 3
- 4
- 5 Prevention is the clients responsibility (auditor can provide guidance). As the audit commences after the fact, we are not in a position to prevent manipulation. However guidance can be given regarding the implementing of internal controls to prevent manipulation.
- 6 The programmes try to highlight possible areas of manipulation and can concentrate on those areas
- 7 Rigorous testing of any estimates, provisions, accruals plus rep letter signed off by individual in this regard
- 8 Through design of the audit programmes we test results from different sources to confirm information obtained.
- 9
- 10
- 11
- 12 The necessary calculations are done by the auditors
- 13

### Discussion:

Answers ranged from “We compare to prior years and ask why estimates were inaccurate. We look at independent QS certificates, etc” to “Prevention is the client’s responsibility (auditor can provide guidance). As the audit commences after the fact, we are not in a position to prevent manipulation. However guidance can be given regarding the implementing of internal controls to prevent manipulation” and “Rigorous testing of any estimates, provisions, accruals plus representation letter signed off by individual in this regard”.

**Conclusion:** Although it is not conclusive, *the answer supports the hypothesis.*

## Question 58

Are your audit programmes specifically designed to detect “*manipulation*”?

	Yes	Unsure	No
Audit firms:			
TOTAL	61.5	30.8	7.7
INTERNATIONAL	30.8	7.7	0
OTHER	30.8	23.1	7.7
Audit firms as a group:			
INTERNATIONAL	80	20	0
OTHER	50	37.5	12.5

### Discussion:

#### Detection and prevention of errors and fraud

“The auditor is not and cannot be held responsible for the prevention of fraud and error. This responsibility rests with management...” and “The detection of errors made innocently or fraudulently is incidental to the auditor’s main duty of reporting on the financial statements.

#### Errors can be classified as:

##### First classification:

- Intentional
- Unintentional

##### Second classification:

- of commission
- of omission

##### Third classification:

- of principle
- clerical

“**Intentional errors by the management** are seldom made to conceal misappropriations of assets but are for the purpose of manipulating income statement accounts in order to present an over- or understatement of profits earned to achieve some benefit”. (Puttick, 2004:35)

## Question 59

Please elaborate

1 We rely on client's integrity & past experience. We would be able to establish material manipulations. Our clients are all market leaders, financially independent and do need to get involved in these problems

2

3

4

5 Audit evidence is garnered from various sources (any anomalies are investigated). Analytical review is a vital tool in identifying inconsistencies.

6

7 Rigorous testing of any estimates, provisions, accruals plus rep letter signed off by individual in this regard

8 Audit programmes by nature are designed to verify the information presented to source documents to prevent miss-representations

9

10

11

12 All calculations done by the auditors

13

### Discussion:

Answers ranged from the naïve “We rely on client’s integrity & past experience. We would be able to establish material manipulations. Our clients are all market leaders, financially independent and do need to get involved in these problems” to a more realistic “Audit programmes by nature are designed to verify the information presented to source documents to prevent miss-representations”.

**Conclusion:** Although it is not conclusive, *the answer supports the hypothesis.*

### Question 60

Do you compare cost to date with estimated cost on all contracts where profit is calculated based on percentage of completion?

	Yes	No
Audit firms:		
TOTAL	92.3	7.7
INTERNATIONAL	38.5	0
OTHER	53.8	7.7
Audit firms as a group:		
INTERNATIONAL	100	0
OTHER	87.5	12.5

### Question 61

Item for item?

	Yes	No
Audit firms:		
TOTAL	30.8	69.2
INTERNATIONAL	7.7	30.8
OTHER	23.1	38.5
Audit firms as a group:		
INTERNATIONAL	20	80
OTHER	37.5	62.5

### Discussion:

“The contract costs attributable to the contract can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates.” (AC109.23 / IAS11.23)

### Conclusion:

This is normal audit procedure.

### Question 62

*Do you compare cost to completion with estimated costs on all contracts where profit is calculated based on percentage of completion?*

	Yes	No
Audit firms:		
TOTAL	100	0
INTERNATIONAL	38.5	0
OTHER	61.5	0
Audit firms as a group:		
INTERNATIONAL	100	0
OTHER	100	0

### Question 63

*Item for item?*

	Yes	No
Audit firms:		
TOTAL	30.8	69.2
INTERNATIONAL	7.7	30.8
OTHER	23.1	38.5
Audit firms as a group:		
INTERNATIONAL	20	80
OTHER	37.5	62.5

### Discussion:

“Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be measured reliably. *The contract costs attributable to the contract* can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates.”  
 (AC109.23 / IAS11.23) (Own emphasis)

### Conclusion:

Is this considered normal audit procedure or is the question ambiguous?



#### 4.3.4.2. DISCUSSION AND CONCLUSION TO HYPOTHESIS FOUR

**The hypothesis related to the problem, sub-problem and questions states:**

- *AC109/IAS11 leaves the choice of the basis and method, to be used to determine the stage of completion and therefore the recognition of profit on incomplete construction contracts, to the professional opinion of the accountants involved.*

*AC109/IAS11 states:*

*“When the outcome of a construction contract can be estimated reliably, contract revenue and contract costs associated with the construction contract should be recognised as revenue and expenses respectively by reference to the state of completion of the contract activity at the balance sheet date. The stage of completion should be determined based on the work performed on the contract at the balance sheet date”. (AC109.22 / IAS11.22)*

*“The stage of completion of a contract may be determined in a variety of ways. The enterprise uses the method that measures reliably the work performed”. (AC109.30 / IAS11.30)*

AC109/IAS11 is clear on this point. The percentage of completion method, of accounting, can be applied if the stage of completion can be determined. No restrictions are placed on the method of determining the stage of completion. No mention is made of not allowing an enterprise to switch from one method to the other, except for normal accounting implications.

The answer to question 62 was the only question directly related to AC109/IAS11 where respondents were in agreement. This, however, does not indicate that no ambiguity exists. The question asks more than meets the eye, as will be discussed on the next pages.

## Why are contract costs so important?

*According to AC109.16/IAS11.16 contract costs should include:*

“Costs that are attributable to contract activity in general and can be allocated to the contract”

*According to AC109.22/IAS11.22 recognition should include:*

“When the outcome of a construction contract can be estimated reliably contract revenue and contract costs associated with the construction contract should be recognised as revenue and expenses respectively by reference to the state of completion of the contract activity at the balance sheet date”

*According to AC109.23/IAS11.23 in the case of a fixed price contract:*

“The outcome of a construction contract can be estimated reliably when certain conditions are satisfied including:

Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be measured reliably

The contract costs attributable to the contract can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates.”

*According to AC109.30/IAS11.30:*

“The stage of completion of a contract may be determined in a variety of ways. The enterprise uses the method that measures reliably the work performed. Depending on the nature of the contract, the methods may include:

The proportion that contract costs incurred for work performed to date bear to the estimated total contract costs.”

*According to AC109.18/IAS11.18:*

“Certain costs that may be attributable to contract activity in general and can be allocated to specific contracts that may include:

*Construction overheads.* Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics.

The allocation is based on the normal level of construction activity. Construction overheads include... “

*According to AC109.21/IAS11.21:*

“Contract costs include the costs attributable to a contract for the period from the date of securing the contract to the final completion of the contract.”

**According to the questionnaire sent out:**

**Question 6**

AC109/IAS11 requires recognition of revenue and costs with reference to the stage of completion of a construction contract. It further requires the stage of completion of a construction contract to be based on the work performed on the balance sheet date.

The following options to determine the stage of completion are given:

- 6.1 Costs to date compared with total expected costs.
- 6.2 Work certified compared with total expected income.
- 6.3 Completion of a physical part of the contract.
- 6.4 Surveys of work done to date.
- 6.5 Hours worked to date compared with total expected hours (IAS11), or
- 6.6 Any other basis that will reliably indicate the stage of completion.

**Question 12**

Which of the options indicated below as 6.1 to 6.6 are used more frequently to determine the stage of completion? Please order the options in terms of frequency of use from 1 to 6 without repeating an order. Use 1 for most frequently used and 6 for least frequently used.

**6.1. Costs to date compared with total expected costs**

	Ranked	1	2	3	4	5	6
Audit firms:							
TOTAL		69.2	23.1	7.7	0	0	0
INTERNATIONAL		30.8	7.7	0	0	0	0
OTHER		38.5	15.4	7.7	0	0	0
Audit firms as a group:							
INTERNATIONAL		80	20	0	0	0	0
OTHER		62.5	25	12.5	0	0	0

***In conclusion:***

It is obvious that costs are important.

Cost is used in determining the percentage of completion and ultimately the profit or loss that is anticipated. Cost to date compared with total expected cost is the most frequently used method to determine percentage of completion.

Furthermore AC109/IAS11 states that the outcome of the contract can be estimated reliably when the contract costs attributable to the contract can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates.

Question 60 read: Do you compare cost to date with estimated cost on all contracts where profit is calculated based on percentage of completion?

Question 62 read: Do you compare cost to completion with estimated costs on all contracts where profit is calculated based on percentage of completion?

Are costs to date equal to costs attributable?

Are costs to completion equal to costs attributable or to estimated costs?

Are we referring only to construction overheads or to construction direct cost and construction reimbursable costs?

If the respondents who are regarded as experts are not in agreement on this issue, can it be expected of the contractors and their accountants to come up with the correct answers?

*The answers support the hypothesis.*

#### 4.3.5. HYPOTHESIS FIVE

##### The research problem:

- *Does AC109/IAS11: CONSTRUCTION CONTRACTS provide clear and feasible guidelines for the determination of the stage of completion on a construction contract for disclosure in the financial statements of contractors?*

##### The sub-problem:

- *Do the prescriptions and guidelines in SAAS620/ISA620 for the “use of the work of an expert” provide an adequate alternative for gaining audit evidence, in verifying calculations and estimates of work in progress and the stage of completion of a construction contract?*

##### The hypothesis:

- *There is no existing and feasible practice for the use of the work of independent, objective, qualified and experienced Built Environment Professionals (BEPs) by Registered Auditors and Accountants of construction contractors.*

The most **important questions** related to this hypothesis are:

- Does your firm make "use of the work of an expert" as audit evidence when the audit of construction contracts is undertaken?
- Do you employ any of the BEPs for the audit of construction-type audits?
- Do you consider yourself able to conduct the audit without the opinion of the BEPs?

**Table 14: Hypothesis five supporting questions and answers**

<b>No.</b>	<b>Notes to the questions</b>	<b>Notes to the answers</b>	<b>Page</b>
3	Any previous experience	No previous experience	336
4	Recognise professionals	Not recognised	337-343
25	Visit site & interview	Not following the PITF note	344
26	Identify & understand assumptions & uncertainties	Not following the PITF note	345
27	BEPs unique contracts	Not evaluated as unique	346
28	Construction contract law	Not evaluated as unique	347
29	Detect from drawings	No training	348-351
34	Measure by clerk	Measurement and accountants	352
35	Audit of measure by clerk	Measurement and accountants	353
36	Elaborate on Q35	Refer page 18	354
37	Elaborate on Q36	Refer page 19	355
38	Calculations arithmetical	Critical answer	356
39	Elaborate on Q38	Refer page 21	357
40	BEPs independent	Practical situation	358
41	Measure verify own clerks	Do employ "others"	359
42	Elaborate on Q41	Refer page 24	360
43	Attributable & overheads	Unsure	361
44	Direct costs & BOQ	Unsure	362
46	Make use of work of expert	Do employ "others"	363
47	Employ BEPs in audit	Do employ "others"	364-368
48	BEPs = audit evidence	Not really needed	369
49	Not without BEPs	Not really needed	370
50	Elaborate on Q49	Refer page 35	371
51	Audit without BEPs	Unsure	372
52	BEPS on payroll of client	No	372
53	<i>BEPs employed permanently</i>	No	373

#### 4.3.5.1. DISCUSSIONS OF ANSWERS TO HYPOTHESIS FIVE

##### Question 3

Do you have any other knowledge, experience or qualification in the construction industry other than in your capacity as an auditor?

	yes	no
Audit firms:		
TOTAL	15.4	84.6
INTERNATIONAL	0.0	38.5
OTHER	15.4	46.2
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	25	75

##### Discussion:

The assumptions pertaining to question 24 refer, namely:

This answer means that if the respondents are able to read architectural designs and drawings one or more of the following situations must be applicable:

- They picked it up during the process of auditing construction companies.
- They received informal training.
- No training is needed.

##### Conclusion:

This question was posed to determine whether the respondents might have any experience in the built environment that influenced their involvement as auditors of construction contractors. No other experience was indicated and respondents 1 and 13 misunderstood the question (e.g. Marley is a manufacturer of roof tiles).



## Question 4

In your opinion, which of the following are professional careers? Please indicate with whom of the persons in 4.1 to 4.14 you have regular contact in the auditing of construction contracts or no contact at all. (Please indicate as well if career or profession is not known to you.)

### 4.1 Architect

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	7.7	0	100	23.1	69.2
INTERNATIONAL	0	0	38.5	0	38.5
OTHER	7.7	0	61.5	23.1	30.8
Audit firms as a group:					
INTERNATIONAL	0	0	100	0	100
OTHER	12.5	0	100	37.5	50

### 4.2 Landscape Architect

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	30.8	15.4	53.8	0	100
INTERNATIONAL	0	7.7	30.8	0	38.5
OTHER	30.8	7.7	23.1	0	61.5
Audit firms as a group:					
INTERNATIONAL	0	20	80	0	100
OTHER	50	12.5	37.5	0	100

### 4.3. Structural and Civil Engineer

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	7.7	0	92.3	61.5	38.5
INTERNATIONAL	0	0	38.5	38.5	0
OTHER	7.7	0	53.8	23.1	38.5
Audit firms as a group:					
INTERNATIONAL	0	0	100	100	0
OTHER	12.5	0	87.5	37.5	62.5

### 4.4 Electrical Engineer

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	15.4	0.0	84.6	38.5	61.5
INTERNATIONAL	0	0	38.5	38.5	0
OTHER	15.4	0	46.2	0	61.5
Audit firms as a group:					
INTERNATIONAL	0	0	100	100	0
OTHER	25	0	75	0	100

### 4.5 Mechanical Engineer

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	15.4	0	84.6	30.8	69.2
INTERNATIONAL	0	0	38.5	30.8	7.7
OTHER	15.4	0	46.2	0	61.5
Audit firms as a group:					
INTERNATIONAL	0	0	100	80	20
OTHER	25	0	75	0	100

#### 4.6 Town and regional Planner

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	38.5	0	61.5	0	100
INTERNATIONAL	0	0	38.5	0	38.5
OTHER	38.5	0	23.1	0	61.5
Audit firms as a group:					
INTERNATIONAL	0	0	100	0	100
OTHER	62.5	0	37.5	0	100

#### 4.7 Quantity Surveyor

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	7.7	0	92.3	84.6	15.4
INTERNATIONAL	0	0	38.5	38.5	0
OTHER	7.7	0	53.8	46.2	15.4
Audit firms as a group:					
INTERNATIONAL	0	0	100	100	0
OTHER	12.5	0	87.5	75	25

#### 4.8 Construction Manager

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	30.8	53.8	15.4	76.9	23.1
INTERNATIONAL	0	38.5	0	38.5	0
OTHER	30.8	15.4	15.4	38.5	23.1
Audit firms as a group:					
INTERNATIONAL	0	100	0	100	0
OTHER	50	25	25	62.5	37.5

## 4.9 Project Manager

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	38.5	15.4	46.2	92.3	7.7
INTERNATIONAL	0	15.4	23.1	38.5	0
OTHER	38.5	0	23.1	53.8	7.7
Audit firms as a group:					
INTERNATIONAL	0	40	60	100	0
OTHER	62.5	0	37.5	87.5	12.5

## 4.10 Cost Engineer

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	30.8	38.5	30.8	38.5	61.5
INTERNATIONAL	0	15.4	23.1	30.8	7.7
OTHER	30.8	23.1	7.7	7.7	53.8
Audit firms as a group:					
INTERNATIONAL	0	40	60	80	20
OTHER	50	37.5	12.5	12.5	87.5

## 4.11 Interior Designer

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	38.5	30.8	30.8	0.0	100.0
INTERNATIONAL	0.0	15.4	23.1	0	38.5
OTHER	38.5	15.4	7.7	0	61.5
Audit firms as a group:					
INTERNATIONAL	0	40	60	0	100
OTHER	62.5	25	12.5	0	100

#### 4.12 Site Manager

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	38.5	61.5	0	46.2	53.8
INTERNATIONAL	0	38.5	0	38.5	0.0
OTHER	38.5	23.1	0	7.7	53.8
Audit firms as a group:					
INTERNATIONAL	0	100	0	100	0
OTHER	62.5	37.5	0	12.5	88

#### 4.13 Time manager

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	30.8	69.2	0	23.1	76.9
INTERNATIONAL	0	38.5	0	23.1	15.4
OTHER	30.8	30.8	0	0.0	61.5
Audit firms as a group:					
INTERNATIONAL	0	100	0	60	40
OTHER	50	50	0	0	100

#### 4.14 Construction Project Manager

	No Answer	Career or profession unknown	Professional	Regular contact	No contact
Audit firms:					
TOTAL	38.5	46.2	15.4	76.9	23.1
INTERNATIONAL	0	38.5	0	38.5	0
OTHER	38.5	7.7	15.4	38.5	23.1
Audit firms as a group:					
INTERNATIONAL	0	100	0	100	0
OTHER	63	13	25	63	38

**Table 15: Response to question four. (A summary)**

<b>Career</b>	<b>Percentage of the respondents recognising careers as professional</b>	<b>Percentage of the respondents indicating “no contact” with careers</b>	<b>“International” auditors included in percentage recognising professionals / having no contact</b>	<b>“Other” auditors included in percentage recognising professionals / having no contact</b>
Architect	100	64.2	100 / 100	100 / 50
Landscape Architect	53.8	100	80 / 100	37.5 / 100
Structural and Civil Engineer	92.3	8.5	100 / 0	87.5 / 62.5
Electrical Engineer	84.6	61.5	100 / 0	75 / 100
Mechanical Engineer	84.6	69.2	100 / 20	75 / 100
Town and Regional Planner	61.5	100	100 / 100	37.5 / 100
Quantity Surveyor	92.3	15.4	100 / 0	87.5 / 25
Construction Manager	15.4	23.1	0 / 0	25 / 37.5
Project Manager	46.2	7.7	60 / 0	37.5 / 12.5
Cost Engineer	30.8	61.5	60 / 20	12.5 / 87.5

<b>Career</b>	<b>Percentage of the respondents recognising careers as professional</b>	<b>Percentage of the respondents indicating “no contact” with careers</b>	<b>“International” auditors included in percentage recognising professionals / having no contact</b>	<b>“Other” auditors included in percentage recognising professionals / having no contact</b>
Site Manager	0	53.8	0 / 0	0 / 88
Time Manager	0	76.9	0 / 40	0 / 100
Construction Project Manager	15.4	23.1	0 / 0	25 / 38

### **Discussion:**

The alternative to having personal experience in the built environment would be to have meaningful and constant contact with the professionals in the built environment. This question was posed to determine whether respondents do have regular contact with such professionals. Certain professionals are not recognised as such (Construction Project Managers) and some careers are mistaken for others (e.g. Time Managers for Time keepers).

### **Conclusion:**

The answers further indicated that contact is limited and therefore hypothesis five is supported.

## Question 25

Do you employ a specialist to visit the construction sites of the client and conduct interviews with the construction project managers of these sites?

	Yes	No
Audit firms:		
TOTAL	7.7	92.3
INTERNATIONAL	0	38.5
OTHER	7.7	53.8
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	12.5	87.5

### Discussion:

#### Visit construction contract sites.

“Consideration of a site visit might include significant contract sites, in which the work is in the very early stages of a contract. Such a visit may identify the complexities of performing the contract” (PITF, 2000-3:3)

#### Meet with project managers.

“Project managers play an important role in controlling and reporting job site costs. They are also close to the facts and are likely to get more prompt and accurate information than the accounting personnel.” (PITF, 2000-3:3)

#### Identify and understand the significant assumptions and uncertainties.

“This procedure is fundamental to performing an effective audit of an entity using contract accounting.” (PITF, 2000-3:3)

### Conclusion:

*The answer supports the hypothesis.*



## Question 26

Do you employ build environment professionals to assist you in identifying and understanding the significant assumptions and uncertainties on the contract?

	Yes	No
Audit firms:		
TOTAL	0	100
INTERNATIONAL	0	38.5
OTHER	0	61.5
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	0	100

### Discussion:

Identify and understand the significant assumptions and uncertainties.

“Identify and understand the significant assumptions and uncertainties on the contract. This procedure is fundamental to performing an effective audit of an entity using contract accounting. Not performing this function results in an audit that does not comply with GAAS.” (PITF, 2000-3:3)

It can be assumed that the BEP’s are not needed.

SAOS620/ISA620 and other internationally agreed procedures clearly prescribe this action! (Refer to question 25)

### Conclusion:

*The answer supports the hypothesis.*

## Question 27

Do you employ professional assistance in studying significant and unique contractual agreements?

	Yes	No
Audit firms:		
TOTAL	15.4	84.6
INTERNATIONAL	7.7	30.8
OTHER	7.7	53.8
Audit firms as a group:		
INTERNATIONAL	20	80
OTHER	12.5	87.5

### Discussion:

“Read significant contracts.” (PITF, 2000-3:2)

“Identify unique contracts and increase the amount of testing and professional skepticism relating to such contracts.” (PITF, 2000-3:2)

“Confirm the terms and conditions of the contract as well as the normal billing procedures.” (PITF, 2000-3:2)

### Conclusion:

In the answers to question 47 it is suggested that this is an “in-house” function.

Depending on the circumstances this might be sufficient.

## Question 28

Do you have any formal training in Construction Contract Law?

	Yes	No
Audit firms:		
TOTAL	7.7	92.3
INTERNATIONAL	0	38.5
OTHER	7.7	53.8
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	12.5	87.5

### Discussion:

“Read significant contracts.” (PITF, 2000-3:2)

“Identify unique contracts and increase the amount of testing and professional skepticism relating to such contracts.” (PITF, 2000-3:2)

“Confirm the terms and conditions of the contract as well as the normal billing procedures.” (PITF, 2000-3:2)

### Conclusion:

Responses to question 47 are again referred to, which suggest an “in-house” function. This might be sufficient if the “in-house” attorney forms part of the routine audit team and has the expertise of construction litigation. This area could be problematic for the smaller audit firms.

## Question 29

Will you be able to detect the following when reading building drawings?

### 29.1 a mistake in design

	yes	unsure	no
Audit firms:			
TOTAL	0	23.1	76.9
INTERNATIONAL	0	7.7	30.8
OTHER	0	15.4	46.2
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	0	25	75

### 29.2. a major problem in the execution of a design

	yes	unsure	no
Audit firms:			
TOTAL	0	23.1	76.9
INTERNATIONAL	0	7.7	30.8
OTHER	0	15.4	46.2
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	0	25	75

### 29.3. a significant part of the contract and / or design

	yes	unsure	no
Audit firms:			
TOTAL	15.4	23.1	61.5
INTERNATIONAL	0	7.7	30.8
OTHER	15.4	15.4	30.8
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	25	25	50

#### 29.4. a difficult price estimation of the design

	yes	unsure	no
Audit firms:			
TOTAL	0	38.5	61.5
INTERNATIONAL	0	7.7	30.8
OTHER	0	30.8	30.8
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	0	50	50

#### 29.5. non-standard material contained in the design

	yes	unsure	no
Audit firms:			
TOTAL	7.7	30.8	61.5
INTERNATIONAL	0	7.7	30.8
OTHER	7.7	23.1	30.8
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	12.5	37.5	50

#### 29.6 new and/or controversial building methods or procedures

	yes	unsure	no
Audit firms:			
TOTAL	0	30.8	69.2
INTERNATIONAL	0	7.7	30.8
OTHER	0	23.1	38.5
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	0	37.5	62.5

#### 29.7. safety and or other execution risks inherent to the design

	yes	unsure	no
Audit firms:			
TOTAL	0	23.1	76.9
INTERNATIONAL	0	7.7	30.8
OTHER	0	15.4	46.2
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	0	25	75

**Discussion:**

**Table 12: Response to question 29 (A summary)**

<b>Are you able to detect the following on building drawings?</b>	<b>Yes</b>	<b>Unsure</b>	<b>No</b>	<b>International auditors as part of the no answer</b>	<b>Others auditors as part of the no answer</b>
Design error	0%	23.1%	76.9%	80%	75%
Major problem in execution	0%	23.1%	76.9%	80%	75%
Significant part of design	15.4%	23.1%	61.5%	80%	50%
Difficult price estimation	0%	38.5%	61.5%	80%	50%
Non-standard material contained	7.7%	30.8%	61.5%	80%	50%
New or controversial building methods	0%	30.8%	69.2%	80%	62.5%
Safety or execution risks	0%	23.1%	76.9%	80%	75%

The process of auditing construction companies in general and estimates in particular is exactly as indicated by the AICPA:

- “Such businesses rely on accurate and reliable estimates to operate their business as well as to prepare financial statements in accordance with generally accepted accounting principles.” (PITF,2000-3:1)
- “Therefore, it is critical that the auditor gain an understanding of the contractor’s significant estimates and assumptions in operating its business.” (PITF,2000-3:1)
- “Remember that the audit of a contractor is an audit of a contractor’s ability to estimate.” (PITF,2000-3:1)

Identify and understand the significant assumptions and uncertainties on the contract. This procedure is fundamental to performing an effective audit of an entity using contract accounting. Not performing this function results in an audit that does not comply with GAAS. (PITF, 2000-3:1)

The focus should be on the key factors and assumptions, such as those that are:

- significant to the estimate,
- sensitive to variation,
- deviate from historical patterns, and are
- subject and susceptible to bias or misstatement.

A review of revised or updated estimates with the actual costs incurred after the balance sheet date is also a useful procedure. (PITF, 2000-3:1)

## **Conclusion:**

*This answer supports the hypothesis.*

### Question 34

Can "*reliable measurements*" be made by any audit clerk or only by senior or qualified personnel?

	Any audit clerk	Only senior or qualified personnel
Audit firms:		
TOTAL	38.5	61.5
INTERNATIONAL	23.1	15.4
OTHER	15.4	46.2
Audit firms as a group:		
INTERNATIONAL	60	40
OTHER	25	75

### Discussion:

The measurement referred to is:

- "Total contract revenue can be *measured reliably*."
- Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be *measured reliably*."
- The contract costs attributable to the contract can be clearly identified and *measured reliably* so that actual contract costs incurred can be compared with prior estimates." (AC109.23/IAS11.23)
- "The contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and *measured reliably*." (AC109.23/IAS11.23)

### Conclusion:

It is obvious that the respondents view measurement in accounting terms. They are again not in agreement.

*This answer supports the hypothesis*



### Question 35

Can the audit of "*reliable measurement*" be done by a clerk, a senior clerk or an audit manager only?

	Clerk	Senior clerk	Audit manager
Audit firms:			
TOTAL	20	40	40
INTERNATIONAL	0	15.4	23.1
OTHER	23.1	30.8	23.1
Audit firms as a group:			
INTERNATIONAL	0	40	60
OTHER	37.5	50	37.5

### Discussion:

The measurement referred to is:

- "Total contract revenue can be *measured reliably*."
- Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be *measured reliably*."
- The contract costs attributable to the contract can be clearly identified and *measured reliably* so that actual contract costs incurred can be compared with prior estimates." (AC109.23/IAS11.23)
- "The contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and *measured reliably*." (AC109.23/IAS11.23)

### Conclusion:

It is obvious that the respondents view measurement in accounting terms. They are not in agreement.

*This answer supports the hypothesis.*

### Question 36

If you answered that the audit can be done by any of the above persons in Question 35 would you best describe such a person? Someone with at least:

	1 year	2 years	3 years or more	qualified professional
Audit firms:				
TOTAL	0	15.4	76.9	7.7
INTERNATIONAL	0	0	38.5	0
OTHER	0	15.4	38.5	7.7
Audit firms as a group:				
INTERNATIONAL	0	0	100	0
OTHER	0	25	62.5	12.5

### Discussion:

The measurement referred to is:

- “Total contract revenue can be *measured reliably*.”
- Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be *measured reliably*.”
- The contract costs attributable to the contract can be clearly identified and *measured reliably* so that actual contract costs incurred can be compared with prior estimates.” (AC109.23/IAS11.23)
- “The contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and *measured reliably*.” (AC109.23/IAS11.23)

It is obvious that the respondents view measurement in accounting terms. They are in agreement. The above paragraphs refer to work normally done by Quantity Surveyors and Cost Engineers. It would not be reasonable to expect an audit clerk to be able to manage it, irrespective of his experience in auditing.

**Conclusion:** *This answer supports the hypothesis*

### Question 37

If you answered "a qualified professional" in Question 36, how would you describe him/her?

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9 CA(SA)
- 10
- 11
- 12
- 13

#### Discussion:

The reason why this question yielded only one answer is that the respondents are of the opinion that an unqualified person or clerk can audit the work. Quantity Surveyors and Cost Engineers normally do the work. The notion that you can audit work that you were not trained to do is foreign, to say the least. The respondent answering "a qualified professional" referred to a Chartered Accountant.

**Conclusion:** *This answer supports the hypothesis*

### Question 38

Do you regard the calculations done in verifying the estimates made by the contractor as arithmetical in nature which can be checked by a clerk with the necessary experience?

	Yes	No
Audit firms:		
TOTAL	84.6	15.4
INTERNATIONAL	30.8	7.7
OTHER	53.8	7.7
Audit firms as a group:		
INTERNATIONAL	80	20
OTHER	87.5	12.5

### Discussion:

“When the outcome of a construction contract can be *estimated reliably*, contract revenue and contract costs associated with the construction contract should be recognised as revenue and expenses respectively by reference to the state of completion of the contract activity at the balance sheet date.”  
(AC109.22/IAS11.22)

In the case of a fixed price contract, the outcome of a construction contract can be estimated reliably when all of the following conditions are satisfied and in the case of a cost plus contract, the outcome of a construction contract can be estimated reliably when both of the following conditions are satisfied.”  
(AC109.23&.24/IAS11.23&.24)

### Conclusion:

The most important answer relating to hypothesis three is answer 38. If ever there were any question as to the respondents’ thinking, it should now be removed. Measurement is regarded in accounting terms.

*This answer supports the hypothesis*

### Question 39

What would you deem to be "*necessary experience*" referred to in question 38?

- 1 Independent - QS with industry registration
- 2
- 3 Experience in auditing construction companies.
- 4 Some experience in the construction audit environment.
- 5 The ability to understand the nature of construction contracts (CC's), the clauses in specific contracts and their financial implications, at least 2-3 years auditing experience of cc's and a critical mind to assess data and results of analytical reviews.
- 6
- 7 Prior experience in this process. Access to other individuals with experience.
- 8 Previously worked together with a senior staff member (manager or partner) on sections of similar assignments and do the work under direct supervision of such senior staff member.
- 9 B Com degree & 1 year articles
- 10 A person with at least 2 years experience of working on construction contracts & projects
- 11
- 12 3 years plus
- 13 Previous experience in construction audits

### Discussion:

Answers ranged from "Independent - QS with industry registration" to "The ability to understand the nature of construction contracts (CC's), the clauses in specific contracts and their financial implications, at least 2-3 years auditing experience of cc's and a critical mind to assess data and results of analytical reviews." The second person is a special individual.

**Conclusion:** *The answer supports the hypothesis*

## Question 40

Do you regard professionals involved on a construction project to be an independent source of audit evidence?

	No answer	Always	Some-times	Never
Audit firms:				
TOTAL	7.7	38.5	46.2	7.7
INTERNATIONAL	0	30.8	7.7	0
OTHER	7.7	7.7	38.5	7.7
Audit firms as a group:				
INTERNATIONAL	0	80	20	0
OTHER	12.5	12.5	62.5	12.5

### Discussion:

#### Visit construction contract sites.

“Consideration of a site visit might include significant contract sites, in which the work is in the very early stages of a contract. Such a visit may identify the complexities of performing the contract” (PITF, 2000-3:3)

#### Meet with project managers.

“Project managers play an important role in controlling and reporting job site costs. They are also close to the facts and are likely to get more prompt and accurate information than the accounting personnel.” (PITF, 2000-3:3)

#### Identify and understand the significant assumptions and uncertainties.

“This procedure is fundamental to performing an effective audit of an entity using contract accounting.” (PITF, 2000-3:3)

SAOS620/ISA620 and other internationally agreed procedures clearly prescribe this action!

**Conclusion:** *The answer supports the hypothesis*

## Question 41

In verifying "*measuring*" do you make use of your own personnel only?

	Yes	No
Audit firms:		
TOTAL	38.5	61.5
INTERNATIONAL	7.7	30.8
OTHER	30.8	30.8
Audit firms as a group:		
INTERNATIONAL	20	80
OTHER	50	50

### Discussion:

#### Visit construction contract sites.

“Consideration of a site visit might include significant contract sites, in which the work is in the very early stages of a contract. Such a visit may identify the complexities of performing the contract” (PITF.2000-3:3)

#### Meet with project managers.

“Project managers play an important role in controlling and reporting job site costs. They are also close to the facts and are likely to get more prompt and accurate information than the accounting personnel.” (PITF, 2000-3:3)

#### Identify and understand the significant assumptions and uncertainties.

“This procedure is fundamental to performing an effective audit of an entity using contract accounting.” (PITF, 2000-3:3)

ISA 620 and other internationally agreed procedures clearly prescribe this action!

### Conclusion:

*The answer supports the hypothesis*

## Question 42

If your answer is “Yes”, please state the reason for not using any other people?

- 1 Either there is a cost or there is not. Invoices support all amounts.  
Time records are audit in detail. There is very little skill in measuring the costs.
- 2
- 3
- 4
- 5 To ensure independence. Hired professionals need to be made familiar with the client - this is time consuming and expensive.
- 6 Would only use the experts in "tricky" or "unusual" circumstances.
- 7
- 8
- 9
- 10
- 11
- 12 The costs involved to the audit, etc.
- 13

### Discussion:

Answers ranged from “Either there is a cost or there is not. Invoices support all amounts. Time records are audit in detail. There is very little skill in measuring the costs” to “To ensure independence. Hired professionals need to be made familiar with the client - this is time consuming and expensive.” The first answer sums it up in “There is very little skill in measuring the costs”. Neither cost nor time should be the issue.

**Conclusion:** *The answer supports the hypothesis.*



### Question 43

Do you regard "*attributable costs*" and "*overheads*" as synonyms?

	Yes	Unsure	No
Audit firms:			
TOTAL	7.7	15.4	76.9
INTERNATIONAL	7.7	0	30.8
OTHER	0	15.4	46.2
Audit firms as a group:			
INTERNATIONAL	20	0	80
OTHER	0	25	75

### Discussion:

“Costs that may be attributable to contract activity in general and can be allocated to specific contracts include:

- construction overheads. (AC109.18/IAS11.18)

Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics. The allocation is based on the normal level of construction activity. Construction overheads include costs, such as the preparation and processing of construction personnel payroll. Costs that may be attributable to contract activity in general and can be allocated to specific contracts also include borrowing costs when the contractor adopts the allowed alternative treatment in the statement on borrowing costs.” (AC109.18/IAS11.18)

### Conclusion:

This might indicate possible manipulation of financial statements of construction contractors. *There should not be any doubt.* (See questions 44, 21.3 and 21.4)

*This answer supports the hypothesis.*

### Question 44

In your opinion, are the costs included in the "*Bill of Quantities*" and the costs identified as "*Direct Costs*" exactly the same?

	Yes	Unsure	No
Audit firms:			
TOTAL	15.4	23.1	61.5
INTERNATIONAL	0	7.7	30.8
OTHER	15.4	15.4	30.8
Audit firms as a group:			
INTERNATIONAL	0	20	80
OTHER	25	25	50

### Discussion:

"Costs that relate directly to a specific contract include:

- site labour costs, including site supervision
- costs of materials used in construction
- depreciation of plant and equipment used on the contract
- costs of moving plant, equipment and materials to and from the contract site
- costs of hiring plant and equipment
- costs of design and technical assistance that is directly related to the contract
- the estimated costs of rectification and guarantee work, including expected warranty costs, and
- claims from third parties" (AC109.17/IAS11.17)

### Conclusion:

This might indicate possible manipulation of financial statements of construction contractors. *There should not be any doubt.* (See questions 43, 21.3 and 21.6)

*This answer supports the hypothesis.*

## Question 46

Does your firm make "use of the work of an expert" as audit evidence when the audit of construction contracts is undertaken?

	Yes	No
Audit firms:		
TOTAL	53.8	46.2
INTERNATIONAL	30.8	7.7
OTHER	23.1	38.5
Audit firms as a group:		
INTERNATIONAL	80	20
OTHER	37.5	62.5

### Discussion:

“Consider the use of specialists in auditing construction contracts in accordance with SAS No.73, Using the work of a Specialist.” (PITF, 2000-3:1-5)

ISA 620 states that although the auditor is expected to be an expert on business in general it is not expected that he be an expert where the knowledge areas of other professions becomes involved.

ISA 620 further states that one such area would be “The measurement of work completed and to be completed on contracts in progress.” (ISA620.06)

This question should have been phrased more specifically to determine the identity of the experts used by the “other” auditors.

### Conclusion:

Although (or maybe because) the respondents do not agree. *The answer supports all of the hypotheses.*

## Question 47

Do you employ any of the following persons for the audit of construction-type audits, in obtaining audit evidence on the stage of completion of the contract?

### 47.1 Architect

	Yes	No
Audit firms:		
TOTAL	15.4	84.6
INTERNATIONAL	0	38.5
OTHER	15.4	46.2
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	25	75

### 47.2 Landscape Architect

	Yes	No
Audit firms:		
TOTAL	0	100
INTERNATIONAL	0	38.5
OTHER	0	61.5
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	0	100

### 47.3 Structural & Civil Engineer

	Yes	No
Audit firms:		
TOTAL	7.7	92.3
INTERNATIONAL	0	38.5
OTHER	7.7	53.8
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	12.5	87.5

## 47.4 Electrical Engineer

Audit firms:

TOTAL

INTERNATIONAL

OTHER

Audit firms as a group:

INTERNATIONAL

OTHER

	Yes	No
TOTAL	0	100
INTERNATIONAL	0	38.5
OTHER	0	61.5
Audit firms as a group: INTERNATIONAL	0	100
Audit firms as a group: OTHER	0	100

## 47.5 Mechanical Engineer

Audit firms:

TOTAL

INTERNATIONAL

OTHER

Audit firms as a group:

INTERNATIONAL

OTHER

	Yes	No
TOTAL	0	100
INTERNATIONAL	0	38.5
OTHER	0	61.5
Audit firms as a group: INTERNATIONAL	0	100
Audit firms as a group: OTHER	0	100

## 47.6 Town and Regional Planner

Audit firms:

TOTAL

INTERNATIONAL

OTHER

Audit firms as a group:

INTERNATIONAL

OTHER

	Yes	No
TOTAL	0	100
INTERNATIONAL	0	38.5
OTHER	0	61.5
Audit firms as a group: INTERNATIONAL	0	100
Audit firms as a group: OTHER	0	100

## 47.7 Quantity Surveyor

Audit firms:

TOTAL

INTERNATIONAL

OTHER

Audit firms as a group:

INTERNATIONAL

OTHER

	Yes	No
TOTAL	23.1	76.9
INTERNATIONAL	0	38.5
OTHER	23.1	38.5
Audit firms as a group: INTERNATIONAL	0	100
Audit firms as a group: OTHER	37.5	62.5

## 47.8 Construction Manager

Audit firms:

TOTAL

INTERNATIONAL

OTHER

Audit firms as a group:

INTERNATIONAL

OTHER

	Yes	No
TOTAL	7.7	92.3
INTERNATIONAL	0	38.5
OTHER	7.7	53.8
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	12.5	87.5

## 47.9 Project Manager

Audit firms:

TOTAL

INTERNATIONAL

OTHER

Audit firms as a group:

INTERNATIONAL

OTHER

	Yes	No
TOTAL	7.7	92.3
INTERNATIONAL	0	38.5
OTHER	7.7	53.8
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	12.5	87.5

## 47.10 Cost Engineer

Audit firms:

TOTAL

INTERNATIONAL

OTHER

Audit firms as a group:

INTERNATIONAL

OTHER

	Yes	No
TOTAL	0	100
INTERNATIONAL	0	38.5
OTHER	0	61.5
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	0	100

## 47.11 Interior Designer

Audit firms:

TOTAL

INTERNATIONAL

OTHER

Audit firms as a group:

INTERNATIONAL

OTHER

	Yes	No
TOTAL	0	100
INTERNATIONAL	0	38.5
OTHER	0	61.5
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	0	100

## 47.12 Site Manager

	Yes	No
Audit firms:		
TOTAL	15.4	84.6
INTERNATIONAL	0	38.5
OTHER	15.4	46.2
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	25	75

## 47.13 Time manager

	Yes	No
Audit firms:		
TOTAL	0	100
INTERNATIONAL	0	38.5
OTHER	0	61.5
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	0	100

## 47.14 Construction Project Manager

	Yes	No
Audit firms:		
TOTAL	15.4	84.6
INTERNATIONAL	0	38.5
OTHER	15.4	46.2
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	25	75

## 47.15 Legal Practitioner

	Yes	No
Audit firms:		
TOTAL	38.5	61.5
INTERNATIONAL	30.8	7.7
OTHER	7.7	53.8
Audit firms as a group:		
INTERNATIONAL	80	20
OTHER	12.5	87.5

## 47.16 Others

	Yes	No
Audit firms:		
TOTAL	0	53.8
INTERNATIONAL	0	15.4
OTHER	0	38.5
Audit firms as a group:		
INTERNATIONAL	0	40
OTHER	0	62.5

### Discussion:

It is apparent that although the respondents:

- do not have a lot of contact with built environment professionals during the audit
- cannot perform any of the tasks needed to “measure” or “estimate” as prescribed by AC109/IAS11
- do not “employ” any of the built environment professionals as part of the audit team
- do not make “use of the work of an expert” in the audit of construction contractors

this state of affairs is not viewed by them as problematic.

The implication is that they must be interpreting the concepts “measure” and “estimate” differently.

### Conclusion:

*This answer is in direct support of all the hypotheses.*



## Question 48

What type of audit evidence would you require from the persons listed in question 47?

- 1 None
- 2
- 3
- 4
- 5
- 6 Calculations, reports, certificates
- 7 Evidence with regard to quantities, estimates to completion, design changes
- 8 Written reports with explanatory calculations or drawings or pictures
- 9 Certificate showing work done - completion details
- 10 Minutes of meetings, certificates prepared by QS or Engineers, Memo's prepared by individuals
- 11
- 12
- 13 Certificates

### Discussion:

Answers ranged from “None” to “Written reports with explanatory calculations or drawings or pictures” and “Certificate showing work done - completion details” “Evidence with regard to quantities, estimates to completion, design changes” and last but not least “Minutes of meetings, certificates prepared by QS or Engineers, Memo's prepared by individuals.”

### Conclusion:

*The answer supports the hypothesis.*

### Question 49

Is there any audit evidence that you would not be able to obtain if the above persons were not consulted on the audit?

	No answer	Yes	No
Audit firms:			
TOTAL	7.7	23.1	69.2
INTERNATIONAL	0	15.4	23.1
OTHER	7.7	7.7	46.2
Audit firms as a group:			
INTERNATIONAL	0	40	60
OTHER	12.5	12.5	75

### Discussion:

#### Visit construction contract sites.

“Consideration of a site visit might include significant contract sites, in which the work is in the very early stages of a contract. Such a visit may identify the complexities of performing the contract” (PITF, 2000-3:3)

#### Meet with project managers.

“Project managers play an important role in controlling and reporting job site costs. They are also close to the facts and are likely to get more prompt and accurate information than the accounting personnel.” (PITF, 2000-3:3)

#### Identify and understand the significant assumptions and uncertainties.

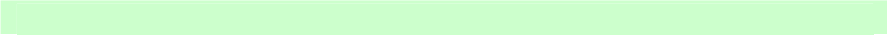
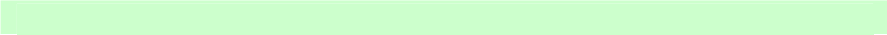
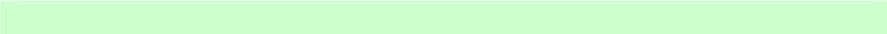
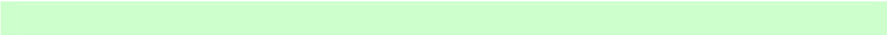
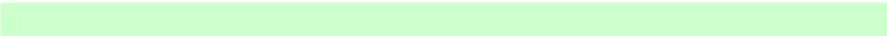

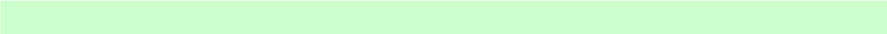
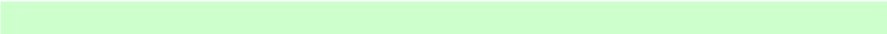
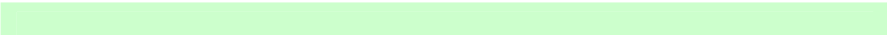
“This procedure is fundamental to performing an effective audit of an entity using contract accounting.” (PITF, 2000-3:3)

SAOS620/ISA 620 and other internationally agreed procedures clearly prescribe this action! The respondents are not sure what evidence they will need from the Built Environment Professionals.

**Conclusion:** *The answer supports the hypothesis.*

## Question 50

Please elaborate

- 1 
- 2 
- 3 
- 4 
- 5 Legal contracts hold vital information  
Records held by the company corroborate information  
It is difficult to manipulate all sources of evidence
- 6 It may be necessary to use experts in situations which are complicated and require significant judgement and interpretations.
- 7 Between client staff & 3rd party confirmations we should get all information required
- 8 
- 9 
- 10 These are the people who are best able to assess progress on a project and whether it will be completed on time, within budget and as planned.
- 11 
- 12 
- 13 

### Discussion:

“These are the people who are best able to assess progress on a project and whether it will be completed on time, within budget and as planned.” With the exception of respondent 10, no-one changed his mind with regard to “experts”.

### Conclusion:

*The answer supports the hypothesis.*

### Question 51

In your opinion, do you consider yourself able to conduct the audit without the opinion of the persons listed in Question 47 on the stage of completion of the contract?

	Yes	No
Audit firms:		
TOTAL	53.8	46.2
INTERNATIONAL	7.7	30.8
OTHER	46.2	15.4
Audit firms as a group:		
INTERNATIONAL	20	80
OTHER	75	25

### Conclusion on 51:

The respondents think they can do it on their own.

### Question 52

Would you at any point consider using the persons listed in Question 47 if they were on the payroll of the client? (Employed/engaged/part of)

	Yes	No
Audit firms:		
TOTAL	92.3	7.7
INTERNATIONAL	38.5	0
OTHER	53.8	7.7
Audit firms as a group:		
INTERNATIONAL	100	0
OTHER	87.5	12.5

### Conclusion on 52:

This answer corresponds with the previous answer.

### Question 53

Does your firm employ any of the persons listed in Question 47 on a permanent basis?

	Yes	No
Audit firms:		
TOTAL	0	100
INTERNATIONAL	0	38.5
OTHER	0	61.5
Audit firms as a group:		
INTERNATIONAL	0	100
OTHER	0	100

### Conclusion on 53:

This implies that even the attorneys referred to in previous answers are used for consultation purposes only. Depending on the circumstances this might be adequate.

### Discussion of questions 51, 52 and 53:

The “international” auditors and “others” auditors do not agree in question 51 on whether they will be able to conduct the audit without the opinion of the BEPs listed in question 47 on the stage of completion of the contract.

They are, however, in agreement that the BEPs can be trusted whether independent or in the employment of the client.

### Conclusion on questions 51, 52 and 53:

*The answers support the hypothesis.*

#### 4.3.5.2. DISCUSSION AND CONCLUSION TO HYPOTHESIS FIVE

The hypothesis states:

- There is no existing and feasible practice for the use of the work of independent, objective, qualified and experienced Built Environment Professionals (BEPs) by Registered Auditors and Accountants of construction contractors

ISA620 states that:

- “although the auditor is expected to be an expert on business in general it is not expected that he be an expert where the knowledge areas of other professions becomes involved”
- one such area would be “The measurement of work completed and to be completed on contracts in progress.” (ISA620.06)

The respondents very clearly indicated that they do not have regular contact with the built environment professionals.

The PITF report has identified certain procedures that should be considered in performing an audit of a construction contractor. Some of these are summarized as follows:

- *“Identify and understand the significant assumptions and uncertainties on the contract. This procedure is fundamental to performing an effective audit of an entity using contract accounting. Not performing this function results in an audit that does not comply with GAAS.*
- *Consider the use of specialists in auditing construction contracts in accordance with SAS No.73, Using the work of a Specialist.”*

(PITF, 2000-3:1-5)

ISA620.14 states that “the appropriateness and reasonableness of assumptions and methods used and their application are the responsibility of the expert because:

- The auditor does not have the same expertise, therefore,
- cannot always challenge the expert's assumptions and methods.

However, the auditor will need to

- obtain an understanding of the assumptions and methods used and
- to consider whether they are appropriate and reasonable, based on the auditor's knowledge of the business and the results of other audit procedures. " (ISA620.14)

The respondents did not indicate that this is adhered to during the audit of construction companies.

The respondents did indicate that they encounter some of the built environment professionals during audits. The indication is that the professionals are mostly employees of the construction companies. Two aspects immediately come to mind, namely:

- the objectivity of the individual
- the professionalism of the individual

Most of the prerequisites to outside help are not adhered to as it is not handled with much formality.

If an auditor judges that he needs the assistance of a built environment professional that is obviously independent and objective, how will he go about it? The only aspect in his favour would be the professional integrity of the individual involved. There is no real guidance on the subject. The contractor's concerns regarding aspects such as confidentiality of methods, prices, agreements, contracts, profit sharing, etc. are all valid. The respondents agreed.

*The answers support the hypothesis. (Note: Hypothesis five could be the solution to the problems identified by the previous four hypotheses!)*

#### 4.3.6. HYPOTHESES ONE TO FIVE

The questions contained in this section are meant to give an overview of the whole problem and are not directed at a specific hypothesis.

**Table 15: Hypotheses one to five supporting questions and answers**

No.	Notes to the questions	Notes to the answers	Page
64	Estimate or cash flow	Conflicting answers	376
65	Accounting bodies & activities	If it was possible to read them all	377 - 380
66	Interested in CPD	To be continued	381 - 382

#### Question 64

Is your audit primarily based on the ability of the contractor to estimate accurately or alternatively on the ability of the contractor to manage the cash flow of the company?

	Do not understand the question?	Ability to estimate	Manage cash flow	Both
Audit firms:				
TOTAL	7.7	53.8	7.7	30.8
INTERNATIONAL	0	30.8	0	7.7
OTHER	7.7	23.1	7.7	23.1
Audit firms as a group:				
INTERNATIONAL	0	80	0	20
OTHER	12.5	37.5	12.5	37.5

#### Discussion:

“Understand the company’s cash flow and how it will manage paying out expenses.” (PITF, 2000-3:2) “Remember that the audit of a contractor is an audit of a contractor’s ability to estimate.” (PITF, 2000-3:2)

#### Conclusion:

*This answer is in support of all the hypotheses.*



## Question 65

Do you regularly familiarise yourself with guidelines, comments and general accounting and auditing activities of the following countries and / or bodies?

### 65.1 United Kingdom

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	7.7	0	46.2	46.2
INTERNATIONAL	0	0	38.5	0
OTHER	7.7	0	7.7	46.2
Audit firms as a group:				
INTERNATIONAL	0	0	100	0
OTHER	12.5	0	12.5	75

### 65.2 United States of America

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	7.7	0	53.8	38.5
INTERNATIONAL	0	0	38.5	0
OTHER	7.7	0	15.4	38.5
Audit firms as a group:				
INTERNATIONAL	0	0	100	0
OTHER	12.5	0	25	62.5

### 65.3 IFRIC (International Financial Reporting Interpretations Committee)

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	0	38.5	53.8	7.7
INTERNATIONAL	0	15.4	23.1	0
OTHER	0	23.1	30.8	7.7
Audit firms as a group:				
INTERNATIONAL	0	40	60	0
OTHER	0	37.5	50	12.5

#### 65.4 IFAC (International Federation of Accountants)

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	7.7	0	30.8	61.5
INTERNATIONAL	0	0	15.4	23.1
OTHER	7.7	0	15.4	38.5
Audit firms as a group:				
INTERNATIONAL	0	0	40	60
OTHER	12.5	0	25	62.5

#### 65.5 IASB (International Accounting Standards Board)

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	7.7	15.4	53.8	23.1
INTERNATIONAL	7.7	0	30.8	0
OTHER	0	15.4	23.1	23.1
Audit firms as a group:				
INTERNATIONAL	20	0	80	0
OTHER	0	25	37.5	37.5

#### 65.6 IAASB (International Auditing and Assurance Standards Board)

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	7.7	7.7	53.8	30.8
INTERNATIONAL	7.7	0	30.8	0
OTHER	0	7.7	23.1	30.8
Audit firms as a group:				
INTERNATIONAL	20	0	80	0
OTHER	0	12.5	37.5	50

### 65.7 FASB (Financial Accounting Standards Board)

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	7.7	0	61.5	30.8
INTERNATIONAL	0	0	38.5	0
OTHER	7.7	0	23.1	30.8
Audit firms as a group:				
INTERNATIONAL	0	0	100	0
OTHER	12.5	0	37.5	50

### 65.8 IASCF (International Accounting Standards Committee Foundation)

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	7.7	15.4	15.4	61.5
INTERNATIONAL	0	7.7	0	30.8
OTHER	7.7	7.7	15.4	30.8
Audit firms as a group:				
INTERNATIONAL	0	20	0	80
OTHER	12.5	12.5	25	50

### 65.9 SAC (Standards Advisory Council)

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	7.7	0	38.5	53.8
INTERNATIONAL	0	0	15.4	23.1
OTHER	7.7	0	23.1	30.8
Audit firms as a group:				
INTERNATIONAL	0	0	40	60
OTHER	12.5	0	37.5	50

## 65.10 EITF (Emerging Issues Task Force)

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	7.7	0	53.8	38.5
INTERNATIONAL	0	0	38.5	0
OTHER	7.7	0	15.4	38.5
Audit firms as a group:				
INTERNATIONAL	0	0	100	0
OTHER	12.5	0	25	62.5

## 65.11 SEC (Securities and Exchange Commission)

	no answer	Yes	Some- times	No
Audit firms:				
TOTAL	7.7	0	46.2	46.2
INTERNATIONAL	0	0	30.8	7.7
OTHER	7.7	0	15.4	38.5
Audit firms as a group:				
INTERNATIONAL	0	0	80	20
OTHER	12.5	0	25.0	62.5

### Discussion:

The intention was to determine whether respondents are familiar with current international trends in construction accounting debates. The respondents would for instance have had a problem with AC109/IAS11 guidelines on “combining and segmenting” if they had studied the above sources, like they indicated they did.

It would seem that current contentious issues do not reach the smaller registered accountant through the above channels, as they do not consult it, and it would then be debatable whether it reaches the contractor’s accountant. (Probably not)

### Conclusion:

*This answer is in direct support of all the hypotheses.*

## Question 66

Do you think that it would be of benefit for accountants/auditors to receive formal education in building cost estimates, construction project management and the reading of architectural and / or engineering drawings if they had construction contractors as clients?

### 66.1 Building cost estimates

	Yes	Unsure	No
Audit firms:			
TOTAL	69.2	23.1	7.7
INTERNATIONAL	38.5	0	0
OTHER	30.8	23.1	7.7
Audit firms as a group:			
INTERNATIONAL	100	0	0
OTHER	50	37.5	12.5

### 66.2 Construction project management

	Yes	Unsure	No
Audit firms:			
TOTAL	61.5	23.1	15.4
INTERNATIONAL	38.5	0	0
OTHER	23.1	23.1	15.4
Audit firms as a group:			
INTERNATIONAL	100	0	0
OTHER	37.5	37.5	25.0

### 66.3 Architectural and/or Engineering drawings

	Yes	Unsure	No
Audit firms:			
TOTAL	30.8	30.8	38.5
INTERNATIONAL	23.1	7.7	7.7
OTHER	7.7	23.1	30.8
Audit firms as a group:			
INTERNATIONAL	60	20	20
OTHER	12.5	37.5	50

## **Discussion:**

It is apparent that although the respondents:

- do not have a lot of contact with built environment professionals during their audit of construction contractors;
- cannot perform any of the tasks needed to “measure” or “estimate” as a built environment professional would have;
- do not “employ” any of the built environment professionals as part of the audit team for construction contractors and
- do not really make “*use of the work of an expert*” in the audit of construction contractors

*The current situation is not viewed by the respondents as being problematic.*

This mean that they interpret the concepts “measure” and “estimate” different from the interpretations attached to the wording by the built environment professionals. This might prove to be a problem or not, only they will know.

## **Conclusion:**

*This answer is in direct support of all the hypotheses.*

### **Question 1**

This question was asked for administrative and courtesy reasons only and not to support any hypothesis.

### **Question 2**

This question was asked for administrative reasons only and not to support any of the hypotheses.

## 4.4. CONCLUDING INTERPRETATIONS

### 4.4.1. THE QUESTIONNAIRE

The questionnaire contains sixty-six questions, discussed and summarized later in this section. When sub-questions are taken into account they amount to 142 with 365 possible answers (60 questions and 133 possible answers are directly related to AC109/IAS11 content). The questions are divided into categories that require some or all of the following qualities from the respondents:

- Knowledge (of AC109/IAS11 and other Statements of GAAP and GAAS, such as AC000/Framework)
- Experience (of construction auditing, accounting and reporting) and
- An opinion (on the application of accounting and auditing procedures and requirements in practice, where construction is concerned)

The respondents had a 100% agreement on only 6 questions. The questions ranged from whether they had any formal training on built environment skills (Q24) to whether they recognise and employ built environment professionals to assist them on auditing procedures (Q4, Q26, Q47 & Q53). Q62: *Do you compare cost to completion with estimated costs on all contracts where profit is calculated based on percentage of completion?* was directly related to AC109/IAS11 (1.76% of questions asked and 0.75% of possible answers, directly related to AC109/IAS11) where all the respondents answered unanimous.

Question 62 is an example of the ease with which ambiguity is reached where accountants work with phrases that are common to them but foreign in certain applications. “Cost to completion” or “cost to complete” is in fact “estimated costs”. It is thus difficult to envisage why you would want to compare an amount with itself. The one question on AC109/IAS11 that was asked to determine whether accountants experience certain phrases in construction accounting ambiguous is the only question that the respondents agreed unanimously.

#### 4.4.2. THE RESPONDENTS

The presumption was that although accountants and auditors are extremely busy professionals, they are familiar with completing questionnaires and would respond promptly. When it became apparent that this was not the case, it led to numerous telephonic requests.

Respondents answered “I have to think before I answer – I do not want to make a mistake”, when asked why they do not complete the questionnaire.

When confronted with the fact that if they answered the questionnaire without consulting a textbook, it should take only about 30 minutes to complete, they acknowledged this, telephonically, yet were not prepared to do it that way.

The reasons for respondents to react this way might be numerous, for instance:

- They are cautious by nature and training and wanted to make sure that the questionnaire had no trick questions.
- They are for the same reasons cautious not to make mistakes.
- They are not prepared to divulge what they consider trade secrets and / or privileged client information.

The respondents were all qualified chartered auditors and accountants in private practice with construction contractors as clients. All but one of the “big four” international audit firms responded. The “missing link” forwarded a written declination to respond, stating that he had been transferred to another department before he could discuss the remaining questions with his colleagues.

The choice of or amount of respondents would not have resulted in a different conclusion. The fact that in only 0.75% of the AC109/IAS11 related answers respondents were unanimous in their interpretation verified the fact that contractors, and their accountants, would have difficulty with the interpretations.



#### 4.4.3. IMPORTANT CONCEPTS

**The first hypotheses** assumed that the respondents do not consider the most important concepts to be able “to measure reliably” and “to estimate reliable”.

The words are contained in paragraph .23 and paragraph .24 of AC109/IAS11. Paragraph 23, for instance, states “that the outcome of a construction contract can be *estimated reliably* when all of the following conditions are met:

- Total contract revenue can be *measured reliably*.
- It is probable that the economic benefits associated with the contract will flow to the enterprise.
- Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be *measured reliably*.
- The contract costs attributable to the contract can be *clearly identified and measured reliably* so that actual contract costs incurred can be compared with prior estimates.” (AC109.23/IAS11.23)

The respondents are in agreement that the most important concepts contained in AC109/IAS11 are contract revenue, contract costs and the recognition of contract recognition of revenue and expense (Question 5).

Recognition of revenue and expense is considered, by the respondents, to be the most important concept contained in AC109/IAS11. To a large extent that is correct. However, included in the recognition of revenue and expense are the principles of “reliable measurement” and “reliable estimates”. Together with “clearly identify” they form the cornerstones of the action to be taken when recognition is being considered. The concept “to be able to clearly identify costs” were not included in the questionnaire because it is considered to form part of the skills of an auditor and accountant. The other two concepts were tested as they are considered to be built environment professional’s skills.

To a certain degree it is a chicken and egg situation, but everyone will agree that if you can measure, identify and estimate, then you can recognize, according to AC109/IAS11, and not the other way around.

**Table 16: The six most important concepts as identified by respondents**

No.	Concept	Considered “most important” by respondents (percentage)
1	Recognition of revenue and expenses	84.6
2	Contract revenue	76.9
3	Contract costs	69.2
4	To measure reliably	61.5
5	To estimate reliably	53.8
6	Changes in estimates	53.8

One of the following possibilities applies, namely:

- The respondents do not realize that measure and estimate form part of recognition.
- The respondents are not of the opinion that recognition means to measure and to estimate.
- The respondents are of the opinion that “to estimate” and “changes in estimates” are similar.
- The respondents do not realize that you have to be able to measure and estimate before you can recognize.
- The respondents really cannot see how measurement and estimation can be of more importance than recognition.
- The respondents are of the opinion that measurement is “to establish the amount of”.

- The respondents do not recognize that to determine the cost of a design, by one professional, will require the expertise of another professional.
- The respondents are required to verify something that they might not be qualified to perform.

#### 4.4.4. RELIABLE MEASUREMENT

“Reliable measurement” and “reliable estimates” are the focus of **hypothesis two**. The possible reasons for the non-recognition of two of the important aspects contained in AC109/IAS11 are:

- that it is not defined in the document
- that it is not described by placing it into context
- that it is not properly linked to a specific action
- that it is not made clear by whom it “can” or “should” be done and
- that it is not made clear what skills are required.

It seems logical that users of AC109/IAS11 assume that reliable measurement is something that is to be performed by an accounting person, which therefore falls within their capabilities. It is also assumed that they are equipped with the necessary skills. If this were not the case it would have been noted. So their assumption is correct.

When asked in question 22 to define “reliable measurement” some of the answers were: “Measure – have an accurate (as far as possible) arithmetical figure with regard to costs” and “Verify the supporting documentation”.

When asked in question 31 to explain the meaning of “reliable estimates” some of the answers were: “Defined in framework” and “For audit purpose I need to obtain an indication of a fair measurement of cost and revenue. This is done by means of what is accounted for in the accounting records compared with third

party inputs". Thus these answers indicate some of the confusion and misconceptions. Some go the accountant route and others assume that more is implied.

A comparison of the answers to question 21 and question 30 might point to the fact that some ambiguity and uncertainty exists even in the minds of the expert respondents. Question 21 reads: Are the requirements for the following clearly defined? Question 30 reads: The wording "*measure reliably*" (and other synonyms) are used throughout the guideline but is never defined. Do you agree with this statement? The "international" auditors and accountants were quite sure and gave a 100% "yes" answer. The "other" auditors and accountants were divided on the issue and 37.5% answered "yes", 37.5 % answered that they were "unsure" and 25% answered "no".

**Table 17: Response to question 21**

No.	Topic	Yes %	Unsure %	No %	International auditors as part of "yes" answers	Other auditors as part of "yes" answers
1	Measuring reliably	61.5	23.1	15.4	100%	37.5%
2	Estimating reliably	46.2	23.1	30.8	100%	12.5%
3	Attributable costs	53.8	30.8	15.4	60%	50%
4	Overheads	76.9	7.7	15.4	80%	75%
5	Non-attributable costs	15.4	46.2	38.5	0%	25%
6	Cost allocation in general	53.8	30.8	15.4	60%	50%
7	Early stage of a contract	15.4	30.8	5.8	0%	25%

Question 32 reveals further uncertainty amongst the “other” auditors, as illustrated by the table below:

*Question 32 reads: Do “estimate reliably” and “measure reliably” require the same skills?*

**Table 18: Response to question 32**

Topic	Yes	No	“International” auditors as part of yes	“Other” auditors as part of yes
Measure reliably	84.6%	15.4%	100%	75%

The questions (22, 23, 31 and 33) were included to support the above questions and produced answers that further indicated that there is uncertainty and ambiguity regarding the principle “to measure reliably”.

*This is enough evidence to suggest that the hypothesis is supported by the answers.*

#### **4.4.5. AUDITING THE WORK OF BUILT ENVIRONMENT PROFESSIONALS**

**Hypothesis three** focuses on measurement and refers to the arithmetic nature of various calculations required to produce the estimates of:

- cost to complete
- cost to date
- stage of completion
- costs attributable and
- revenue due

The assumption is that arithmetic skills are all that is needed to audit estimates.

Questions 21, 30 and 32 support the hypothesis but are not conclusive. Questions 24 and 29 were added to determine the extent of the respondents own skills. It will assist in their appreciation of the skills required. The answers indicated without any doubts that they do not possess the skills needed to perform the required task.

Questions 34, 35 and 36 were included to determine whether the respondents were of the opinion that the verification of the measurement, done by the built environment professionals, can be performed by accounting orientated personnel. Their answer was in the affirmative but they were of the opinion that only senior personnel should perform this task.

This topic was addressed directly in question 38 with: Do you regard the calculations done in verifying the estimates made by the contractor as arithmetical in nature which can be checked by a clerk with the necessary experience?

**Table 18: Response to question 38.**

Topic	Yes	No	“International” auditors as part of yes	“Other” auditors as part of yes
Estimates by contractor is arithmetical in nature	84.6%	15.4%	80%	87.5%

*The answers to question 38 support the hypothesis.*

Questions 22, 23, 31 and 33 were included to support the previous hypothesis, but also applied to this hypothesis. Questions 37 and 39 were additional and although question 37 produced only one answer, it probably summed up the situation. The respondents are of the opinion that they possess the ability and skills to perform the necessary verification of the estimates done by contractors. They are probably also of the opinion that if you know the dimensions of an object you can determine its costs, revenue and resultant profit or loss. This is unfortunately seldom true. The answers to question 39 were not as clear as the answer to question 38. *There is, however, enough evidence to suggest that the hypothesis is supported by the answers.*

#### 4.4.6. DETERMINING STAGE OF COMPLETION

**The fourth hypothesis** focused on the calculation of the stage of completion of the contract.

*The respondents seemed unsure whether this very important calculation can be done with accuracy.*

**Table 20: Response to question 6**

Topic	Yes	Unsure	No	“International” auditors as part of the yes answer	“Other” auditors as part of the yes answer
Stage of completion calculated accurately	61.5%	23.1%	15.4%	60%	62.5%

Questions 6, 7, 9 and 12 were posed to determine which of the bases for calculating the stage of completion are the most popular in practice. There were no surprises here and almost everybody had the same preference, followed AC109/IAS11 to the letter, and opted for “costs to date”.

Question 11 asked respondents whether the basis for calculation was a free choice affair or whether any prescription was applicable. AC109/IAS11 states: “The stage of completion of a contract may be determined in a variety of ways. The enterprise uses the method that measures reliably the work performed. Depending on the nature of the contract, the methods may include:

- the proportion that contract costs incurred for work performed to date bear to the estimated total contract costs
- surveys of work performed, or
- completion of a physical proportion of the contract work.”

(AC109.30/IAS11.30)

Although this sounds like free choice, it is actually not the case. AC109/IAS11 clearly states that: “The enterprise uses the method that measures reliably the work performed.” The built environment professionals would expect that this will result in the “surveys of work performed” method.

The answers to this question are again not conclusive. A possible explanation for the disagreement among “international” and “other” auditors might be the following: The smaller audit firm is more often involved in the decision of which basis to use for the calculation than the bigger audit firm. Usually the smaller construction enterprise employs the smaller audit firm, and vice versa. Experience in making the decision might thus be the reason for a slight disagreement. The smaller audit firms are more often confronted with this decision than the bigger audit firms.



Table 21 illustrates the answer to question 11.

**Table 21: Response to question 11**

Topic	Yes	Unsure	No	“International” auditors as part of the <b>no</b> answer	“Other” auditors as part of the <b>yes</b> answer
Acceptable alternatives for any set of circumstances	61.5%	7.7%	30.8%	60%	75%

Question 14 determined how final the choice, of a calculation base, is for future years. Respondents felt that it was a permanent situation but no evidence of that could be found in AC109/IAS11 to substantiate that opinion.

Questions 16 and 17 intended determining whether changes occurred after the initial choice. According to the respondents this does not happen frequently. They also indicated that they are in agreement with the contractors when changes do occur.

Question 18 asked respondents whether the choice of method was a result of consultation between them and the contractor. The answers indicated that the bigger firms consult while the smaller audit firms do not, which could lead to the conclusion that the smaller contractor does not take part in decisions, thereby leaving it to the auditors. Therefore there is no consultation situation.

Question 43 determined the extent of “accidental” manipulation that could occur in the determining of the stage of completion on construction contracts. AC109/IAS11 indicates that certain costs must be excluded from allocation to contracts and other cost must be allocated in a consistent manner. The direct

costs do not pose a problem but the “indirect” type does. A wrong choice of words or technicality might have influenced the answers to question 43. Attributable costs include overheads (According to AC109/IAS11) but respondents did not see them as synonyms.

Question 44 was more to the point where respondents were asked whether the Bill of Quantities and direct costs were to be regarded as synonyms. They responded overwhelmingly with a “no” answer, and again this was not expected. Direct costs include the Bill of Quantities.

Question 54 was included to obtain the respondents views on whether they are of the opinion that AC109/IAS11 could be manipulated in any way.

The candid answers were surprising. The fact that all of the respondents were of the opinion that it can be done is significant in the interpretation of the results to this question.

**Table 22: Response to question 54**

Topic	Yes	Unsure	No	“International” auditors as part of the “ <b>yes</b> ” answer	“Other” auditors as part of the “ <b>unsure</b> ” answer
Manipulation possible	46.2%	53.8%	0%	100%	87.5%

Questions 56, 58, 60, and 62 indicated that auditors do their best to verify the accounting and other evidence according to GAAS.

Questions 8, 10, 13, 15, 45, 55, 57, and 59 were all posed to allow the respondents to elaborate on the respective previous questions. Some respondents did make use of the opportunity but it did not change the overall impression gained from the previous questions.

Question 19, however, was asked to determine whether respondents interpret vague suggestions contained in AC109/IAS11 in a uniform manner. The question asked was: “At what stage do you feel that the contract has progressed to the extent that you feel comfortable that the client can start recognising profits and/or losses?”

AC109/IAS11 states: “During the early stages of a contract it is often the case that the outcome of the contract cannot be estimated reliably. Nevertheless, it may be probable that the enterprise will recover the contract costs incurred. Therefore, contract revenue is recognised only to the extent of costs incurred that are expected to be recoverable. As the outcome of the contract cannot be estimated reliably, no profit is recognised.” (AC109.33/IAS11.33)

The respondents did not agree on this point. This could be an indication that they need the built environment professional in more respect than one.

*The answers supported the hypothesis.*

#### 4.4.7. USING THE WORK OF AN EXPERT

**Hypothesis five** focused on the external auditor and accountant's possible "use of the work of an expert"

Question 3 was included to determine where auditors gain their experience in construction contracts to be able to conduct an audit. This would indicate the need for built environment professional's skills.

The respondents were then questioned on their knowledge of the built environment professionals and their contact with them in the conduct of their audits. It appeared that they do have contact with the built environment professionals, but that it is usually with a certain group only.

The one professional that does not seem to be consulted by auditors of construction contracts, is the construction manager. This is one aspect where change could be for the better, since construction managers will in most cases be the project manager of the future and they could be helpful to auditors in their auditing of construction contracts. The auditors did not appear to be knowledgeable on certain current professions and evolving professions in the built industry.

Question 25 determined whether built environment professionals were employed or otherwise engaged in conducting the audit. It is not current practice.

The PITF document (PITF, 2000-3:2) states that the auditor should:

- "Visit construction contract sites.
- Meet with project managers.
- Identify and understand the significant assumptions and uncertainties on the contract. This procedure is fundamental to performing an effective

audit of an entity using contract accounting. Not performing this function results in an audit that does not comply with GAAS.”

Question 25 asked the respondents whether they employ a specialist to visit the construction sites of the client and conduct interviews with the construction project managers of these sites. They answered no.

Question 26 asked the respondents whether they employ built environment professionals to assist them in identifying and understanding the significant assumptions and uncertainties on the contract. They answered no.

Question 27 asked the respondents whether they employ professional assistance in studying significant and unique contractual agreements. They answered no.

Question 27 asked the respondents whether they have any formal training in Construction Contract Law. They answered no.

Question 29 was included to determine their expertise in built environment skills as would be expected from built environment professionals. They answered none.

Questions 34, 35 and 36 were included to determine whether the respondents felt that the verification of measurement by the built environment professionals can be done by accounting orientated personnel.

Questions 40 indicated that the respondents do regard built environment professionals as a source of audit evidence. Question 41 established that they do indeed use built environment professional to help in measuring activities and question 43 verified that they do not consider attributable costs and overheads as synonymous. Question 44 established that respondents do not consider the Bill of Quantities and Direct Costs to mean the same thing.

In question 46 they declared that they do make “use of the work of an expert” in construction auditing. It appears as if this meant certificates issued by architects and quantity surveyors. Question 47 established that they do not employ any of the built environment professionals on construction audits but do employ attorneys on those audits.

Question 49 established that they are of the opinion that they can obtain all audit evidence needed without the built environment professionals’ assistance, although in question 51 the “international” auditors expressed the opinion that they cannot conduct the audit without them. This was in direct contrast to the opinion of the “other” auditors.

**Table 23: Response to question 51**

Topic	“Yes”	“No”	“International” auditors as part of the “no” answer	“Other” auditors as part of the “yes” answer
Audit without the built environment professionals	53.8%	46.2%	80%	75%

Question 52 determined that independence of the built environment professionals is not important to the auditors of construction companies and question 53 established that the auditors do not employ built environment professionals on a permanent basis.

Questions 37, 39, 42, 48, 50 and 53 were all posed to allow the respondents to elaborate on the previous question. Some respondents did make use of the

opportunity but did not change the overall impression gained from the previous questions.

*The answers supported the hypothesis.*

#### **4.5. SUMMARY ON THE RESULTS AS A WHOLE**

Although the respondents were all competent to answer the questionnaire it became a feature that they frequently seemed to misinterpret the questions where they had to give detailed answers in their own words, as opposed to making a choice between “yes” or “no”.

A high percentage of respondents were also reluctant to answer these questions. Possible explanations are:

- Misunderstanding.
- The questionnaire might have been too long and the respondents rushed to complete it as quickly as possible due to their busy schedules.
- The respondents avoided giving answers in writing which could indicate that the guidelines supplied by AC109/IAS11 are not being followed.

Although care was taken not to ask sensitive or threatening questions it became clear in telephonic discussions with some of the respondents that they preferred to supply answers that fit the mould of AC109/IAS11 guidelines, rather than disclosing the procedures they actually employ in practice. This was also substantiated by the fact that respondents indicated that they had to consult AC109/IAS11 while completing the questionnaire in order to be able to answer the questions. The professionals used in pre-testing the questionnaire agreed that this should not have been necessary. In conversations with some of the respondents to persuade them to complete the questionnaire, they also agreed that it should not be necessary to refer to AC109/IAS11 in answering the questions, but they did not want to make mistakes.

The discussions to answers were limited partly to avoid a mono-operational bias to the answers. The discussion questions were left to the interpretation of the respondents as they did not influence the trend displayed by the answers that they were intended to verify. Questions of a “yes” or “no” nature were followed up with a discussion question in case no trend was indicated by the first question.

**According to the Practice Alert of the AICPA (PITF, 2000-3:1):**

“One of the more challenging audits is that of construction companies and other companies using the percentage of completion method of accounting for long-term contracts.”

“A thorough understanding of this literature is critical to audit such entities.”

“Auditing construction contractors or entities using contract accounting is complex.”

“Such businesses rely on accurate and reliable estimates to operate their business as well as to prepare financial statements in accordance with generally accepted accounting principles.”

“Therefore, it is critical that the auditor gain an understanding of the contractor’s significant estimates and assumptions in operating its business.”

“Remember that the audit of a contractor is an audit of a contractor’s ability to estimate.”



## **CHAPTER 5 - CONCLUSIONS AND RECOMMENDATIONS**

### **5.1. SUMMARY AND SALIENT POINTS**

#### **5.1.1. Chapter 1 - The introduction and motivation for the research**

Conceptions and misconceptions exist regarding important aspects in areas surrounding accounting, finance and construction. Almost everything in construction contracts contribute towards making reporting by construction companies probably one of the most challenging of all industries. The built environment professionals could be of assistance in alleviating some of the problems experienced, if they understood the origin and purpose of AC109/IAS11.

#### **5.1.2. Chapter 2 - The literature study**

Literature on the research topic is limited to textbooks, reports and comments from governing bodies in auditing and accounting. The sources are divided between those originating and aimed at the construction industry in the United States of America and those originating from the international community (the rest), including South Africa. The U.S.A. literature was found to be more comprehensive and provided practical applications, which are not found in the South African literature. The U.S.A. literature also provided some insight into the auditing of construction contracts. Some documentation still considered applicable to construction contract accounting dates from the 1950s.

#### **5.1.3. Chapter 3 - The research methodology**

With the luxury of hindsight, the research methodology that was decided on, appeared to be the feasible choice. It might have been an option to do a personal interview with both the contractors' accountants and their external

auditors and accountants. It appeared that the participants in the construction accounting field are all eager to contribute towards a solution.

## **5.2. SUMMARY AND INTERPRETATION OF RESULTS**

### **The main hypothesis**

*AC109/IAS11 does not provide clear and feasible guidelines for the determination of the stage of completion on a construction contract for disclosure in the financial statements of contractors*

Although the respondents were adamant that no unclear wording and statements existed in AC109/IAS11, they were unanimous in only 0.75% of AC109/IAS11 related answers to questions contained in the questionnaire.

If professionals with similar training and background differ, the possibility that the contractors, and their accountants, would experience difficulty with AC109/IAS11 interpretations, seem likely.

### **5.2.1. Hypothesis one – importance of measurement and estimating**

*“Reliable measurement” and “reliable estimates” are not clearly identified in AC109/IAS11 as the most fundamental concepts.*

No concept tested in the questionnaire is identified by AC109/IAS11 as being the “most fundamental/important” concept in the statement.

When and how “to recognise revenue and expenses” is considered by 100% of the “international” firms and 75% of the “other” firms to be the most important concept contained in AC109/IAS11.

To apply the percentage of completion method of recognising revenue and costs on construction contracts, the outcome of the contract must be estimated reliably. To be able to estimate it must be possible to measure.

Therefore it is deduced that AC109/IAS11 starts with measurement, then estimating and then recognition.

The following is deemed to be the crux of AC109/IAS11:

- “The primary issue in accounting for construction contracts is the allocation of contract revenue and costs to the period that the work is performed.” (AC109.01/IAS11.22)
- “The recognition of contract revenue and expenses is dependant on the fact whether the outcome of the contract can be estimated reliably or not.” (AC109.22/IAS11.22)
- To determine whether the outcome can be estimated reliably the following prerequisites must be met:

For a **fixed price** contract:

- Will the economic benefits of the contract flow to the contractor?
- Can the contract revenue be *measured reliably*?
- *Can both the cost to complete and the stage of completion be measured reliably?*
- *Can costs attributable be clearly identified and reliably measured so that actuals can be compared with estimates?* (AC109.23/IAS11.23)

And for a **cost plus** contract

- Will the economic benefits of the contract flow to the contractor?
- *Can costs attributable be clearly identified and reliably measured (whether or not specifically reimbursable)* (AC109.24/IAS11.24)

From the above it is therefore clear that: “If you can measure reliably, you can estimate reliably”. This is never stated as such in AC109/IAS11 and is therefore not considered by the respondents to be the most important concept contained in AC109/IAS11.

The following reference by one of the authoritative textbooks prescribed to accounting students in South Africa illustrates the general approach to estimation, measurement and recognition of costs and revenue displayed by accountants.

According to Vorster et al (2003:237) “the outcome of a construction contract can be estimated reliably only if it is probable that economic benefits will flow to the company. Aspects to be considered beforehand are:

- the predictability of the cost,
- the accuracy of cost allocations to the contract,
- the accuracy with which the contract completion is established and
- the duration of the contract.”

*Thus the hypothesis to sub-problem one is supported.*

### **5.2.2. Hypothesis two – definition of measurement and estimating**

*No definitions of “Reliable measurement” or “reliable estimates” are given in AC109/IAS11.*

“Reliability”, “measurement” and “reliability of measurement” are all defined in AC000/Framework: Framework for the Preparation and Presentation of Financial Statements. AC109/IAS11 refers to these definitions by referring to the Framework. However, the definitions contained in AC000/Framework do not define “reliable measurement” in the same way that the Built Environment Professionals would have. If the literature on “measurement” and “accuracy” of

the built environment professionals are consulted, it is clear why misconceptions resulted. It becomes even more debatable if “cost to complete” forms the focus of the “reliable measurement”, as contained in AC109/IAS11.

The question is: do the *accounting definitions* actually define the measurements needed to calculate the stage of completion on a construction contract?

Epstein and Mirza (2005:187) confirmed that AC109/IAS11 does not specifically provide instructions for estimating costs to complete.

ISA540.03 states that an accounting estimate means an approximation of the amount of an item in the absence of a precise means of measurement. Examples given include losses on construction contracts in progress.

According to Palmer (1995:31) SOP 81-1:

- recommends the use of the percentage-of-completion method in circumstances in which estimates are reasonably dependable
- states a presumption that contractors generally have the ability to produce estimates that are sufficiently dependable to justify the use of the percentage-of-completion method of accounting and
- (states) that *persuasive evidence to the contrary is necessary to overcome that presumption.*

As indicated in the literature study, the accounting authorities in the USA did not write an abbreviated document as guidance, but adhered to the comprehensive SOP 81-1 (and ARB 45, written in 1955.) In practice, a number of methods are used to measure the extent of progress toward completion. They include:

- the cost-to-cost method,
- variations of the cost-to-cost method,

- efforts-expended methods,
  - the units-of-delivery method, and the
  - units-of-work-performed method.
- Some of the measures are sometimes done and certified by engineers or architects, but management should review and understand the procedures used by those professionals. (SOP 81-1:44)

None of these kinds of explanations are included in AC109/IAS11.

In conclusion on the “reliability of measurement” in AC000/Framework:

- The criterion for the recognition of an item is:
  - that it possesses a cost or value
  - that it can be measured with reliability
- When, however, a reasonable estimate cannot be made:
  - the item is not recognized in the balance sheet or income statement.

AC000/Framework states that the disclosure in the notes is appropriate when knowledge of the item is considered to be relevant to the evaluation of the financial position, performance and changes in financial position of an enterprise, by the users of financial statements.

“Measurement” according to AC000/Framework: According to AC000/Framework measurement is the process of determining the monetary amounts at which the elements of the financial statements are to be recognized. This involves the selection of the particular basis of measurement that is employed to different degrees and in varying combinations in the financial statements.

Historical cost, current cost, realisable (settlement) value and present value are the bases mentioned. Historical cost is the measurement basis most commonly adopted.

“Reliability” according to AC000/framework:

AC000/Framework states that to be useful, information must also be reliable and thus free from material error and bias and dependable to users.

According to AC000/Framework information can be relevant but unreliable and potentially misleading but must at least lead to:

- Faithful representation: Information must represent faithfully the transactions and events it purports to represent although subject to some risk of being less than a faithful.
- Substance over form: Information must be accounted for and presented in accordance with their substance and economic reality and not merely their legal form.
- Neutrality: The information contained in financial statements must be neutral and free from bias, to be reliable.
- Prudence: The preparers of financial statements do have to contend with the uncertainties that surround many events and circumstances.
- Completeness: Information must be complete within the bounds of materiality and cost.

There is no overlap between the material of the built environment professionals and the above definitions and explanations on this topic.

*Thus the hypothesis to sub-problem two is supported.*

### **5.2.3. Hypothesis three – required skill for construction measurement**

The context within which “reliable measurement” and “reliable estimates” are used in AC109/IAS11 is such that it does not seem to imply more than arithmetical correctness.

The most important answer relating to hypothesis three is the answer to question number 38: *Do you regard the calculations done in verifying the estimates made by the contractor as arithmetical in nature which can be checked by a clerk with the necessary experience?* Respondents regard measurement only in accounting terms, principles and procedures. To them it seems to make no difference who performs it, as long as the person has experience in accounting.

AC109/IAS11 leave the impression of implying more than just an arithmetical calculation as it would have sufficed with “identified” or “calculated” or something similar. AC109/IAS11 refers to “measured” and even suggests/assumes a degree of uncertainty by adding the word “reliably”. This might mean that more was implied than general arithmetic. The respondents seem to agree with this statement, but still feel that no special skills are involved.

Palmer et al (1995:400-401) stressed that in order to be fully effective in doing the internal auditing in a construction company the auditor should be able to:

- review the plans,
- observe the physical progress of the job,
- know what the accounting records “should” show,
- reconcile the records with what he has observed, and
- know the sequence of accomplishment of physical work.

The respondents indicated that the above is not part of their speciality.

*The hypothesis to sub-problem three is supported.*

#### **5.2.4. Hypothesis four – stage of completion**

*AC109/IAS11 leaves the choice of the basis and method, to be used to determine the stage of completion and therefore the recognition of profit on incomplete construction contracts, to the professional opinion of the accountants involved.*



The percentage of completion method, of accounting, can be applied if the stage of completion can be determined. No restrictions are placed and no mention is made of prohibiting the switching from one method to another. Although AC109/IAS11 seems clear on this point the respondents did not express a clear and unambiguous opinion. The question now arises whether everyone is interpreting this in their own way.

Palmer et al (1995:33) states on “measuring the extent of progress toward completion” that:

- *The results obtained should be evaluated periodically through physical observation by qualified personnel,*
- In the same way that the results of perpetual inventory records are evaluated and adjusted by taking a physical inventory in a manufacturing enterprise.

Adrian and Adrian (1999:282) states that in spite of any audit technique used, the percentage of completion remains somewhat of an uncertain variable for the construction firm and auditor and is therefore probably the most challenging area of construction firm auditing.

*The hypothesis to sub-problem four is supported.*

#### **5.2.5. Hypothesis five – use of an expert**

*There is no existing and feasible practice for the use of the work of independent, objective, qualified and experienced Built Environment Professionals (BEPs) by Registered Auditors and Accountants of construction contractors.*

The respondents indicated that they do encounter all of the built environment professionals during routine construction contract audits. Although answers were vague it was assumed that these professionals are mostly employees of the construction companies. It further appeared that most of the prerequisites concerning outside help are not really adhered to and it is not handled with formality. If an auditor judges that he needs the assistance of a built environment professional, that appears to be obviously independent and objective, how will he go about it? The only solution is the professional's registration. There is no in depth guidance on this subject.

The contractor's concerns regarding outside professionals and aspects such as confidentiality of methods, prices, agreements, contracts, profit sharing, etc. are all valid. The respondents agreed.

ISA 620.06 states with reference to "Using the work of an Expert" that in obtaining an understanding of the entity and performing further procedures in response to assessed risks, the auditor may need to obtain, in conjunction with the entity or independently, audit evidence in the form of ... statements of an expert. The examples given include "the measurement of work completed and to be completed on contracts in progress".

In 2005 the ASB asked the IAASB to look into the matter of using specialists/experts in certain audits. It could be possible that under certain circumstances the contracting of experts could/should become mandatory and that non-contracting of experts by management could/should be considered scope limitation. The question of "whether the auditor should obtain a description of the assumptions, methods, test data and findings of the expert" were also asked.

The indication of what to expect, on the above, might be contained in the following statement by Landes (Cheney, 2005:14):

“What we want to do is take away what we think may be a practice problem in some situations – the over-reliance on the use of specialists’ work without the auditor doing sufficient due diligence and applying appropriate professional scepticism”.

*The hypothesis to sub-problem five is supported.*

## **Summary**

In the Practice Alert (PITF: 2000-3:5) of the AICPA the following was emphasized:

- “Auditing entities that use contract accounting is challenging in that the main element of the contractor’s financial statements is based on estimates of cost, and, importantly, costs, not shipments, drive the revenue recognition process.”
- “Prior to auditing contractors an auditor should ensure that they have the appropriate expertise to understand the risks of the business.”
- “Therefore, it is critical that the auditor gains an understanding of the contractor’s significant estimates and assumptions in operating its business. Remember that the audit of a contractor is an audit of a contractor’s ability to estimate.”

Palmer et al (1995:457) stated that “...not many public accountants have enough knowledge of the operational end of construction to evaluate some of the important relationships between job progress as it exists in the field and what the job records show. “

Although the above mentioned literature is largely aimed at external auditors the ambiguity that exists as a result of a choice of words, principles and actions originating from AC109/IAS11 might be more of a problem for the contractor and his internal accountant. In AC109/IAS11 they are confronted with seemingly

familiar phrases actually having different meanings and expecting different outcomes. They should realize that AC109/IAS11 refers to an accountant's interpretation and definition of words common to both professions.

The contractor and his internal accountant should be made aware of this possible ambiguity to ensure that they comply with AC109/IAS11 and Generally Accepted Accounting Practice. The auditors must be aware that the mere fact that certain respondents differed or were unsure on certain issues verifies that ambiguity in interpretations exists.

### **5.3. GAPS, ANOMALIES AND / OR DEVIATIONS IN THE DATA**

#### **5.3.1. Anomalies and surprising results**

Unexpected feedback and outcomes:

1. The presumption that although accountants and auditors are extremely busy professionals, they are familiar with completing questionnaires and would respond promptly. When it became apparent that this was not the case, it led to numerous telephonic requests. When reminded of the fact that the questionnaire should take only about 30 minutes to complete, and that a textbook need not be consulted, they agreed that this was the case, yet were not prepared to complete the questionnaire without consulting a textbook. .
2. The fact that the respondents did not communicate intimate knowledge of major developments and current topics of dispute regarding construction accounting. They did indicate that they read the more important journals and web-pages but still revealed no knowledge of certain important developments in construction accounting.

3. The extent of non-agreement, not only on the topics considered to be ambiguous, but also on topics that were considered to be settled long ago, such as construction overheads and related items.
4. The number of phrases and words duplicated by both the accountant and the built environment professional of words and phrases common to each environment, such as measure, estimate, financial management and financial statements.
5. Not all accountants realize that AC109/IAS11 is applicable in the reporting of construction contracts in the financial statements of contractors under all circumstances
6. Accountants do not realize that AC109/IAS11 allows for the use of any method in determining the percentage of completion on the contract, on condition that it supplies the correct answer.
7. Accountants still view the cost-recovery method as being equal to the completed-contract method.
8. The lack of agreement on the definition of contract costs.
9. The focus on revenue rather than costs.
10. The lack of guidance on issues such as cost to date and cost to complete.
11. The lack of agreement that the audit of construction contractors revolves around the contractor's ability to manage his cash flow and his ability to estimate.

12. General consensus that certificates of interim payments constitute cash flow manipulation tools.
13. Although increases in construction costs are universal and occur often, cost to complete is presumed to be easily verified.
14. The lack of appreciation for built environment professionals skills displayed by accountants.

### **5.3.2. Confirmation and deviation from the expected**

The registered auditors and accountants display a healthy confidence in what they do. This may be part of the solution as well as part of the problem. The respondents were reluctant to answer the longer questions with any degree of authority.

### **5.4. LARGER SIGNIFICANCE OF RESULTS**

- More international statements could present ambiguities in interpretation. This might be even truer in situations where a client is in an industry that is unknown or foreign to auditors and accountants. Guidance by the IAASB to warn that this is a high-risk industry and extreme caution should be exercised, could be helpful.
- The method of initiating Statements of GAAP might be outdated. The time might be right to involve professionals, practitioners and academics from other fields, not only on a voluntary basis but on a formal consultancy basis.
- The convergence of American and “International” accounting and auditing controlling bodies is currently a reality, and for the first time the

International Accounting Framework and International Reporting Standards are realities.

- The USA appeared reluctant to accept the above. It might have something to do with the “International Statements” being perceived to be “abridged” versions. The American standards seem to be on a different level than that of the “International” group and they might perceive it to be to their disadvantage to converge.
- Construction companies seem to seldom progress from “small” to “big”. This trend seems to increase and is more evident in developing countries. Does it have anything to do with the reporting and accounting methods and procedures?
- If auditors and accountants, external or internal, conduct their audit and other accounting duties in such a manner that they embrace rather than exclude other professionals, it might encourage these professionals to be more supportive and co-operative.

## **5.5. RECOMMENDATIONS**

- The interpretation of AC109/IAS11, with regard to certain paragraphs, needs clarifying. The role, if any, of built environment professionals has to be clarified and explained.
- It should be investigated whether it is feasible to expect the auditing profession to conduct an audit on “cost to complete” on a construction contract, considering the level of their construction related skills.
- The development of a standard costs identification and allocating system for accounting of construction contracts.

- Accountants and auditors should be allowed to “rely” on the expert with a higher degree of confidence.
- The convergence and adoption of best practices contained in statements IAS 11, SOP 81-1 and ARB 45.
- Clarity on the difference between expected losses according to AC109/IAS11 and profit forecasts in general.
- The professional responsibility of all professionals involved on construction contracts should be clarified in the event of misstatement in the financial statements.
- Other professionals involved on a construction contract should assist in the report by the auditor on the contract.
- Supplying comprehensive guidelines on methods to determine the percentage of completion on construction contracts and/or possible alternative methods of disclosure of work in progress.



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## APPENDICES

- A. AC 109: Construction Contracts
- B. IAS 11: Construction Contracts
- C. Questionnaire
- D. PITF report 2000-3
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## **APPENDIX A**

### **AC 109: CONSTRUCTION CONTRACTS**

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*AC 109 Construction contracts*


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This Statement of Generally Accepted Accounting Practice has been approved for issue by the Accounting Practices Board, which body has as its principal object:

'To establish and to procure the recognition and acceptance of what the Board considers is or should be generally accepted accounting practice.'

The provisions of this statement should be read in conjunction with AC 000 – Framework for the preparation and presentation of financial statements.

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The Statement of Generally Accepted Accounting Practice, which has been in bold italic type, should be read in the context of the background material and implementation guidance in this statement and in conjunction with the framework for the preparation and presentation of financial statements. Statements of Generally Accepted Accounting Practice are not intended to apply to immaterial items.

## Objective

- .01 The objective of this statement is to prescribe the accounting treatment of revenue and costs associated with construction contracts. Because of the nature of the activity undertaken in construction contracts, the date at which the contract activity is entered into and the date when the activity is completed usually fall into different accounting periods. Therefore, the primary issue in accounting for construction contracts is the allocation of contract revenue and contract costs to the accounting periods in which construction work is performed. This statement uses the recognition criteria established in the framework for the preparation and presentation of financial statements to determine when revenue and contract costs should be recognised as revenue and expenses in the income statement. It also provides practical guidance on the application of these criteria.

## Scope

- .02 This statement should be applied in accounting for construction contracts in the financial statements of contractors.

## Definitions

- .03 The following terms are used in this statement with the meanings specified:

A construction contract is a contract specifically negotiated for the construction of an asset or a combination of assets that are closely interrelated or interdependent in terms of their design, technology and function or their ultimate purpose or use.

A fixed price contract is a construction contract in which the contractor agrees to a fixed contract price, or a fixed rate per unit of output, which in some cases is subject to cost escalation clauses.

A cost plus contract is a construction contract in which the contractor is reimbursed for allowable or otherwise defined costs, plus a percentage of these costs or a fixed fee.

- .04 A construction contract may be negotiated for the construction of a single asset such as a bridge, building, dam, pipeline, road, ship or tunnel. A construction contract may also deal with the construction of a number of assets that are closely interrelated or interdependent in terms of their design, technology and function or their ultimate purpose

or use; examples of such contracts include those for the construction of refineries and other complex pieces of plant or equipment.

- .05 For the purposes of this statement, construction contracts include:
- (a) contracts for the rendering of services that are directly related to the construction of the asset, for example, those for the services of project managers and architects, and
  - (b) contracts for the destruction or restoration of assets, and the restoration of the environment following the demolition of assets.
- .06 Construction contracts are formulated in a number of ways that, for the purposes of this statement, are classified as fixed price contracts and cost plus contracts. Some construction contracts may contain characteristics of a fixed price contract plus contract, for example in the case of a cost plus contract with an agreed maximum price. In such circumstances, a contractor needs to consider all the conditions in paragraphs .23 and .24 in order to determine when to recognise contract revenue and expenses.

### **Combining and segmenting construction contracts**

- .07 The requirements of this statement are usually applied separately to each contract. However, in certain circumstances, it is necessary to apply the statement to the separately identifiable components of a single contract or to a group of contracts together in order to reflect the substance of a contract or a group of contracts.
- .08 When a contract covers a number of assets, the construction of each asset should be treated as a separate construction contract when:
- (a) separate proposals have been submitted for each asset.
  - (b) each asset has been subject to separate negotiation and the contractor and customer have been able to accept or reject that part of the contract relating to each asset, and
  - (c) the costs and revenues of each asset can be identified.
- .09 A group of contracts, whether with single customer or with several customers, should be treated as a single construction contract when:
- (a) the group of contracts is negotiated as a single package
  - (b) the contracts are so closely interrelated that they are, in effect, part of a single project with an overall profit margin and

(c) the contracts are performed concurrently or in a continuous sequence.

.10 A contract may provide for the construction of an additional asset at the option of the customer or may be amended to include the construction of an additional asset. The construction of the additional asset should be treated as a separate construction contract when: the asset differs significantly in design, technology or function from the asset or assets covered by the original contract or the price of the asset is negotiated without regard to the original contract price.

### **Contract revenue**

.11 Contract revenue should comprise:

- (a) the initial amount of revenue agreed in the contract, and
- (b) variations in contract work,
- (c) claims and
- (d) incentive payments:
  - (i) to the extent that it is probable that they will result in revenue, and
  - (ii) they are capable of being reliably measured.

.12 Contract revenue is measured at the fair value of the consideration received or receivable. The measurement of contract revenue is affected by a variety of uncertainties that depend on the outcome of future events. The estimates often need to be revised as events occur and uncertainties are resolved. Therefore the amount of contract revenue may increase or decrease from one period to the next. For example:

- (a) a contractor and a customer may agree variations or claims that increase or decrease contract revenue in a period subsequent to that in which the contract was initially agreed
- (b) the amount of revenue agreed in a fixed price contract may increase as a result of cost escalation clauses
- (c) the amount of contract revenue may decrease as a result of penalties arising from delays caused by the contractor in the completion of the contract, or when a fixed price contract involves a fixed price per unit of output, contract revenue increases as the number of units is increased

.13 A variation is an instruction by the customer for a change in the scope of the work to be performed under the contract. A variation may lead to an increase or a decrease in contract revenue. Examples of variations are changes in the specifications or design of



the asset and changes in the duration of the contract. A variation is included in contract revenue when:

- (a) It is probable that the customer will approve the variation and the amount of revenue arising from the variation, and
- (b) the amount of revenue can be reliably measured

.14 A claim is an amount that the contractor seeks to collect from the customer or another party as reimbursement for costs not included in the contract price. A claim may arise from, for example, customer caused delays, errors in specifications or design, and disputed variations in contract work. The measurement of the amounts of revenue arising from claims is subject to a high level of uncertainty and often depends on the outcome of negotiations. Therefore, claims are only included in contract revenue when:

- (a) negotiations have reached an advanced stage such that it is probable that the customer will accept the claim, and
- (b) the amount that it is probable will be accepted by the customer can be measured reliably.

.15 Incentive payments are additional amounts paid to the contractor if specified performance standards are met or exceeded. For example, a contract may allow for an incentive payment to the contractor for early completion of the contract. Incentive payments are included in contract revenue when:

- (a) the contract is sufficiently advanced that it is probable that the specified performance standards will be met or exceeded, and
- (b) the amount of the incentive payment can be measured reliably

### **Contract costs**

.16 Contract costs should comprise:

- (a) costs that relate directly to the specific contract
- (b) costs that are attributable to contract activity in general and can be allocated to the contract, and
- (c) such other costs as are specifically chargeable to the customer under the terms of the contract

.17 Costs that relate directly to a specific contract include:

- (a) site labour costs, including site supervision
- (b) costs of materials used in construction
- (c) depreciation of plant and equipment used on the contract

- (d) costs of moving plant, equipment and materials to and from the contract site
- (e) costs of hiring plant and equipment
- (f) costs of design and technical assistance that is directly related to the contract
- (g) the estimated costs of rectification and guarantee work, including expected warranty costs, and
- (h) claims from third parties

These costs may be reduced by any incidental income that is not included in contract revenue, for example income from the sale of surplus materials and the disposal of plant and equipment at the end of the contract.

- .18 Costs that may be attributable to contract activity in general and can be allocated to specific contracts include:
- (a) insurance
  - (d) costs of design and technical assistance that are not directly related to a specific contract, and
  - (c) construction overheads.

Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics. The allocation is based on the normal level of construction activity. Construction overheads include costs, such as the preparation and processing of construction personnel payroll. Costs that may be attributable to contract activity in general and can be allocated to specific contracts also include borrowing costs when the contractor adopts the allowed alternative treatment in the statement on borrowing costs.

- .19 Costs that are specifically chargeable to the customer under the terms of the contract may include some general administration costs and development costs for which reimbursement is specified in the terms of the contract.

- .20 Costs that cannot be attributed to contract activity or cannot be allocated to a contract are excluded from the costs of a construction contract.

Such costs include:

- (a) general administration costs for which reimbursement is not specified in the contract
- (b) selling costs

- (c) research and development costs for which reimbursement is not specified in the contract, and
- (d) depreciation of idle plant and equipment that is not used on a particular contract

.21 Contract costs include the costs attributable to a contract for the period from the date of securing the contract to the final completion of the contract. However, costs that relate directly to a contract and are incurred in securing the contract are also included as part of the contract costs if they can be separately identified and measured reliably and it is probable that the contract will be obtained. When costs incurred in securing a contract are recognized as an expense in the period in which they are incurred, they are not included in contract costs when the contract is obtained in a subsequent period.

### **Recognition of contract revenue and expenses**

.22 When the outcome of a construction contract can be estimated reliably, contract revenue and contract costs associated with the construction contract should be recognised as revenue and expenses respectively by reference to the state of completion of the contract activity at the balance sheet date. The stage of completion should be determined based on the work performed on the contract at the balance sheet date. (An expected loss on the construction contract should be recognised as an expense immediately in accordance with paragraph .36.)

.23 In the case of a fixed price contract, the outcome of a construction contract can be estimated reliably when all of the following conditions are satisfied:

- (a) Total contract revenue can be measured reliably.
- (b) It is probable that the economic benefits associated with the contract will flow to the enterprise.
- (c) Both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be measured reliably.
- (d) The contract costs attributable to the contract can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates.

.24 In the case of a cost plus contract, the outcome of a construction contract can be estimated reliably when both of the following conditions are satisfied:

- (a) It is probable that the economic benefits associated with the contract will flow to the enterprise.
  - (b) The contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and measured reliably
- .25 Revenue and expenses are recognised by reference to the stage of completion of a contract (sometimes referred to as the percentage of completion method). Under this method, contract revenue is matched with the contract costs incurred in reaching the stage of completion, resulting in the reporting of revenue, expenses and profit that can be attributed to the proportion of work completed. The use of this method provides useful information on the extent of contract activity and performance during a period.
- .26 Under this method, contract revenue is recognised as revenue in the income statement in the accounting periods in which the work is performed. Contract costs are usually recognised as an expense in the income statement in the accounting periods in which the work to which they relate is performed. However, any expected excess of total contract costs over total contract revenue for the contract is recognised as an expense immediately in accordance with paragraph .36.
- .27 A contractor may have incurred contract costs that relate to future activity on the contract. Such contract costs are recognised as an asset provided it is probable that they will be recovered. Such costs represent an amount due from the customer and are often classified as contract work in progress.
- .28 The outcome of a construction contract can only be estimated reliably when it is probable that the economic benefits associated with the contract will flow to the enterprise. However, when an uncertainty arises about the collectability of an amount already included in contract revenue, and already recognised in the income statement, the uncollectable amount or the amount in respect of which recovery has ceased to be probable is recognised as an expense rather than as an adjustment of the amount of contract revenue.
- .29 An enterprise is generally able to make reliable estimates after it has agreed to a contract that establishes:
- (a) each party's enforceable rights regarding the asset to be constructed
  - (b) the consideration to be exchanged, and
  - (c) the manner and terms of settlement

It is also usually necessary for the enterprise to have an effective internal financial budgeting and reporting system. The enterprise reviews and, when necessary, revises the estimates of contract revenue and contract costs as the contract progresses. The need for such revisions does not necessarily indicate that the outcome of the contract cannot be estimated reliably.

- .30 The stage of completion of a contract may be determined in a variety of ways. The enterprise uses the method that measures reliably the work performed. Depending on the nature of the contract, the methods may include:
- (a) the proportion that contract costs incurred for work performed to date bear to the estimated total contract costs
  - (b) surveys of work performed, or
  - (c) completion of a physical proportion of the contract work

Progress payment and advances received from customers often do not reflect the work performed.

- .31 When the stage of completion is determined by reference to the contract costs incurred to date, only those contract costs that reflect work performed are included in costs incurred to date. Examples of contract costs that are excluded are:
- (a) contract costs that relate to future activity on the contract, such as costs of materials that have been delivered to a contract site or set aside for use in a contract but not yet installed, used or applied during contract performance, unless the materials have been made specially for the contract, and
  - (b) payments made to subcontractors in advance of work performed under the subcontract.

- .32 When the outcome of a construction contract cannot be estimated reliably:
- (a) revenue should be recognised only to the extent of contract costs incurred that it is probable will be recoverable, and
  - (b) contract costs should be recognised as an expense in the period in which they are incurred

(An expected loss on the construction contract should be recognised as an expense immediately in accordance with paragraph .36.)

- .33 During the early stages of a contract it is often the case that the outcome of the contract cannot be estimated reliably. Nevertheless, it may be probable that the enterprise will recover the contract costs incurred. Therefore, contract revenue is recognised only to the extent of costs incurred that are expected to be recoverable. As the outcome of the contract cannot be estimated reliably, no profit is recognised. However, even though the outcome of the contract cannot be estimated reliably, it may be probable that total contract costs will exceed total contract revenues. (In such cases, any expected excess of total contract costs over total contract revenue for the contract is recognised as an expense immediately in accordance with paragraph .36.)
- .34 Contract costs that are not probable of being recovered are recognised as an expense immediately. Examples of circumstances in which the recoverability of contract costs incurred may not be probable and in which contract costs may need to be recognised as an expense immediately include contracts:
- (a) which are not fully enforceable, that is, their validity is seriously in question.
  - (b) the completion of which is subject to the outcome of pending litigation or legislation.
  - (c) relating to properties that are likely to be condemned or expropriated
  - (d) where the customer is unable to meet its obligations, or where the contractor is unable to complete the contract or otherwise meet its obligations under the contract.
- .35 When the uncertainties that prevented the outcome of the contract being estimated reliably no longer exist, revenue and expenses associated with the construction contract should be recognised in accordance with paragraph .22 rather than in accordance with paragraph .32

### **Recognition of expected losses**

- .36 When it is probable that total contract costs will exceed total contract revenue, the expected loss should be recognised as an expense immediately
- .37 The amount of such a loss is determined irrespective of:
- (a) whether or not work has commenced on the contract
  - (b) the stage of completion of contract activity, or
  - (c) the amount of profits expected to arise on other contracts that are not treated as a single construction contract in accordance with paragraph .09.

## Changes in estimates

- .38 The method set out in this statement is applied on a cumulative basis in each accounting period to the current estimates of contract revenue and contract costs. Therefore, the effect of a change in the estimate of contract revenue or contract costs, or the effect of a change in the estimate of the outcome of a contract, is accounted for as a change in accounting estimate (see the statement on net profit or loss for the period, fundamental errors and changes in accounting policies). The changed estimates are used in the determination of the amount of revenue and expenses recognised in the income statement in the period which the change is made and in subsequent periods.

## Disclosure

- .39 An enterprise should disclose:
- (a) the amount of contract revenue recognised as revenue in the period
  - (b) the methods used to determine the contract revenue recognised in the period, and
  - (c) the methods used to determine the stage of completion of contracts in progress
- .40 An enterprise should disclose each of the following for contracts in progress at the balance sheet date:
- (a) The aggregate amount of costs incurred and recognised profits (less recognised losses) to date
  - (b) The amount of advances received
  - (c) The amount of retentions
- .41 Retentions are portions of progress billings which are not paid until the satisfaction of conditions specified in the contract for the payment of such amounts or until defects have been rectified. Progress billings are amounts billed for work performed on a contract whether or not they have been paid by the customer. Advances are amounts received by the contractor before the related work is performed.
- .42 An enterprise should present:
- (a) the gross amount due from customers for contract work as an asset, and
  - (b) the gross amount due to customers for contract work as a liability
- .43 The gross amount due from customers for contract work is the net amount of:
- (a) costs incurred plus recognised profits, less

- (b) the sum of recognised losses and progress billings for all contracts in progress for which costs plus recognised profits (less recognised losses) exceeds progress billings
- .44 The gross amount due to customer for contract work is the net amount of:
- (a) costs incurred plus recognised profits, less
  - (b) the sum of recognised losses and progress billings for all the contracts in progress billings exceed costs incurred plus recognised profits (less recognised losses).
- .45 An enterprise discloses any contingent gains and losses in accordance with the statement on contingencies and events occurring after the balance sheet date. Contingent gains and contingent losses may arise from such items as warranty costs, claims, penalties or possible losses.

#### **Effective date**

- .46 The requirements set out in this statement should be applied as soon as possible and regarded as standard for financial statements covering all periods commencing on or after 1 July 1995.

#### **Comparison to international standard**

- .47 This statement has been based on International Accounting Standard 11 (Revised). There are no matters of principle in this statement which differ from those contained in the international standard.

#### **Statement superseded**

- .48 This statement supersedes Statement of Generally Accepted Accounting Practice AC 109 Accounting for Construction Contracts, issued in July 1993



## **APPENDIX B**

# **INTERNATIONAL ACCOUNTING STANDARD**

## **IAS 11: CONSTRUCTION CONTRACTS**

**International Accounting Standard 11**

# Construction Contracts

*This Standard is effective for financial statements covering periods beginning on or after 1 January 1995.*

IAS 11

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International Accounting Standard 11 *Construction Contracts* (IAS 11) is set out in paragraphs 1–46. All the paragraphs have equal authority but retain the IASC format of the Standard when it was adopted by the IASB. IAS 11 should be read in the context of its objective, the *Preface to International Financial Reporting Standards* and the *Framework for the Preparation and Presentation of Financial Statements*. IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors* provides a basis for selecting and applying accounting policies in the absence of explicit guidance.

IAS 11

## International Accounting Standard 11 Construction Contracts

### Objective

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The objective of this Standard is to prescribe the accounting treatment of revenue and costs associated with construction contracts. Because of the nature of the activity undertaken in construction contracts, the date at which the contract activity is entered into and the date when the activity is completed usually fall into different accounting periods. Therefore, the primary issue in accounting for construction contracts is the allocation of contract revenue and contract costs to the accounting periods in which construction work is performed. This Standard uses the recognition criteria established in the *Framework for the Preparation and Presentation of Financial Statements* to determine when contract revenue and contract costs should be recognised as revenue and expenses in the income statement. It also provides practical guidance on the application of these criteria.

### Scope

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- 1 This Standard shall be applied in accounting for construction contracts in the financial statements of contractors.**
- 2 This Standard supersedes IAS 11 *Accounting for Construction Contracts* approved in 1978.

### Definitions

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- 3 The following terms are used in this Standard with the meanings specified:**

**A construction contract is a contract specifically negotiated for the construction of an asset or a combination of assets that are closely interrelated or interdependent in terms of their design, technology and function or their ultimate purpose or use.**

**A fixed price contract is a construction contract in which the contractor agrees to a fixed contract price, or a fixed rate per unit of output, which in some cases is subject to cost escalation clauses.**

**A cost plus contract is a construction contract in which the contractor is reimbursed for allowable or otherwise defined costs, plus a percentage of these costs or a fixed fee.**
- 4 A construction contract may be negotiated for the construction of a single asset such as a bridge, building, dam, pipeline, road, ship or tunnel. A construction contract may also deal with the construction of a number of assets which are closely interrelated or interdependent in terms of their design, technology and function or their ultimate purpose or use; examples of such contracts include those for the construction of refineries and other complex pieces of plant or equipment.

- 5 For the purposes of this Standard, construction contracts include:
- (a) contracts for the rendering of services which are directly related to the construction of the asset, for example, those for the services of project managers and architects; and
  - (b) contracts for the destruction or restoration of assets, and the restoration of the environment following the demolition of assets.
- 6 Construction contracts are formulated in a number of ways which, for the purposes of this Standard, are classified as fixed price contracts and cost plus contracts. Some construction contracts may contain characteristics of both a fixed price contract and a cost plus contract, for example in the case of a cost plus contract with an agreed maximum price. In such circumstances, a contractor needs to consider all the conditions in paragraphs 23 and 24 in order to determine when to recognise contract revenue and expenses.

### Combining and segmenting construction contracts

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- 7 The requirements of this Standard are usually applied separately to each construction contract. However, in certain circumstances, it is necessary to apply the Standard to the separately identifiable components of a single contract or to a group of contracts together in order to reflect the substance of a contract or a group of contracts.
- 8 When a contract covers a number of assets, the construction of each asset shall be treated as a separate construction contract when:**
- (a) separate proposals have been submitted for each asset;
  - (b) each asset has been subject to separate negotiation and the contractor and customer have been able to accept or reject that part of the contract relating to each asset; and
  - (c) the costs and revenues of each asset can be identified.
- 9 A group of contracts, whether with a single customer or with several customers, shall be treated as a single construction contract when:
- (a) the group of contracts is negotiated as a single package;
  - (b) the contracts are so closely interrelated that they are, in effect, part of a single project with an overall profit margin; and
  - (c) the contracts are performed concurrently or in a continuous sequence.
- 10 A contract may provide for the construction of an additional asset at the option of the customer or may be amended to include the construction of an additional asset. The construction of the additional asset shall be treated as a separate construction contract when:
- (a) the asset differs significantly in design, technology or function from the asset or assets covered by the original contract; or
  - (b) the price of the asset is negotiated without regard to the original contract price.

IAS 11

## Contract revenue

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- 11 Contract revenue shall comprise:**
- (a) the initial amount of revenue agreed in the contract; and**
  - (b) variations in contract work, claims and incentive payments:**
    - (i) to the extent that it is probable that they will result in revenue; and**
    - (ii) they are capable of being reliably measured.**
- 12** Contract revenue is measured at the fair value of the consideration received or receivable. The measurement of contract revenue is affected by a variety of uncertainties that depend on the outcome of future events. The estimates often need to be revised as events occur and uncertainties are resolved. Therefore, the amount of contract revenue may increase or decrease from one period to the next. For example:
- (a) a contractor and a customer may agree variations or claims that increase or decrease contract revenue in a period subsequent to that in which the contract was initially agreed;
  - (b) the amount of revenue agreed in a fixed price contract may increase as a result of cost escalation clauses;
  - (c) the amount of contract revenue may decrease as a result of penalties arising from delays caused by the contractor in the completion of the contract; or
  - (d) when a fixed price contract involves a fixed price per unit of output, contract revenue increases as the number of units is increased.
- 13** A variation is an instruction by the customer for a change in the scope of the work to be performed under the contract. A variation may lead to an increase or a decrease in contract revenue. Examples of variations are changes in the specifications or design of the asset and changes in the duration of the contract. A variation is included in contract revenue when:
- (a) it is probable that the customer will approve the variation and the amount of revenue arising from the variation; and
  - (b) the amount of revenue can be reliably measured.
- 14** A claim is an amount that the contractor seeks to collect from the customer or another party as reimbursement for costs not included in the contract price. A claim may arise from, for example, customer caused delays, errors in specifications or design, and disputed variations in contract work. The measurement of the amounts of revenue arising from claims is subject to a high level of uncertainty and often depends on the outcome of negotiations. Therefore, claims are included in contract revenue only when:
- (a) negotiations have reached an advanced stage such that it is probable that the customer will accept the claim; and
  - (b) the amount that it is probable will be accepted by the customer can be measured reliably.

- 15 Incentive payments are additional amounts paid to the contractor if specified performance standards are met or exceeded. For example, a contract may allow for an incentive payment to the contractor for early completion of the contract. Incentive payments are included in contract revenue when:
- (a) the contract is sufficiently advanced that it is probable that the specified performance standards will be met or exceeded; and
  - (b) the amount of the incentive payment can be measured reliably.

### Contract costs

---

- 16 **Contract costs shall comprise:**
- (a) costs that relate directly to the specific contract;**
  - (b) costs that are attributable to contract activity in general and can be allocated to the contract; and**
  - (c) such other costs as are specifically chargeable to the customer under the terms of the contract.**
- 17 Costs that relate directly to a specific contract include:
- (a) site labour costs, including site supervision;
  - (b) costs of materials used in construction;
  - (c) depreciation of plant and equipment used on the contract;
  - (d) costs of moving plant, equipment and materials to and from the contract site;
  - (e) costs of hiring plant and equipment;
  - (f) costs of design and technical assistance that is directly related to the contract;
  - (g) the estimated costs of rectification and guarantee work, including expected warranty costs; and
  - (h) claims from third parties.

These costs may be reduced by any incidental income that is not included in contract revenue, for example income from the sale of surplus materials and the disposal of plant and equipment at the end of the contract.

- 18 Costs that may be attributable to contract activity in general and can be allocated to specific contracts include:
- (a) insurance;
  - (b) costs of design and technical assistance that are not directly related to a specific contract; and
  - (c) construction overheads.

Such costs are allocated using methods that are systematic and rational and are applied consistently to all costs having similar characteristics. The allocation is based on the normal level of construction activity. Construction overheads include costs such as the preparation and processing of construction personnel



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payroll. Costs that may be attributable to contract activity in general and can be allocated to specific contracts also include borrowing costs when the contractor adopts the allowed alternative treatment in IAS 23 *Borrowing Costs*.

- 19 Costs that are specifically chargeable to the customer under the terms of the contract may include some general administration costs and development costs for which reimbursement is specified in the terms of the contract.
- 20 Costs that cannot be attributed to contract activity or cannot be allocated to a contract are excluded from the costs of a construction contract. Such costs include:
- (a) general administration costs for which reimbursement is not specified in the contract;
  - (b) selling costs;
  - (c) research and development costs for which reimbursement is not specified in the contract; and
  - (d) depreciation of idle plant and equipment that is not used on a particular contract.
- 21 Contract costs include the costs attributable to a contract for the period from the date of securing the contract to the final completion of the contract. However, costs that relate directly to a contract and are incurred in securing the contract are also included as part of the contract costs if they can be separately identified and measured reliably and it is probable that the contract will be obtained. When costs incurred in securing a contract are recognised as an expense in the period in which they are incurred, they are not included in contract costs when the contract is obtained in a subsequent period.

### **Recognition of contract revenue and expenses**

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- 22 **When the outcome of a construction contract can be estimated reliably, contract revenue and contract costs associated with the construction contract shall be recognised as revenue and expenses respectively by reference to the stage of completion of the contract activity at the balance sheet date. An expected loss on the construction contract shall be recognised as an expense immediately in accordance with paragraph 36.**
- 23 **In the case of a fixed price contract, the outcome of a construction contract can be estimated reliably when all the following conditions are satisfied:**
- (a) **total contract revenue can be measured reliably;**
  - (b) **it is probable that the economic benefits associated with the contract will flow to the entity;**
  - (c) **both the contract costs to complete the contract and the stage of contract completion at the balance sheet date can be measured reliably; and**
  - (d) **the contract costs attributable to the contract can be clearly identified and measured reliably so that actual contract costs incurred can be compared with prior estimates.**

24 **In the case of a cost plus contract, the outcome of a construction contract can be estimated reliably when all the following conditions are satisfied:**

- (a) **it is probable that the economic benefits associated with the contract will flow to the entity; and**
- (b) **the contract costs attributable to the contract, whether or not specifically reimbursable, can be clearly identified and measured reliably.**

25 The recognition of revenue and expenses by reference to the stage of completion of a contract is often referred to as the percentage of completion method. Under this method, contract revenue is matched with the contract costs incurred in reaching the stage of completion, resulting in the reporting of revenue, expenses and profit which can be attributed to the proportion of work completed. This method provides useful information on the extent of contract activity and performance during a period.

26 Under the percentage of completion method, contract revenue is recognised as revenue in the income statement in the accounting periods in which the work is performed. Contract costs are usually recognised as an expense in the income statement in the accounting periods in which the work to which they relate is performed. However, any expected excess of total contract costs over total contract revenue for the contract is recognised as an expense immediately in accordance with paragraph 36.

27 A contractor may have incurred contract costs that relate to future activity on the contract. Such contract costs are recognised as an asset provided it is probable that they will be recovered. Such costs represent an amount due from the customer and are often classified as contract work in progress.

28 The outcome of a construction contract can only be estimated reliably when it is probable that the economic benefits associated with the contract will flow to the entity. However, when an uncertainty arises about the collectibility of an amount already included in contract revenue, and already recognised in the income statement, the uncollectable amount or the amount in respect of which recovery has ceased to be probable is recognised as an expense rather than as an adjustment of the amount of contract revenue.

29 An entity is generally able to make reliable estimates after it has agreed to a contract which establishes:

- (a) each party's enforceable rights regarding the asset to be constructed;
- (b) the consideration to be exchanged; and
- (c) the manner and terms of settlement.

It is also usually necessary for the entity to have an effective internal financial budgeting and reporting system. The entity reviews and, when necessary, revises the estimates of contract revenue and contract costs as the contract progresses. The need for such revisions does not necessarily indicate that the outcome of the contract cannot be estimated reliably.

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30 The stage of completion of a contract may be determined in a variety of ways. The entity uses the method that measures reliably the work performed. Depending on the nature of the contract, the methods may include:

- (a) the proportion that contract costs incurred for work performed to date bear to the estimated total contract costs;
- (b) surveys of work performed; or
- (c) completion of a physical proportion of the contract work.

Progress payments and advances received from customers often do not reflect the work performed.

31 When the stage of completion is determined by reference to the contract costs incurred to date, only those contract costs that reflect work performed are included in costs incurred to date. Examples of contract costs which are excluded are:

- (a) contract costs that relate to future activity on the contract, such as costs of materials that have been delivered to a contract site or set aside for use in a contract but not yet installed, used or applied during contract performance, unless the materials have been made specially for the contract; and
- (b) payments made to subcontractors in advance of work performed under the subcontract.

32 **When the outcome of a construction contract cannot be estimated reliably:**

- (a) revenue shall be recognised only to the extent of contract costs incurred that it is probable will be recoverable; and**
- (b) contract costs shall be recognised as an expense in the period in which they are incurred.**

**An expected loss on the construction contract shall be recognised as an expense immediately in accordance with paragraph 36.**

33 During the early stages of a contract it is often the case that the outcome of the contract cannot be estimated reliably. Nevertheless, it may be probable that the entity will recover the contract costs incurred. Therefore, contract revenue is recognised only to the extent of costs incurred that are expected to be recoverable. As the outcome of the contract cannot be estimated reliably, no profit is recognised. However, even though the outcome of the contract cannot be estimated reliably, it may be probable that total contract costs will exceed total contract revenues. In such cases, any expected excess of total contract costs over total contract revenue for the contract is recognised as an expense immediately in accordance with paragraph 36.

34 Contract costs that are not probable of being recovered are recognised as an expense immediately. Examples of circumstances in which the recoverability of contract costs incurred may not be probable and in which contract costs may need to be recognised as an expense immediately include contracts:

- (a) that are not fully enforceable, ie their validity is seriously in question;
- (b) the completion of which is subject to the outcome of pending litigation or legislation;

- (c) relating to properties that are likely to be condemned or expropriated;
- (d) where the customer is unable to meet its obligations; or
- (e) where the contractor is unable to complete the contract or otherwise meet its obligations under the contract.

**35 When the uncertainties that prevented the outcome of the contract being estimated reliably no longer exist, revenue and expenses associated with the construction contract shall be recognised in accordance with paragraph 22 rather than in accordance with paragraph 32.**

### Recognition of expected losses

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**36 When it is probable that total contract costs will exceed total contract revenue, the expected loss shall be recognised as an expense immediately.**

37 The amount of such a loss is determined irrespective of:

- (a) whether work has commenced on the contract;
- (b) the stage of completion of contract activity; or
- (c) the amount of profits expected to arise on other contracts which are not treated as a single construction contract in accordance with paragraph 9.

### Changes in estimates

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38 The percentage of completion method is applied on a cumulative basis in each accounting period to the current estimates of contract revenue and contract costs. Therefore, the effect of a change in the estimate of contract revenue or contract costs, or the effect of a change in the estimate of the outcome of a contract, is accounted for as a change in accounting estimate (see IAS 8 *Accounting Policies, Changes in Accounting Estimates and Errors*). The changed estimates are used in the determination of the amount of revenue and expenses recognised in the income statement in the period in which the change is made and in subsequent periods.

### Disclosure

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**39 An entity shall disclose:**

- (a) the amount of contract revenue recognised as revenue in the period;
- (b) the methods used to determine the contract revenue recognised in the period; and
- (c) the methods used to determine the stage of completion of contracts in progress.

**40 An entity shall disclose each of the following for contracts in progress at the balance sheet date:**

- (a) the aggregate amount of costs incurred and recognised profits (less recognised losses) to date;
- (b) the amount of advances received; and
- (c) the amount of retentions.

## IAS 11

- 41 Retentions are amounts of progress billings that are not paid until the satisfaction of conditions specified in the contract for the payment of such amounts or until defects have been rectified. Progress billings are amounts billed for work performed on a contract whether or not they have been paid by the customer. Advances are amounts received by the contractor before the related work is performed.
- 42 **An entity shall present:**
- (a) **the gross amount due from customers for contract work as an asset;**  
**and**
  - (b) **the gross amount due to customers for contract work as a liability.**
- 43 The gross amount due from customers for contract work is the net amount of:
- (a) costs incurred plus recognised profits; less
  - (b) the sum of recognised losses and progress billings
- for all contracts in progress for which costs incurred plus recognised profits (less recognised losses) exceeds progress billings.
- 44 The gross amount due to customers for contract work is the net amount of:
- (a) costs incurred plus recognised profits; less
  - (b) the sum of recognised losses and progress billings
- for all contracts in progress for which progress billings exceed costs incurred plus recognised profits (less recognised losses).
- 45 An entity discloses any contingent liabilities and contingent assets in accordance with IAS 37 *Provisions, Contingent Liabilities and Contingent Assets*. Contingent liabilities and contingent assets may arise from such items as warranty costs, claims, penalties or possible losses.

### Effective date

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- 46 **This Standard becomes operative for financial statements covering periods beginning on or after 1 January 1995.**

## Appendix Illustrative examples

*This appendix accompanies, but is not part of, IAS 11.*

### Disclosure of accounting policies

The following are examples of accounting policy disclosures:

Revenue from fixed price construction contracts is recognised on the percentage of completion method, measured by reference to the percentage of labour hours incurred to date to estimated total labour hours for each contract.

Revenue from cost plus contracts is recognised by reference to the recoverable costs incurred during the period plus the fee earned, measured by the proportion that costs incurred to date bear to the estimated total costs of the contract.

### The determination of contract revenue and expenses

The following example illustrates one method of determining the stage of completion of a contract and the timing of the recognition of contract revenue and expenses (see paragraphs 22–35 of the Standard).

A construction contractor has a fixed price contract for 9,000 to build a bridge. The initial amount of revenue agreed in the contract is 9,000. The contractor's initial estimate of contract costs is 8,000. It will take 3 years to build the bridge.

By the end of year 1, the contractor's estimate of contract costs has increased to 8,050.

In year 2, the customer approves a variation resulting in an increase in contract revenue of 200 and estimated additional contract costs of 150. At the end of year 2, costs incurred include 100 for standard materials stored at the site to be used in year 3 to complete the project.

The contractor determines the stage of completion of the contract by calculating the proportion that contract costs incurred for work performed to date bear to the latest estimated total contract costs. A summary of the financial data during the construction period is as follows:

	Year 1	Year 2	Year 3
Initial amount of revenue agreed in contract	9,000	9,000	9,000
Variation	—	200	200
Total contract revenue	9,000	9,200	9,200
Contract costs incurred to date	2,093	6,168	8,200
Contract costs to complete	5,957	2,032	—
Total estimated contract costs	8,050	8,200	8,200
Estimated profit	950	1,000	1,000
Stage of completion	26%	74%	100%

## IAS 11

The stage of completion for year 2 (74%) is determined by excluding from contract costs incurred for work performed to date the 100 of standard materials stored at the site for use in year 3.

The amounts of revenue, expenses and profit recognised in the income statement in the three years are as follows:

	To date	Recognised in prior years	Recognised in current year
<u>Year 1</u>			
Revenue (9,000 × .26)	2,340	–	2,340
Expenses (8,050 × .26)	<u>2,093</u>	<u>–</u>	<u>2,093</u>
Profit	<u>247</u>	<u>–</u>	<u>247</u>
<u>Year 2</u>			
Revenue (9,200 × .74)	6,808	2,340	4,468
Expenses (8,200 × .74)	<u>6,068</u>	<u>2,093</u>	<u>3,975</u>
Profit	<u>740</u>	<u>247</u>	<u>493</u>
<u>Year 3</u>			
Revenue (9,200 × 1.00)	9,200	6,808	2,392
Expenses	<u>8,200</u>	<u>6,068</u>	<u>2,132</u>
Profit	<u>1,000</u>	<u>740</u>	<u>260</u>

### Contract disclosures

A contractor has reached the end of its first year of operations. All its contract costs incurred have been paid for in cash and all its progress billings and advances have been received in cash. Contract costs incurred for contracts B, C and E include the cost of materials that have been purchased for the contract but which have not been used in contract performance to date. For contracts B, C and E, the customers have made advances to the contractor for work not yet performed.

The status of its five contracts in progress at the end of year 1 is as follows:

	A	B	C	D	E	Total
Contract revenue recognised in accordance with paragraph 22	145	520	380	200	55	1,300
Contract expenses recognised in accordance with paragraph 22	110	450	350	250	55	1,215
Expected losses recognised in accordance with paragraph 36	—	—	—	40	30	70
Recognised profits less recognised losses	<u>35</u>	<u>70</u>	<u>30</u>	<u>(90)</u>	<u>(30)</u>	<u>15</u>
Contract costs incurred in the period	110	510	450	250	100	1,420
Contract costs incurred recognised as contract expenses in the period in accordance with paragraph 22	<u>110</u>	<u>450</u>	<u>350</u>	<u>250</u>	<u>55</u>	<u>1,215</u>
Contract costs that relate to future activity recognised as an asset in accordance with paragraph 27	—	<u>60</u>	<u>100</u>	—	<u>45</u>	<u>205</u>
Contract revenue (see above)	145	520	380	200	55	1,300
Progress billings (paragraph 41)	100	520	380	180	55	1,235
Unbilled contract revenue	<u>45</u>	—	—	<u>20</u>	—	<u>65</u>
Advances (paragraph 41)	—	<u>80</u>	<u>20</u>	—	<u>25</u>	<u>125</u>

The amounts to be disclosed in accordance with the Standard are as follows:

Contract revenue recognised as revenue in the period (paragraph 39(a))	1,300
Contract costs incurred and recognised profits (less recognised losses) to date (paragraph 40(a))	1,435
Advances received (paragraph 40(b))	125
Gross amount due from customers for contract work – presented as an asset in accordance with paragraph 42(a)	220
Gross amount due to customers for contract work – presented as a liability in accordance with paragraph 42(b)	(20)



IAS 11

The amounts to be disclosed in accordance with paragraphs 40(a), 42(a) and 42(b) are calculated as follows:

	Contract					Total
	A	B	C	D	E	
Contract costs incurred	110	510	450	250	100	1,420
Recognised profits less recognised losses	<u>35</u>	<u>70</u>	<u>30</u>	<u>(90)</u>	<u>(30)</u>	<u>15</u>
	145	580	480	160	70	1,435
Progress billings	<u>100</u>	<u>520</u>	<u>380</u>	<u>180</u>	<u>55</u>	<u>1,235</u>
Due from customers	45	60	100	–	15	220
Due to customers	–	–	–	(20)	–	(20)

The amount disclosed in accordance with paragraph 40(a) is the same as the amount for the current period because the disclosures relate to the first year of operation.

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## APPENDIX C

## QUESTIONNAIRE

# A QUESTIONNAIRE ON AC109

**For Office Use**

Respondent

V1   1

**Instructions:** Please answer all questions as carefully as you can by drawing a circle (O) around a number in a shaded block or by writing your answer in the shaded space provided.

1. Would you like to receive the results of this survey?

Yes : e-Mail address:	<b>1</b>
No	<b>2</b>

V2  3

2. Are you an **auditor** of **construction contracts**?

Yes	<b>1</b>
No	<b>2</b>

V3  4

3. Do you have any **other knowledge, experience or qualification** in the construction industry other than in your capacity as an auditor?

Yes	<b>1</b>
No	<b>2</b>

V4  5

Please elaborate

V5   6

**Question 4** continues on the next page .....

4. In your opinion, which of the following are **professional careers**? Please indicate **with whom** of the persons in 4.1 to 4.14 you have **regular contact** in the auditing of construction contracts or **no contact** at all. (Please indicate as well if career or profession is not known to you.)

		Career or profession unknown	Professional	Regular contact	No contact
4.1	Architect	1	2	3	4
4.2	Landscape Architect	1	2	3	4
4.3	Structural & Civil Engineer	1	2	3	4
4.4	Electrical Engineer	1	2	3	4
4.5	Mechanical Engineer	1	2	3	4
4.6	Town and Regional Planner	1	2	3	4
4.7	Quantity Surveyor	1	2	3	4
4.8	Construction Manager	1	2	3	4
4.9	Project Manager	1	2	3	4
4.10	Cost Engineer	1	2	3	4
4.11	Interior Designer	1	2	3	4
4.12	Site Manager	1	2	3	4
4.13	Time Manager	1	2	3	4
4.14	Construction Project Manager	1	2	3	4

V6				8
V9				11
V12				14
V15				17
V18				20
V21				23
V24				26
V27				29
V30				32
V33				35
V36				38
V39				41
V42				44
V45				47

**Question 5** continues on the next page ....

5. What, in your opinion, is/are the **most important concept/s** in **AC109**? (See the list from 5.1 to 5.12 below). Do any of the paragraphs, as contained in **AC109**, need **clearer guidelines** and/or **definitions**?

	<u>The statement of the:</u>	AC109 paragraphs	Most important concept	Needs clearer definition	Needs clearer guidelines				
5.1	<b>OBJECTIVE</b>	.01	<b>1</b>	<b>2</b>	<b>3</b>	V48	<input type="text"/>	<input type="text"/>	50
5.2	<b>SCOPE</b>	.02	<b>1</b>	<b>2</b>	<b>3</b>	V51	<input type="text"/>	<input type="text"/>	53
5.3	<b>DEFINITIONS</b>	.03 - .06	<b>1</b>	<b>2</b>	<b>3</b>	V54	<input type="text"/>	<input type="text"/>	56
	<u>or the clarification on/of:</u>								
5.4	when to <b>COMBINE</b> and when to <b>SEGMENT</b>	.07 - .10	<b>1</b>	<b>2</b>	<b>3</b>	V57	<input type="text"/>	<input type="text"/>	59
5.5	what is to be considered as <b>CONTRACT REVENUE</b>	.11 - .15	<b>1</b>	<b>2</b>	<b>3</b>	V60	<input type="text"/>	<input type="text"/>	62
5.6	what is to be considered as <b>CONTRACT COSTS</b>	.16 - .21	<b>1</b>	<b>2</b>	<b>3</b>	V63	<input type="text"/>	<input type="text"/>	65
5.7	when and how to <b>RECOGNISE REVENUE</b> and <b>EXPENSES</b>	.22 - .32	<b>1</b>	<b>2</b>	<b>3</b>	V66	<input type="text"/>	<input type="text"/>	68
5.8	whether the outcome can be <b>ESTIMATED RELIABLY</b> or not	.22 & .32	<b>1</b>	<b>2</b>	<b>3</b>	V69	<input type="text"/>	<input type="text"/>	71
5.9	when and how to <b>MEASURE RELIABLY</b> or not	.23 & .30	<b>1</b>	<b>2</b>	<b>3</b>	V72	<input type="text"/>	<input type="text"/>	74
5.10	when and how to recognise <b>EXPECTED LOSSES</b>	.36 - .37	<b>1</b>	<b>2</b>	<b>3</b>	V75	<input type="text"/>	<input type="text"/>	77
5.11	when and how to recognise <b>CHANGES IN ESTIMATES</b>	.38	<b>1</b>	<b>2</b>	<b>3</b>	V78	<input type="text"/>	<input type="text"/>	80
5.12	how to comply with the <b>DISCLOSURE REQUIREMENTS</b>	.39 - .45	<b>1</b>	<b>2</b>	<b>3</b>	V81	<input type="text"/>	<input type="text"/>	83

**AC109** requires recognition of **revenue** and **costs** with reference to the **stage of completion** of a construction contract. It further requires the stage of completion of a construction contract to be **based** on the **work performed** on the balance sheet date.

The following options to determine the stage of completion are given:

- 6.1 **Costs to date** compared with **total expected costs**.
- 6.2 **Work certified** compared with **total expected** income.
- 6.3 **Completion of a physical part** of the contract.
- 6.4 **Surveys** of work done to date.
- 6.5 **Hours worked to date** compared with **total expected hours** (IAS11), or
- 6.6 **any other** basis that will **reliably indicate** the stage of completion.

6. In your opinion, can the **stage of completion** on a construction contract **be determined accurately**?

Yes	<b>1</b>	V84	<input type="text"/>	86
Unsure	<b>2</b>			
No	<b>3</b>			

7. To narrow it down:

Can it be done by using the **options** as contained in **6.1 to 6.5** above?

Yes	<b>1</b>
Unsure	<b>2</b>
No	<b>3</b>

V85  87

8. Please elaborate


V86   88

9. or can it be done using the **alternatives** in option **6.6** only?

Yes	<b>1</b>
Unsure	<b>2</b>
No	<b>3</b>

V87  90

10. Please elaborate


V88   91

11. Are the above options **acceptable alternatives** for any given set of circumstances? i.e. does the contractor have a free **choice** between them?

Yes	<b>1</b>
Unsure	<b>2</b>
No	<b>3</b>

V89  93

12. Which of the options indicated below as **6.1** to **6.6** are used **more frequently** to determine the **stage of completion**? Please **order** the options in terms of frequency of use from **1** to **6** without repeating an order. Use **1** for **most frequently used** and **6** for **least frequently used**.

	Option	Order
6.1	Costs to date compared with total expected costs.	
6.2	Work certified compared with total expected income.	
6.3	Completion of a physical part of the contract.	
6.4	Surveys of work done to date.	
6.5	Hours worked to date compared with total expected hours (IAS11), or	
6.6	any other basis that will reliably indicate the stage of completion.	

V90  94  
V91  95  
V92  96  
V93  97  
V94  98  
V95  99

13. If, in **Question 12**, you chose **6.6** as the **most frequently used option**, which other options or techniques are **used with success**?


V96   100  
V97   102

14. Can the **stage of completion** of contract A, in **year one**, be determined by using one of the above options in **6.1** to **6.6** and in **year two** by changing and using one of the other?

Yes	<b>1</b>
Unsure	<b>2</b>
No	<b>3</b>

V98  104

15. If your answer to **Question 14** is "**No**" please elaborate.


V99   105

16. Did the situation ever arise where one of your clients had to **change** from one option to another during the progress of the contract?

Yes	<b>1</b>
No	<b>2</b>

V100  107

17. Did you **agree** with them?

Yes	<b>1</b>
Unsure	<b>2</b>

V101  108



**18.** Does the client **consult** with you when **choosing** the **best** possible option to determine the stage of **completion of construction** contracts?

Yes	<b>1</b>
Unsure	<b>2</b>

V102  109

**19.** At what **stage** do you feel that the contract has **progressed** to the extent that you feel **comfortable** that the client can start recognising profits and/or losses?

From <b>percentage</b> to <b>percentage</b>		

V103    110

V104    113

**20.** When the outcome of a construction contract **cannot** be estimated **reliably**, it is suggested that **no profit** be taken till such time that reliable estimates are again possible. Do you regard this as being **equal** to the **completed-contract-method** of profit recognition?

Yes	<b>1</b>
Unsure	<b>2</b>
No	<b>3</b>

V105  116

**21.** Are the **requirements** for the following **clearly defined**?

		<b>Yes</b>	<b>Unsure</b>	<b>No</b>
21.1	measuring reliably	<b>1</b>	<b>2</b>	<b>3</b>
21.2	estimating reliably	<b>1</b>	<b>2</b>	<b>3</b>
21.3	attributable costs to construction contracts	<b>1</b>	<b>2</b>	<b>3</b>
21.4	overheads to construction contracts	<b>1</b>	<b>2</b>	<b>3</b>
21.5	non-allowable/-attributable costs to construction contracts	<b>1</b>	<b>2</b>	<b>3</b>
21.6	cost allocation on construction contracts in general	<b>1</b>	<b>2</b>	<b>3</b>
21.7	identifying whether the contract is in an early stage of completion and that no profit can be taken on the construction contract to date	<b>1</b>	<b>2</b>	<b>3</b>

V106  117

V107  118

V108  119

V109  120

V110  121

V111  122

V112  123

Paragraphs .23 & .24 of AC109 state that the **outcome** of a construction contract can be "**estimated reliably**" when certain conditions are fulfilled. An integral part of the conditions is being able to:

**Measure reliably** the contract cost to complete the contract and the stage of contract completion.

**Measure reliably and identify clearly** the contract costs attributable to the contract so that contract cost incurred can be compared with prior estimates.

Please **define** the following terms according to **your understanding** of them in the **application** of your audit techniques and procedures:

**22. Measure reliably**


V113   124

**23. Estimate reliably**


V114   126

**24. Did you do any course and/or receive formal training in any of the following fields?**

		Yes	No	
24.1	Architectural designs and drawings	1	2	V115 <input style="width: 40px; height: 20px;" type="text"/> 128
24.2	Engineering designs and drawings	1	2	V116 <input style="width: 40px; height: 20px;" type="text"/> 129
24.3	Geological reports	1	2	V117 <input style="width: 40px; height: 20px;" type="text"/> 130
24.4	Quantifying builder's quantities	1	2	V118 <input style="width: 40px; height: 20px;" type="text"/> 131
24.5	The compilation of the bill of quantities	1	2	V119 <input style="width: 40px; height: 20px;" type="text"/> 132
24.6	The different measurement systems	1	2	V120 <input style="width: 40px; height: 20px;" type="text"/> 133
24.7	The ordering methods and procedures pertaining to building materials	1	2	V121 <input style="width: 40px; height: 20px;" type="text"/> 134
24.8	The quantifying of specialist procedures such as electrical, mechanical, etc.	1	2	V122 <input style="width: 40px; height: 20px;" type="text"/> 135
24.9	The specification of preliminaries on a construction contract	1	2	V123 <input style="width: 40px; height: 20px;" type="text"/> 136

**25.** Do you **employ** a specialist to visit the construction sites of the client and **conduct interviews** with the construction project managers of these sites?

Yes	<b>1</b>
No	<b>2</b>

V124  137

**26.** Do you **employ** build environment professionals to assist you in **identifying** and **understanding** the significant assumptions and uncertainties on the contract?

Yes	<b>1</b>
No	<b>2</b>

V125  138

**27.** Do you **employ** professional assistance in **studying** significant and unique contractual **agreements**?

Yes	<b>1</b>
No	<b>2</b>

V126  139

**28.** Do you have **any** formal training in **Construction Contract Law**?

Yes	<b>1</b>
No	<b>2</b>

V127  140

**29** Will you be able to **detect** the following when reading **building drawings**?

		Yes	Unsure	No		
29.1	a mistake in design	1	2	3	V128	<input type="checkbox"/> 141
29.2	a major problem in the execution of a design	1	2	3	V129	<input type="checkbox"/> 142
29.3	a significant part of the contract and / or design	1	2	3	V130	<input type="checkbox"/> 143
29.4	a difficult price estimation of the design	1	2	3	V131	<input type="checkbox"/> 144
29.5	non-standard material contained in the design	1	2	3	V132	<input type="checkbox"/> 145
29.6	new and/or controversial building methods or procedures	1	2	3	V133	<input type="checkbox"/> 146
29.7	safety and or other execution risks inherent to the design	1	2	3	V134	<input type="checkbox"/> 147

**30.** The wording "**measure reliably**" (and other synonyms) are used throughout the guideline but is **never defined**. Do you **agree** with this statement?

Yes	<b>1</b>
No	<b>2</b>

V135  148

**31.** What do you understand the meaning of "**measure reliably**" to be?


V136			149
V137			151

**32.** Do "**estimate reliably**" and "**measure reliably**" require the same skills?

Yes	<b>1</b>
No	<b>2</b>

V138		153
------	--	-----

**33.** Please elaborate


V139			154
V140			156

**34.** Can "**reliable measurements**" be made by any audit clerk or only by senior or qualified personnel?

Any audit clerk	<b>1</b>
Only senior or qualified personnel	<b>2</b>

V141		158
------	--	-----

**35.** Can the audit of "**reliable measurement**" be done by a clerk, a senior clerk or an audit manager only?

Clerk	<b>1</b>
Senior clerk	<b>2</b>
Audit manager	<b>3</b>

V142		159
------	--	-----

**36.** If you answered that the audit can be done by any of the above persons in **Question 35** would you best describe such a person? Someone with at least:

1 year experience?	<b>1</b>
2 years experience	<b>2</b>
3 or more years experience?	<b>3</b>
a qualified professional	<b>4</b>

V143		160
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**37.** If you answered "**a qualified professional**" in **Question 36**, how would you describe him/her?


V144 

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 161

**38.** Do you regard the **calculations** done in **verifying** the **estimates** made by the contractor as **arithmetical** in nature which can be checked by a clerk with the necessary experience?

Yes	<b>1</b>
No	<b>2</b>

V145 

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 163

**39.** What would you deem to be "**necessary experience**" referred to in **Question 38**?


V146 

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 164  
V147 

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 166

**40.** Do you regard **professionals** involved on a construction project to be an **independent** source of audit evidence?

Always	<b>1</b>
Sometimes	<b>2</b>
Never	<b>3</b>

V148 

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 168

**41.** In verifying "**measuring**" do you make use of your own personnel only?

Yes	<b>1</b>
No	<b>2</b>

V149 

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 169

**42.** If your answer is "**Yes**", please state the reason for not using any other people?


V150 

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 170

**43.** Do you regard "**attributable costs**" and "**overheads**" as synonyms?

Yes	<b>1</b>
Unsure	<b>2</b>
No	<b>3</b>

V151  172

**44.** In your opinion, are the **costs included** in the "**Bill of Quantities**" and the **costs identified** as "**Direct Costs**" exactly the same?

Yes	<b>1</b>
Unsure	<b>2</b>
No	<b>3</b>

V152  173

**45.** Please elaborate


V153   174

V154   176

**46.** Does your firm make "**use of the work of an expert**" as audit evidence when the audit of construction contracts is undertaken?

Yes	<b>1</b>
No	<b>2</b>

V155  178

**47.** Do you **employ** any of the following persons for the **audit** of construction-type audits, in obtaining audit evidence on the stage of completion of the contract?

		<b>Yes</b>	<b>No</b>
<b>47.1</b>	Architect	<b>1</b>	<b>2</b>

V156  179

If you answered "**No**" is there any specific reason why not?


V157   180

		<b>Yes</b>	<b>No</b>
<b>47.2</b>	Landscape Architect	<b>1</b>	<b>2</b>

V158  182

If you answered "**No**" is there any specific reason why not?


V159   183

**47. (cont.)** Do you **employ** any of the following persons for the **audit** of construction-type audits, in obtaining audit evidence on the stage of completion of the contract?

		Yes	No		
		1	2		
47.3	Structural and Civil Engineer			V160	<input type="text"/> 185
If you answered "No" is there any specific reason why not?					
V161 <input type="text"/> <input type="text"/> 186					
		Yes	No		
		1	2		
47.4	Electrical Engineer			V162	<input type="text"/> 188
If you answered "No" is there any specific reason why not?					
V163 <input type="text"/> <input type="text"/> 189					
		Yes	No		
		1	2		
47.5	Mechanical Engineer			V164	<input type="text"/> 191
If you answered "No" is there any specific reason why not?					
V165 <input type="text"/> <input type="text"/> 192					
		Yes	No		
		1	2		
47.6	Town and Regional Planner			V166	<input type="text"/> 194
If you answered "No" is there any specific reason why not?					
V167 <input type="text"/> <input type="text"/> 195					
		Yes	No		
		1	2		
47.7	Quantity Surveyor			V168	<input type="text"/> 197
If you answered "No" is there any specific reason why not?					
V169 <input type="text"/> <input type="text"/> 198					

**47. (cont.)** Do you **employ** any of the following persons for the **audit** of construction-type audits, in obtaining audit evidence on the stage of completion of the contract?

		Yes	No	
<b>47.8</b>	Construction Manager	<b>1</b>	<b>2</b>	V170 <input style="width: 40px;" type="text"/> 200
	If you answered " <b>No</b> " is there any specific reason why not?			
				V171 <input style="width: 40px;" type="text"/> <input style="width: 40px;" type="text"/> 201
		<b>Yes</b>	<b>No</b>	
<b>47.9</b>	Project manager	<b>1</b>	<b>2</b>	V172 <input style="width: 40px;" type="text"/> 203
	If you answered " <b>No</b> " is there any specific reason why not?			
				V173 <input style="width: 40px;" type="text"/> <input style="width: 40px;" type="text"/> 204
		<b>Yes</b>	<b>No</b>	
<b>47.10</b>	Cost Engineer	<b>1</b>	<b>2</b>	V174 <input style="width: 40px;" type="text"/> 206
	If you answered " <b>No</b> " is there any specific reason why not?			
				V175 <input style="width: 40px;" type="text"/> <input style="width: 40px;" type="text"/> 207
		<b>Yes</b>	<b>No</b>	
<b>47.11</b>	Interior Designer	<b>1</b>	<b>2</b>	V176 <input style="width: 40px;" type="text"/> 209
	If you answered " <b>No</b> " is there any specific reason why not?			
				V177 <input style="width: 40px;" type="text"/> <input style="width: 40px;" type="text"/> 210
		<b>Yes</b>	<b>No</b>	
<b>47.12</b>	Site Manager	<b>1</b>	<b>2</b>	V178 <input style="width: 40px;" type="text"/> 212
	If you answered " <b>No</b> " is there any specific reason why not?			
				V179 <input style="width: 40px;" type="text"/> <input style="width: 40px;" type="text"/> 213



**47. (cont.)** Do you **employ** any of the following persons for the **audit** of construction-type audits, in obtaining audit evidence on the stage of completion of the contract?

		Yes	No		
47.13	Time Manager	1	2	V180	<input type="text"/> 215
If you answered "No" is there any specific reason why not?					
<input type="text"/>					
<input type="text"/>					
<input type="text"/>					
<input type="text"/>					
		Yes	No		
47.14	Construction Project Manager	1	2	V182	<input type="text"/> 218
If you answered "No" is there any specific reason why not?					
<input type="text"/>					
<input type="text"/>					
<input type="text"/>					
<input type="text"/>					
		Yes	No		
47.15	Legal Practitioner (Attorney, etc.)	1	2	V184	<input type="text"/> 221
If you answered "No" is there any specific reason why not?					
<input type="text"/>					
<input type="text"/>					
<input type="text"/>					
<input type="text"/>					
		Yes	No		
47.16	Any other	1	2	V186	<input type="text"/> 224
Specify:					
<input type="text"/>					
Specify					
<input type="text"/>					
If you answered "No" is there any specific reason why not?					
Other 1					
<input type="text"/>					
<input type="text"/>					
Other 2					
<input type="text"/>					
<input type="text"/>					
<input type="text"/>					

**48.** What type of **audit evidence** would you **require** from the persons listed in **Question 47**?


V191 

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 233  
V192 

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 235

**49.** Is there any audit evidence that you would **not** be able to obtain if the above persons were not consulted on the audit?

Yes	<b>1</b>
No	<b>2</b>

V193 

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 237

**50.** Please elaborate


V194 

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 238  
V195 

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 240

**51.** In your opinion, do you consider yourself **able** to conduct the audit **without** the opinion of the persons listed in **Question 47** on the stage of completion of the contract?

Yes	<b>1</b>
No	<b>2</b>

V196 

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 242

**52.** Would you at any point **consider** using the persons listed in **Question 47** if they were on the **payroll** of the client? (Employed / engaged / part of)

Yes	<b>1</b>
No	<b>2</b>

V197 

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 243

**53.** Does your firm employ any of the persons listed in **Question 47** on a **permanent** basis?

Yes	<b>1</b>
No	<b>2</b>

V198 

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 244

**54.** Are you of the opinion that the **requirements** of **AC109** can be "**manipulated**" in any way by the **accountants** of construction contractors and **still comply** with the guideline in general?

Yes	<b>1</b>
Unsure	<b>2</b>
No	<b>3</b>

V199  245

**55.** If your answer to **Question 54** is "**No**", do you have any suggestions on how to **prevent** "manipulation" from happening?


V200   246

V201   248

V202   250

**56.** Are your **audit programmes specifically** designed to **prevent** "**manipulation**"?

Yes	<b>1</b>
Unsure	<b>2</b>
No	<b>3</b>

V203  252

**57.** Please elaborate


V204   253

V205   255

**58.** Are your **audit programmes specifically** designed to **detect** "**manipulation**"?

Yes	<b>1</b>
Unsure	<b>2</b>
No	<b>3</b>

V206  257

**59.** Please elaborate


V207			258
V208			260

**60.** Do you compare **cost to date** with **estimated costs** on all contracts where **profit** is calculated based on **percentage** of completion?

Yes	<b>1</b>
No	<b>2</b>

V209  262

**61.** Item for item?

Yes	<b>1</b>
No	<b>2</b>

V210  263

**62.** Do you compare **cost to completion** with **estimated costs** on all contracts where **profit** is calculated based on **percentage** of **completion**?

Yes	<b>1</b>
No	<b>2</b>

V211  264

**63.** Item for item?

Yes	<b>1</b>
No	<b>2</b>

V212  265

**64.** Is your audit **primarily** based on the ability of the contractor to **estimate accurately**, or alternatively on the ability of the contractor to **manage the cash flow** of the company?

Ability to estimate	<b>1</b>
Manage cash flow	<b>2</b>
Both	<b>3</b>

V213  266

**65.** Do you regularly **familiarise** yourself with **guidelines, comments** and general **accounting** and **auditing activities** of the following countries and / or bodies?

	Country or Body	Yes	Sometimes	No		
65.1	<b>United Kingdom</b>	<b>1</b>	<b>2</b>	<b>3</b>	V214	<input type="text"/> 267
65.2	<b>United States of America</b>	<b>1</b>	<b>2</b>	<b>3</b>	V215	<input type="text"/> 268
65.3	<b>IFRIC</b> (International Financial Reporting Interpretations Committee)	<b>1</b>	<b>2</b>	<b>3</b>	V216	<input type="text"/> 269
65.4	<b>IFAC</b> (International Federation of Accountants)	<b>1</b>	<b>2</b>	<b>3</b>	V217	<input type="text"/> 270
65.5	<b>IASB</b> (International Accounting Standards Board)	<b>1</b>	<b>2</b>	<b>3</b>	V218	<input type="text"/> 271
65.6	<b>IAASB</b> (International Auditing and Assurance Standards Board)	<b>1</b>	<b>2</b>	<b>3</b>	V219	<input type="text"/> 272
65.7	<b>FASB</b> (Financial Accounting Standards Board)	<b>1</b>	<b>2</b>	<b>3</b>	V220	<input type="text"/> 273
65.8	<b>IASC</b> (International Accounting Standards Committee Foundation)	<b>1</b>	<b>2</b>	<b>3</b>	V221	<input type="text"/> 274
65.9	<b>SAC</b> (Standards Advisory Council)	<b>1</b>	<b>2</b>	<b>3</b>	V222	<input type="text"/> 275
65.10	<b>EITF</b> (Emerging Issues Task Force)	<b>1</b>	<b>2</b>	<b>3</b>	V223	<input type="text"/> 276
65.11	<b>SEC</b> (Securities and Exchange Commission)	<b>1</b>	<b>2</b>	<b>3</b>	V224	<input type="text"/> 277

**66.** Do you think that it would be of **benefit** for **accountants/auditors** to receive **formal** education in building cost estimates, construction project management and the reading of architectural and / or engineering drawings if they had construction contractors as clients?

		Yes	Unsure	No		
66.1	Building cost estimates	<b>1</b>	<b>2</b>	<b>3</b>	V225	<input type="text"/> 278

Any suggestions?

	V226	<input type="text"/>	<input type="text"/>	279
	V227	<input type="text"/>	<input type="text"/>	281

		Yes	Unsure	No		
66.2	Construction project management	<b>1</b>	<b>2</b>	<b>3</b>	V228	<input type="text"/> 283

Any suggestions?

	V229	<input type="text"/>	<input type="text"/>	284
	V230	<input type="text"/>	<input type="text"/>	286

**66. (cont.)** Do you think that it would be of **benefit** for **accountants/auditors** to receive **formal** education in building cost estimates, construction project management and the reading of architectural and / or engineering drawings if they had construction contractors as clients?

		<b>Yes</b>	<b>Unsure</b>	<b>No</b>
<b>66.3</b>	Architectural and/or Engineering drawings	<b>1</b>	<b>2</b>	<b>3</b>

V231  288

Any suggestions?


V232   289

V233   291

**Thank you very much for your time and participation.**  
**It is sincerely appreciated.**

## APPENDIX D

### PITF REPORT 2000-3



July 30, 2004

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## Auditing Construction Contracts

# Auditing Construction Contracts

### Notice To Readers

This Practice Alert is intended to provide auditors with information that may help them improve the efficiency and effectiveness of their audits and is based on existing professional literature, the experience of the members of the Professional Issues Task Force (PITF) and information provided by SEC Practice Section member firms to their own professional staff. This information represents the views of the members of the PITF and is not an official position of the AICPA. Official positions are determined through certain specific committee procedures, due process and deliberation. The information provided herein should be used only with the understanding that it is to be read in conjunction with the professional literature and that it is only a means of assisting auditors in meeting their professional responsibilities.

One of the more challenging audits is that of construction companies and other companies using the percentage of completion method of accounting for long-term contracts. This Practice Alert is intended to serve as a reminder of the important concepts, and provide some best practices for auditing such entities.

The primary authoritative accounting literature for construction companies, and entities using contract accounting is SOP 81-1, *Accounting for Performance of Construction-Type and Certain Production-Type Contracts*. A thorough understanding of this literature is critical to auditing such entities. The AICPA's guide entitled "A CPA's Guide to Accounting, Auditing and Tax for Construction Contractors" and the related self-study course, are useful tools in preparing for such audits.

Auditing construction contractors or entities using contract accounting is complex. Such businesses rely on accurate and reliable estimates to operate their business as well as to prepare financial statements in accordance with generally accepted accounting principles. Therefore, it is critical that the auditor gain an understanding of the contractor's significant estimates and assumptions in operating its business. Remember that the audit of a contractor is an audit of a contractor's ability to estimate. There are several things to consider when auditing estimates (also see SAS No. 57, *Auditing Accounting Estimates*): Understand the internal control structure surrounding the estimate, consider the contractor's history of accurate estimates, compare actual to budgeted figures, and




#### Best Practices

The PITF has identified certain procedures that should be considered in performing an audit of a construction contractor. They are as follows:

- **Read significant contracts** This procedure may seem obvious, but it is necessary in identifying the terms of the contract, any guarantees, penalties and incentives, as well as any cancellation and postponement provisions. For instance, reading the contract might identify the party responsible for additional expenses incurred as a result of weather delays (e.g., a colder than normal winter). Make sure the contracts are approved by the appropriate company personnel.
- **Identify unique contracts and increase the amount of testing and professional skepticism relating to such contracts.** These contracts increase the risk of improper estimates and thus improperly stated financial statements. If a company cannot reasonably estimate the cost or progress of a contract, it should be accounted for under the completed-contract method. For example, if a Home building company decides to build power plants, they should consider accounting for such contracts under the completed-contract method until they are reasonably confident that its estimates in the power plant portion of the business are reliable.
- **Understand the company's cash flow and how it will manage paying out expenses.** Often expenses are due prior to receiving all the appropriate cash for the contract revenue. Some companies win long term contracts, but cannot fund the project long enough to realize the revenue earned. It is not uncommon for a customer to withhold 20%–25% of the contract price until they are satisfied with the quality of the completed contract.
- **Recognize that the longer the contract period, the greater the risk that an estimate will be incorrect.** Also, the farther along a contract is toward completion, the less risk there is of an incorrect estimate. Finally, the more variables inherent in an estimate the greater the risk that an estimate will be incorrect.
- **Confirm the terms and conditions of the contract as well as the normal billing procedures.** When confirming a receivable the auditor should strongly consider confirming: the original contract price, total approved change orders, total billings and payments, retainage held and whether it accrues interest, detail of any claims, back charges or disputes, and estimated completion date or the estimate of percentage complete.
- **Review the unapproved change orders of significant**

contract and estimated revenue and cost should be adjusted for changed orders that have been approved both as to scope and price. However, when a change order has been approved as to scope but not price careful evaluation of the specific facts and circumstances is required prior to inclusion in estimated contract revenues. To the extent that change orders are in dispute or are unapproved in regard to both scope and price they should be evaluated as claims. Generally speaking, if there is no verifiable evidence to support the recognition of revenue on an unapproved change order or claim, it should not be recognized.

- Visit construction contract sites. Visiting contract sites can be a very useful audit procedure. Such a visit can provide an opportunity to view the progress of a contract. Consideration of a site visit might include significant contract sites, in which the work is in the very early stages of a contract. Such a visit may identify the complexities of performing the contract. For example, a contract being performed in remote regions of Alaska presents certain logistical risks that may not be appreciated or understood without visiting. The site visit also may provide auditors an opportunity to interview operational personnel and to gain a better understanding for the responsibility the Company is undertaking performing the contract. At the site visit an auditor should also speak with available subcontractors on site to get additional information about the progress of the engagement. Furthermore, the auditor should consider observing equipment and uninstalled inventory on site.
- Meet with project managers. Project managers play an important role in controlling and reporting job site costs. They are also close to the facts and are likely to get more prompt and accurate information than the accounting personnel. For example, a project manager may be aware of a large bill that will arrive relating to his or her project about which the accounting department has not yet been notified. Meeting with the project managers will also assist the auditor in developing expectations for use in performing analytical review procedures. Also, consider having the project managers of significant contracts complete a questionnaire regarding the status of their contracts.
- Identify and understand the significant assumptions and uncertainties. This procedure is fundamental to performing an effective audit of an entity using contract accounting. Not performing this function results in an audit that does not comply with GAAS.
- Test contract costs to make sure that costs are matched with appropriate contracts. In some instances a company may shift costs from unprofitable contracts to profitable ones in an effort to defer losses.

- 
- **Auditing** **contracts** **and** **assumptions**, such as those that are (a) significant to the estimate, (b) sensitive to variation, (c) deviate from historical patterns, and are (d) subjective and susceptible to bias or misstatement. A review of revised or updated estimates of cost to complete and a comparison of the estimates with the actual costs incurred after the balance sheet date is also a useful procedure.
  - See that losses are recorded as incurred, regardless of whether an entity is using the percentage-of-completion or the completed-contract method of recognizing revenue.
  - Analytically review contracts completed and in progress. A detailed analytical review of completed contracts and contracts in progress will provide meaningful information in helping to focus the auditor's efforts on potential problem areas. The look back analysis also reveals significant information about the company's ability to estimate.
  - See that there are appropriate disclosures relating to SOP 94-6, *Disclosure of Risks and Uncertainties*. Entities using contract accounting probably should have more than generic disclosure about the use of significant estimates used in the preparation of financial statements. The AICPA SEC Practice Section has noticed that many companies include excellent disclosure about the risk of contract losses and the possibility of inaccurate estimates in the forepart of their Form 10-K. It is the PITF's view that some of that enhanced disclosure would strengthen financial statement disclosure.
  - Review the aging of receivables on contracts. This procedure will provide evidence that a Company is collecting funds on a timely basis.
  - Consider the use of specialists in auditing construction contracts in accordance with SAS No. 73, *Using the Work of a Specialist*.

Auditing entities that use contract accounting is challenging in that the main element of the contractor's financial statements are based on estimates of cost, and, importantly, costs not shipments drive the revenue recognition process.

Prior to auditing contractors an auditor should ensure that they have the appropriate expertise to understand the risks of the business. This additional knowledge will lead to an audit that meets or exceeds generally accepted auditing standards.

*Previously issued Practice Alerts can be viewed on the AICPA Web site at [www.aicpa.org/members/div/secps/lit/practice.htm](http://www.aicpa.org/members/div/secps/lit/practice.htm)*



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**APPENDIX E**

**AMERICAN INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS'**

**STATEMENT OF POSITION 81 – 1**

**SOP 81-1: ACCOUNTING FOR PERFORMANCE OF CONSTRUCTION-  
TYPE AND CERTAIN PRODUCTION-TYPE CONTRACTS**

# OFFICIAL RELEASES

## Statement of Position No. 81-1—Accounting for Performance of Construction-Type and Certain Production-Type Contracts

### Proposal to the Financial Accounting Standards Board

**Note:** Statements of position of the accounting standards division are issued for the general information of those interested in the subject. They present the conclusions of at least a majority of the accounting standards executive committee, which is the senior technical body of the Institute authorized to speak for the Institute in the areas of financial accounting and reporting and cost accounting. The objective of statements of position is to influence the development of accounting and reporting standards in directions the division believes are in the public interest. It is intended that they should be considered, as deemed appropriate, by bodies having authority to issue pronouncements on the subject. However, statements of position do not establish standards enforceable under the Institute's code of professional ethics.

For reasons of space, Appendixes A, "Schematic Chart of SOP Organization"; B, "Types of Contracts"; and C, "Summary of Disclosure Recommendations in Statement of Position" have been omitted.

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### Introduction

This statement of position provides guidance on the application of generally accepted accounting principles in accounting for the performance of contracts for which specifications are provided by the customer for the construction of facilities or the production of goods or for the provision of related services. Changes in the business environment have increased significantly the variety and uses of those types of contracts and the types of business enterprises that use them. In the present business environment, diverse types of contracts, ranging from relatively simple to highly complex and from relatively short- to long-term, are widely used in many industries for construction, production, or provision of a broad range of goods and services. However, existing principles related to accounting for contracts were written in terms of long-term construction-type contracts, and they are not stated in sufficient detail for the scope of activities to which they presently are applied. Those activities range far beyond the traditional construction-type activity (the design and physical construction of facilities such as buildings, roads, dams, and bridges) to include, for example, the development and production of military and commercial aircraft, weapons delivery systems, space exploration hardware, and computer software. The accounting standards division believes that guidance is now needed in this area of accounting.

### The Basic Accounting Issue

The determination of the point or points at which revenue should be recognized as earned and costs should be recognized as expenses is a major accounting issue common to all business enterprises engaged in the performance of contracts of the types covered by this statement. Accounting for such contracts is essentially a process of measuring the results of relatively long-term events and allocating those results to relatively short-term accounting periods. This involves considerable use of estimates in determining revenues, costs, and profits and in assigning the amounts to accounting periods. The process

is complicated by the need to evaluate continually the uncertainties inherent in the performance of contracts and by the need to rely on estimates of revenues, costs, and the extent of progress toward completion.

### Present Accounting Requirements and Practices

The pervasive principle of realization and its exceptions and modifications are central factors underlying accounting for contracts. APB Statement 4 states:

Revenue is generally recognized when both of the following conditions are met: (1) the earnings process is complete or virtually complete, and (2) an exchange has taken place. [Paragraph 150]

Revenue is sometimes recognized on bases other than the realization rule. For example, on long-term construction contracts revenue may be recognized as construction progresses. This exception to the realization principle is based on the availability of evidence of the ultimate proceeds and the consensus that a better measure of periodic income results. [Paragraph 152]

The exception to the usual revenue realization rule for long-term construction-type contracts, for example, is justified in part because strict adherence to realization at the time of sale would produce results that are considered to be unreasonable. The judgment of the profession is that revenue should be recognized in this situation as construction progresses. [Paragraph 174]

Accounting Research Bulletin no. 45 (ARB 45), *Long-Term Construction-Type Contracts*, issued by the AICPA Committee on Accounting Procedure in 1955, describes the two generally accepted methods of accounting for long-term construction-type contracts for financial reporting purposes:

The percentage-of-completion method recognizes income as work on a contract progresses; recognition of revenues and profits generally is related to costs incurred in providing the services required under the contract.

The completed-contract method recognizes income only when the contract is completed, or substantially so, and all costs and related revenues are reported as deferred items in the balance sheet until that time.

The AICPA Industry Audit Guide, *Audits of Government Contractors*, describes units-of-delivery as a modification of the percentage-of-completion method of accounting for contracts.

□ *The units-of-delivery method* recognizes as revenue the contract price of units of a basic product produced during a period and as the cost of earned revenue the costs allocable to the delivered units; costs allocable to undelivered units are reported in the balance sheet as inventory or work in progress. The method is used in circumstances in which an entity produces units of a basic product under production-type contracts in a continuous or sequential production process to buyers' specifications.

The use of either of the two generally accepted methods of accounting involves, to a greater or lesser extent, three key areas of estimates and uncertainties: (a) the extent of progress toward completion, (b) contract revenues, and (c) contract costs. Although the ultimate amount of contract revenue is often subject to numerous uncertainties, the accounting literature has given little attention to the difficulties of estimating contract revenue.

5 ARB 45, paragraph 15, describes the circumstances in which each method is preferable as follows:

The committee believes that in general when estimates of costs to complete and extent of progress toward completion of long-term contracts are reasonably dependable, the percentage-of-completion method is preferable. When lack of dependable estimates or inherent hazards cause forecasts to be doubtful, the completed-contract method is preferable.

Both of the two generally accepted methods are widely used in practice. However, the two methods are frequently applied differently in similar circumstances. The division believes that the two methods should be used in specified circumstances and should not be used as acceptable alternatives for the same circumstances. Accordingly, identifying the circumstances in which either of the methods is preferable and the accounting that should be followed in the application of those methods are among the primary objectives of this statement of position. This statement provides guidance on the application of ARB 45 and does not amend that bulletin.

6 In practice, methods are sometimes found that allocate contract costs and revenues to accounting periods on (a) the basis of cash

receipts and payments or (b) the basis of contract billings and costs incurred. Those practices are not generally accepted methods of accounting for financial reporting purposes. However, those methods are appropriate for other purposes, such as the measurement of income for income tax purposes, for which the timing of cash transactions is a controlling factor. Recording the amounts billed or billable on a contract during a period as contract revenue of the period, and the costs incurred on the contract as expenses of the period, is not acceptable for financial reporting purposes because the amounts billed or billable on a contract during a period are determined by contract terms and do not necessarily measure performance on the contract. Only by coincidence might those unacceptable methods produce results that approximate the results of the generally accepted method of accounting for contracts that are appropriate in the circumstances.

#### Other Pronouncements and Regulations Affecting Contract Accounting

7 Accounting Research Bulletin no. 43, chapter 11, "Government Contracts," prescribes generally accepted principles in three areas of accounting for government contracts. Section A of that chapter deals with accounting problems arising under cost-plus-fixed-fee contracts. Section B deals with certain aspects of the accounting for government contracts and subcontracts that are subject to renegotiation. Section C deals with problems involved in accounting for certain terminated war and defense contracts. Those pronouncements govern accounting for contracts in the areas indicated.

8 The pricing and costing of federal government contracts are governed by cost principles contained in procurement regulations such as the Federal Procurement Regulation (FPR) and the Defense Acquisition Regulation (DAR). Also, most major government contractors are subject to cost accounting standards issued by the Cost Accounting Standards Board (CASB). CASB standards apply to the cost accounting procedures that government contractors use to allocate costs to contracts; CASB standards are not intended for financial reporting.

9 Accounting for contracts for income tax purposes is prescribed by the Internal Revenue Code and the related rules and regulations. The methods of accounting for contracts under those requirements are not limited to the two

generally accepted methods for financial reporting. For numerous historical and practical reasons, tax accounting rules and regulations differ from generally accepted accounting principles. Numerous nonaccounting considerations are appropriate in determining income tax accounting. This statement deals exclusively with the application of generally accepted accounting principles to accounting for contracts in financial reporting. It does not apply to income tax accounting and is not intended to influence income tax accounting.

#### Need for Guidance

10 Because of the complexities and uncertainties in accounting for contracts, the increased use of diverse types of contracts for the construction of facilities, the production of goods, or the provision of related services, and present conditions and practices in industries in which contracts are performed for those purposes, additional guidance on the application of generally accepted accounting principles is needed. This statement of position provides that guidance. Appendix A contains a schematic chart showing the organization of the statement.

#### Scope of Statement of Position

11 This statement of position applies to accounting for performance of contracts for which specifications are provided by the customer for the construction of facilities or the production of goods or the provision of related services that are reported in financial statements prepared in conformity with generally accepted accounting principles.<sup>1</sup> Existing authoritative accounting literature uses the terms "long-term" and "construction-type" in identifying the types of contracts that are the primary focus of interest. The term "long-term" is not used in this statement of position as an identifying characteristic because other characteristics are considered more relevant for identifying the types of contracts covered. However, accounting for contracts by an entity that primarily has relatively short-term contracts is recommended in paragraph 31 of this statement.

<sup>1</sup>This statement is not intended to apply to "service transactions" as defined in the FASB's October 23, 1978 Invitation to Comment, *Accounting for Certain Service Transactions*. However, it applies to separate contracts to provide services essential to the construction or production of tangible property, such as design, engineering, procurement, and construction management (see paragraph 13 for examples).

The scope of the statement is not limited to construction-type contracts.

#### Contracts Covered

12 Contracts covered by this statement of position are binding agreements between buyers and sellers in which the seller agrees, for compensation, to perform a service to the buyer's specifications.<sup>2</sup> Contracts consist of legally enforceable agreements in any form and include amendments, revisions, and extensions of such agreements. Performance will often extend over long periods, and the seller's right to receive payment depends on his performance in accordance with the agreement. The service may consist of designing, engineering, fabricating, constructing, or manufacturing related to the construction or the production of tangible assets. Contracts such as leases and real estate agreements, for which authoritative accounting literature provides special methods of accounting, are not covered by this statement.

13 Contracts covered by this statement include, but are not limited to, the following:

- Contracts in the construction industry, such as those of general building, heavy earth moving, dredging, demolition, design-build contractors, and specialty contractors (for example, mechanical, electrical, or paving).
- Contracts to design and build ships and transport vessels.
- Contracts to design, develop, manufacture, or modify complex aerospace or electronic equipment to a buyer's specification or to provide services related to the performance of such contracts.
- Contracts for construction consulting service, such as under agency contracts or construction management agreements.
- Contracts for services performed by architects, engineers, or architectural or engineering design firms.

14 Contracts not covered by this statement include, but are not limited to, the following:

- Sales by a manufacturer of goods produced in a standard manufacturing operation, even if produced to buyers' specifications, and sold in the ordinary course of business through the manufacturer's regular marketing channels if such sales are normally recognized as revenue in accordance with the realization principle for sales of products and

<sup>2</sup>Specifications imposed on the buyer by a third party (for example, a government or regulatory agency or a financial institution) or by conditions in the marketplace is deemed to be "buyer's specifications."

if their costs are accounted for in accordance with generally accepted principles of inventory costing.

☐ Sales or supply contracts to provide goods from inventory or from homogeneous continuing production over a period of time.

☐ Contracts included in a program and accounted for under the program method of accounting. For accounting purposes, a program consists of a specified number of units of a basic product expected to be produced over a long period in a continuing production effort under a series of existing and anticipated contracts.<sup>3</sup>

☐ Service contracts of health clubs, correspondence schools, and similar consumer-oriented organizations that provide their services to their clients over an extended period.

☐ Magazine subscriptions.

☐ Contracts of nonprofit organizations to provide benefits to their members over a period of time in return for membership dues.

**15** Contracts covered by this statement may be classified into four broad types based on methods of pricing: (a) fixed-price or lump-sum contracts, (b) cost-type (including cost-plus) contracts, (c) time-and-material contracts, and (d) unit-price contracts. A fixed-price contract is an agreement to perform all acts under the contract for a stated price. A cost-type contract is an agreement to perform under a contract for a price determined on the basis of a defined relationship to the costs to be incurred, for example, the costs of all acts required plus a fee, which may be a fixed amount or a fixed percentage of the costs incurred. A time-and-material contract is an agreement to perform all acts required under the contract for a price based on fixed hourly rates for some measure of the labor hours required (for example, direct labor hours) and the cost of materials. A unit-price contract is an agreement to perform all acts required under the contract for a specified price for each unit of output. Each of the various types of contracts may have incentive, penalty, or other provisions that modify their basic pricing terms. The pricing features of the various types are discussed in greater detail in Appendix B.

### Definition of a Contractor

**16** The term "contractor" as used in this statement refers to a person

or entity that enters into a contract to construct facilities, produce goods, or render services to the specifications of a buyer either as a general or prime contractor, as a subcontractor to a general contractor, or as a construction manager.

### Definition of a Profit Center

**17** For the purpose of this statement, a "profit center" is the unit for the accumulation of revenues and costs and the measurement of income. For business enterprises engaged in the performance of contracts, the profit center for accounting purposes is usually a single contract; but under some specified circumstances it may be a combination of two or more contracts, a segment of a contract or of a group of combined contracts. This statement of position provides guidance on the selection of the appropriate profit center. The accounting recommendations, usually stated in terms of a single contract, also apply to alternative profit centers in circumstances in which alternative centers are appropriate.

### Application and Effect on Existing Audit Guides and SOPs

**18** This statement of position presents the division's recommendations on accounting for contracts (as specified in paragraphs 11 to 17) in all industries. The recommendations in this statement need not be applied to immaterial items. Two existing AICPA Industry Audit Guides, *Audits of Construction Contractors* and *Audits of Government Contractors*, provide additional guidance on the application of generally accepted accounting principles to the construction industry and to government contracts, respectively. The recommendations in this statement take precedence in those areas. *Audits of Construction Contractors* is being revised concurrently with this statement to conform to its provisions.

**19** The guidance on contract accounting and financial reporting in *Audits of Government Contractors* is essentially consistent with the recommendations in this statement except that this statement recommends the cumulative catch-up method for accounting for changes in estimates under the percentage-of-completion method of accounting, whereas either the cumulative catch-up method or the reallocation method is acceptable under the guide. Therefore, *Audits of Government Contractors* is amended so that its guidance on accounting for changes in estimates conforms to

the recommendations in this statement. Also, since the recommendations in this statement provide more comprehensive and explicit guidance on the application of generally accepted accounting principles to contract accounting than does the guide, *Audits of Government Contractors*, the guide is amended to incorporate this statement as an appendix. The provisions of that guide should be interpreted and applied in the context of the recommendations in this statement.

**20** This statement is not intended to supersede recommendations on accounting in other AICPA industry accounting or audit guides or in other statements of position.

### The Division's Conclusions

#### Determining a Basic Accounting Policy for Contracts

**21** In accounting for contracts, the basic accounting policy decision is the choice between the two generally accepted methods: the percentage-of-completion method including units of delivery and the completed-contract method. The determination of which of the two methods is preferable should be based on a careful evaluation of circumstances because the two methods should not be acceptable alternatives for the same circumstances. The division's recommendations on basic accounting policy are set forth in the sections on "The Percentage-of-Completion Method" and "The Completed-Contract Method," which identify the circumstances appropriate to the methods, the bases of applying the methods, and the reasons for the recommendations. The recommendations apply to accounting for individual contracts and to accounting for other profit centers in accordance with the recommendations in the section on "Determining the Profit Center." As a result of evaluating individual contracts and profit centers, a contractor should be able to establish a basic policy that should be followed in accounting for most of his contracts. In accordance with the requirements of APB Opinion 22, *Disclosure of Accounting Policies*, a contractor should disclose in the note to the financial statements on accounting policies the method or methods of determining earned revenue and the cost of earned revenue including the policies relating to combining and segmenting, if applic-

able. Appendix C contains a summary of the disclosure requirements in this statement.

### The Percentage-of-Completion Method

**22** This section sets forth the recommended basis for using the percentage-of-completion method and the reasons for the recommendation. Under most contracts for construction of facilities, production of goods, or provision of related services to a buyer's specifications, both the buyer and the seller (contractor) obtain enforceable rights. The legal right of the buyer to require specific performance of the contract means that the contractor has, in effect, agreed to sell his rights to work-in-progress as the work progresses. This view is consistent with the contractor's legal rights; he typically has no ownership claim to the work-in-progress but has lien rights. Furthermore, the contractor has the right to require the buyer, under most financing arrangements, to make progress payments to support his ownership investment and to approve the facilities constructed (or goods produced or services performed) to date if they meet the contract requirements. The buyer's right to take over the work-in-progress at his option (usually with a penalty) provides additional evidence to support that view. Accordingly, the business activity taking place supports the concept that in an economic sense performance is, in effect, a continuous sale (transfer of ownership rights) that occurs as the work progresses. Also under most contracts for the production of goods and the provision of related services that are accounted for on the basis of units delivered, both the contractor and the customer obtain enforceable rights as the goods are produced or the services are performed. As units are delivered, title to and the risk of loss on those units normally transfer to the customer, whose acceptance of the items indicates that they meet the contractual specifications. For such contracts, delivery and acceptance are objective measurements of the extent to which the contracts have been performed. The percentage-of-completion method recognizes the legal and economic results of contract performance on a timely basis. Financial statements based on the percentage-of-completion method present the economic substance of a company's transactions and events more clearly and more timely than financial statements based on the completed-contract method, and they present more accurately the relationships between gross profit

<sup>3</sup>The division is preparing a separate statement of position on program accounting, which will provide guidance on the circumstances in which existing and anticipated production-type contracts may be combined for the purpose of accumulating and allocating production costs.



from contracts and related period costs. The percentage-of-completion method informs the users of the general purpose financial statements of the volume of economic activity of a company.

#### Circumstances Appropriate to the Method

23 The use of the percentage-of-completion method depends on the ability to make reasonably dependable estimates. For the purposes of this statement, "the ability to make reasonably dependable estimates" relates to estimates of the extent of progress toward completion, contract revenues, and contract costs. The division believes that the percentage-of-completion method is preferable as an accounting policy in circumstances in which reasonably dependable estimates can be made and in which all the following conditions exist:

Contracts executed by the parties normally include provisions that clearly specify the enforceable rights regarding goods or services to be provided and received by the parties, the consideration to be exchanged, and the manner and terms of settlement.

The buyer can be expected to satisfy his obligations under the contract.

The contractor can be expected to perform his contractual obligations.

24 For entities engaged on a continuing basis in the production and delivery of goods or services under contractual arrangements and for whom contracting represents a significant part of their operations, the presumption is that they have the ability to make estimates that are sufficiently dependable to justify the use of the percentage-of-completion method of accounting.<sup>4</sup> Persuasive evidence to the contrary is necessary to overcome that presumption. The ability to produce reasonably dependable estimates is an essential element of the contracting business. For a contract on which a loss is anticipated, generally accepted accounting principles require recognition of the entire anticipated loss as soon as the loss becomes evident. An entity without the ability to update and revise estimates continually with a degree of confidence could not meet

<sup>4</sup>The division recognizes that many contractors have internal estimating procedures that are based on mostly documented estimates and marginal quality field reporting and job costing systems. These conditions may influence the ability of an entity to produce reasonably dependable estimates. However, procedures and systems should not influence the development of accounting principles and should be dealt with by management as internal control, financial reporting, and auditing concerns.

that essential requirement of generally accepted accounting principles.

25 Accordingly, the division believes that entities with significant contracting operations generally have the ability to produce reasonably dependable estimates and that for such entities the percentage-of-completion method of accounting is preferable in most circumstances. The method should be applied to individual contracts or profit centers, as appropriate.

a Normally, a contractor will be able to estimate total contract revenue and total contract cost in single amounts. Those amounts should normally be used as the basis for accounting for contracts under the percentage-of-completion method.

b For some contracts, on which some level of profit is assured, a contractor may only be able to estimate total contract revenue and total contract cost in ranges of amounts. If, based on the information arising in estimating the ranges of amounts and all other pertinent data, the contractor can determine the amounts in the ranges that are most likely to occur, those amounts should be used in accounting for the contract under the percentage-of-completion method. If the most likely amounts cannot be determined, the lowest probable level of profit in the range should be used in accounting for the contract until the results can be estimated more precisely.

c However, in some circumstances, estimating the final outcome may be impractical except to assure that no loss will be incurred. In those circumstances, a contractor should use a zero estimate of profit; equal amounts of revenue and cost should be recognized until results can be estimated more precisely. A contractor should use this basis only if the bases in (a) or (b) are clearly not appropriate. A change from a zero estimate of profit to a more precise estimate should be accounted for as a change in an accounting estimate.

An entity using the percentage-of-completion method as its basic accounting policy should use the completed-contract method for a single contract or a group of contracts for which reasonably dependable estimates cannot be made or for which inherent hazards makes estimates doubtful. Such a departure from the basic policy should be disclosed.

#### Nature of Reasonable Estimates and Inherent Hazards

26 In practice, contract revenues and costs are estimated in a wide variety of ways ranging from rudimentary procedures to com-

plex methods and systems. Regardless of the techniques used, a contractor's estimating procedures should provide reasonable assurance of a continuing ability to produce reasonably dependable estimates.<sup>5</sup> Ability to estimate covers more than the estimating and documentation of contract revenues and costs; it covers a contractor's entire contract administration and management control system. The ability to produce reasonably dependable estimates depends on all the procedures and personnel that provide financial or production information on the status of contracts. It encompasses systems and personnel not only of the accounting department but of all areas of the company that participate in production control, cost control administrative control, or accountability for contracts. Previous reliability of a contractor's estimating process is usually an indication of continuing reliability, particularly if the present circumstances are similar to those that prevailed in the past.

27 Estimating is an integral part of contractors' business activities, and there is a necessity to revise estimates on contracts continually as the work progresses. The fact that circumstances may necessitate frequent revision of estimates does not indicate that the estimates are unreliable for the purpose for which they are used. Although results may differ widely from original estimates because of the nature of the business, the contractor, in the conduct of his business, may still find the estimates reasonably dependable. Despite these widely recognized conditions, a contractor's estimates of total contract revenue and total contract costs should be regarded as reasonably dependable if the minimum total revenue and the maximum total cost can be estimated with a sufficient degree of confidence to justify the contractor's bids on contracts.

28 ARB 45 discourages the use of the percentage-of-completion method of accounting in circumstances in which inherent hazards make estimates doubtful. "Inherent hazards" relate to contract conditions or external factors that raise questions about contract estimates and about the ability of either the contractor or the cus-

<sup>5</sup>The type of estimating procedures appropriate in a particular set of circumstances depends on a careful evaluation of the costs and benefits of developing the procedures. The ability to produce reasonably dependable estimates that would justify the use of the percentage-of-completion method as recommended in paragraph 25 does not depend on the elaborateness of the estimating procedures used.

tomers to perform his obligations under the contract. Inherent hazards that cause contract estimates to be doubtful usually differ from inherent business risks. Business enterprises engaged in contracting, like all business enterprises, are exposed to numerous business risks that vary from contract to contract. The reliability of the estimating process in contract accounting does not depend on the absence of such risks. Assessing business risks is a function of users of financial statements.

29 The present business environment and the refinement of the estimating process have produced conditions under which most business entities engaged in contracting can deal adequately with the normal, recurring business risks in estimating the outcome of contracts. The division believes that inherent hazards that make otherwise reasonably dependable contract estimates doubtful involve events and conditions that would not be considered in the ordinary preparation of contract estimates and that would not be expected to recur frequently, given the contractor's normal business environment. Such hazards are unrelated to, or only incidentally related to, the contractor's typical activities. Such hazards may relate, for example, to contracts whose validity is seriously in question (that is, which are less than fully enforceable), to contracts whose completion may be subject to the outcome of pending legislation or pending litigation, or to contracts exposed to the possibility of the condemnation or expropriation of the resulting properties. Reasonably dependable estimates cannot be produced for a contract with unrealistic or ill-defined terms or for a contract between unreliable parties. However, the conditions stated in paragraph 23 for the use of the percentage-of-completion method of accounting, which apply to most bona fide contracts, make the existence of some uncertainties, including some of the type described in ARB 45, paragraph 15, unlikely for contracts that meet those conditions. Therefore, the division believes that there should be specific, persuasive evidence of such hazards to indicate that use of the percentage-of-completion method on one of the bases in paragraph 25 is not preferable.

#### The Completed-Contract Method

30 This section sets forth the recommended basis for using the completed-contract method and the reasons for the recommendation. Under the completed-contract method, income is recog-

nized only when a contract is completed or substantially completed. During the period of performance, billings and costs are accumulated on the balance sheet, but no profit or income is recorded before completion or substantial completion of the work. This method precludes reporting on the performance that is occurring under the enforceable rights of the contract as work progresses. Although the completed-contract method is based on results as finally determined rather than on estimates for unperformed work, which may involve unforeseen costs and possible losses, it does not reflect current performance when the period of a contract extends beyond one accounting period, and it therefore may result in irregular recognition of income. Financial statements based on this method may not show informative relationships between gross profit reported on contracts and related period costs.

#### Circumstances of Use

**31** The completed-contract method may be used as an entity's basic accounting policy in circumstances in which financial position and results of operations would not vary materially from those resulting from use of the percentage-of-completion method (for example, in circumstances in which an entity has primarily short-term contracts). Although this statement does not formally distinguish on the basis of length between long-term and short-term contracts, the basis for recording income on contracts of short duration poses relatively few problems. In accounting for such contracts, income ordinarily is recognized when performance is substantially completed and accepted. Under those circumstances, revenues and costs in the aggregate for all contracts would be expected to result in a matching of gross profit with period overhead or fixed costs similar to that achieved by use of the percentage-of-completion method. For example, the completed-contract method, as opposed to the percentage-of-completion method, would not usually produce a material difference in net income or financial position for a small plumbing contractor that performs primarily relatively short-term contracts during an accounting period; performance covers such a short span of time that the work is somewhat analogous to the manufacture of self production items for sale. An entity using the completed-contract method as its basic accounting policy should depart from that policy for a single contract or a group of contracts not having the features described in paragraph 31

and use the percentage-of-completion method on one of the bases described in paragraph 25. Such a departure should be disclosed.

**32** The completed-contract method is preferable in circumstances in which estimates cannot meet the criteria for reasonable dependability discussed in the section on the percentage-of-completion method or in which there are inherent hazards of the nature of those discussed in that section. An entity using the percentage-of-completion method as its basic accounting policy should depart from that policy and use the completed-contract method for a single contract or a group of contracts only in the circumstances described in paragraph 25.

**33** The use of the completed-contract method is recommended for the circumstances described in paragraphs 31 and 32. However, for circumstances in which there is an assurance that no loss will be incurred on a contract (for example, when the scope of the contract is ill-defined but the contractor is protected by a cost-plus contract or other contractual terms), the percentage-of-completion method based on a zero profit margin, rather than the completed-contract method, is recommended until more precise estimates can be made. The significant difference between the percentage-of-completion method applied on the basis of a zero profit margin and the completed-contract method relates to the effects on the income statement. Under the zero profit margin approach to applying the percentage-of-completion method, equal amounts of revenue and cost, measured on the basis of performance during the period, are presented in the income statement; whereas, under the completed-contract method, performance for a period is not reflected in the income statement, and no amount is presented in the income statement until the contract is completed. The zero profit margin approach to applying the percentage-of-completion method gives users of general purpose financial statements an indication of the volume of a company's business and of the application of its economic resources.

#### Determining the Profit Center

**34** The basic presumption should be that each contract is the profit center for revenue recognition, cost accumulation, and income measurement. That presumption may be overcome only if a contract or a series of contracts meets the conditions described for combining or segmenting contracts. A group of contracts (combining), and a phase or segment of a single contract or of a group of contracts

(segmenting) may be used as a profit center in some circumstances. Since there are numerous practical implications of combining and segmenting contracts, evaluation of the circumstances, contract terms, and management intent are essential in determining contracts that may be accounted for on those bases.

#### Combining Contracts

**35** A group of contracts may be so closely related that they are, in effect, parts of a single project with an overall profit margin, and accounting for the contracts individually may not be feasible or appropriate. Under those circumstances, consideration should be given to combining such contracts for profit recognition purposes. The presumption in combining contracts is that revenue and profit are earned, and should be reported, uniformly over the performance of the combined contracts. For example, a group of construction-type contracts may be negotiated as a package with the objective of achieving an overall profit margin, although the profit margins on the individual contracts are performed and reported in different periods and accounted for separately, the reported profit margins in those periods will differ from the profit margin contemplated in the negotiations for reasons other than differences in performance.

**36** Contracts may be combined for accounting purposes only if they meet the criteria in paragraphs 37 and 38.

**37** A group of contracts may be combined for accounting purposes if the contracts:  
a Are negotiated as a package in the same economic environment with an overall profit margin objective. Contracts not executed at the same time may be considered to have been negotiated as a package in the same economic environment only if the time period between the commitments of the parties to the individual contracts is reasonably short. The longer the period between the commitments of the parties to the contracts, the more likely it is that the economic circumstances affecting the negotiations have changed.

b Constitute in essence an agreement to do a single project. A project for this purpose consists of construction, or related service activity with different elements, phases, or units of output that are closely interrelated or interdependent in terms of their design, technology, and function or their ultimate purpose or use.

c Require closely interrelated construction activities with substantial common costs that cannot

be separately identified with, or reasonably allocated to, the elements, phases, or units of output.  
d Are performed concurrently or in a continuous sequence under the same project management at the same location or at different locations in the same general vicinity.

e Constitute in substance an agreement with a single customer. In assessing whether the contracts meet this criterion, the facts and circumstances relating to the other criteria should be considered. In some circumstances different divisions of the same entity would not constitute a single customer if, for example, the negotiations are conducted independently with the different divisions. On the other hand, two or more parties may constitute in substance a single customer if, for example, the negotiations are conducted jointly with the parties to do what in essence is a single project.

Contracts that meet all of these criteria may be combined for profit recognition and for determining the need for a provision for losses in accordance with ARB 45, paragraph 6. The criteria should be applied consistently to contracts with similar characteristics in similar circumstances.

**38** Production-type contracts that do not meet the criteria in paragraph 37 or segments of such contracts may be combined into groupings such as production lots or releases for the purpose of accumulating and allocating production costs to units produced or delivered on the basis of average unit costs in the following circumstances:<sup>6</sup>

a The contracts are with one or more customers for the production of substantially identical units of a basic item produced concurrently or sequentially.

b Revenue on the contracts is recognized on the units-of-delivery basis of applying the percentage-of-completion method.

#### Segmenting a Contract

**39** A single contract or a group of contracts that otherwise meet the test for combining may include several elements or phases, each of which the contractor negotiated separately with the same customer and agreed to perform without regard to the performance of the others. If those activities are accounted for as a single profit center, the reported income may differ from that contemplated in the negotiations for reasons other

<sup>6</sup>The division is preparing a separate statement of position on program accounting, which will provide guidance on the circumstances in which existing and anticipated production-type contracts may be combined for the purpose of accumulating and allocating production costs.

than differences in performance. If the project is segmented, revenues can be assigned to the different elements or phases to achieve different rates of profitability based on the relative value of each element or phase to the estimated total contract revenue. A project, which may consist of a single contract or a group of contracts, with segments that have different rates of profitability may be segmented if it meets the criteria in paragraph 40, paragraph 41, or paragraph 42. The criteria for segmenting should be applied consistently to contracts with similar characteristics and in similar circumstances.

**40** A project may be segmented if all the following steps were taken and are documented and verifiable:

**a** The contractor submitted bona fide proposals on the separate components of the project and on the entire project.

**b** The customer had the right to accept the proposals on either basis.

**c** The aggregate amount of the proposals on the separate components approximated the amount of the proposal on the entire project.

**41** A project that does not meet the criteria in paragraph 40 may be segmented only if it meets all the following criteria:

**a** The terms and scope of the contract or project clearly call for separable phases or elements.

**b** The separable phases or elements of the project are often bid or negotiated separately.

**c** The market assigns different gross profit rates to the segments because of factors such as different levels of risk or differences in the relationship of the supply and demand for the services provided in different segments.

**d** The contractor has a significant history of providing similar services to other customers under separate contracts for each significant segment to which a profit margin higher than the overall profit margin on the project is ascribed.<sup>7</sup>

**e** The significant history with customers who have contracted for services separately is one that is relatively stable in terms of pricing policy rather than one unduly weighted by erratic pricing decisions (responding, for example, to extraordinary economic circumstances or to unique customer-contractor relationships).

<sup>7</sup>In applying the criterion in paragraph 41d, values assignable to the segments should be on the basis of the contractor's normal historical prices and terms of such services to other customers. The division considered but rejected the concept of allowing a contractor to segment on the basis of prices charged by other contractors, since it does not follow that those prices could have been obtained by a contractor who has no history in the market.

**f** The excess of the sum of the prices of the separate elements over the price of the total project is clearly attributable to cost savings incident to combined performance of the contract obligations (for example, cost savings in supervision, overhead, or equipment mobilization). Unless this condition is met, segmenting a contract with a price substantially less than the sum of the prices of the separate phases or elements would be inappropriate even if the other conditions are met. Acceptable price variations should be allocated to the separate phases or elements in proportion to the prices ascribed to each. In all other situations a substantial difference in price (whether more or less) between the separate elements and the price of the total project is evidence that the contractor has accepted different profit margins. Accordingly, segmenting is not appropriate, and the contracts should be the profit centers.

**g** The similarity of services and prices in the contract segments and services and the prices of such services to other customers contracted separately should be documented and verifiable.

**42** A production-type contract that does not meet the criteria in paragraphs 40 or 41 may also be segmented and included in groupings such as production lots or releases for the purpose of accumulating and allocating production costs to units produced or delivered on the basis of average unit cost under the conditions specified in paragraph 38.

### Measuring Progress on Contracts

**43** This section describes methods of measuring the extent of progress toward completion under the percentage-of-completion method and sets forth criteria for selecting those methods and for determining when a contract is substantially completed. Meaningful measurement of the extent of progress toward completion is essential since this factor is used in determining the amounts of estimated contract revenue and estimated gross profit that will be recognized as earned in any given period.

### Methods of Measuring Extent of Progress Toward Completion

**44** In practice, a number of methods are used to measure the extent of progress toward completion. They include the cost-to-cost method, variations of the cost-to-cost method, efforts-expended methods, the units-of-delivery method, and the units-of-work-

performed method. Those practices are intended to conform to ARB 45, paragraph 4.<sup>8</sup> Some of the measures are sometimes made and certified by engineers or architects, but management should review and understand the procedures used by those professionals.

**45** Some methods used in practice measure progress toward completion in terms of costs, some in terms of units of work, and some in terms of values added (the contract value of total work performed to date). All three of these measures of progress are acceptable in appropriate circumstances. The division concluded that other methods that achieve the objective of measuring extent of progress toward completion in terms of costs, units, or value added are also acceptable in appropriate circumstances. However, the method or methods selected should be applied consistently to all contracts having similar characteristics. The method or methods of measuring extent of progress toward completion should be disclosed in the notes to the financial statements. Examples of circumstances not appropriate to some methods are given within the discussion of input and output measures.

### Input and Output Measures

**46** The several approaches to measuring progress on a contract can be grouped into input and output measures. Input measures are made in terms of efforts devoted to a contract. They include the methods based on costs and on efforts expended. Output measures are made in terms of results achieved. They include methods based on units produced, units delivered, contract milestones, and value added. For contracts under which separate units of output are produced, progress can be measured on the basis of units of work completed. In other circumstances, progress may be measured, for example, on the basis of cubic yards of excavation for foundation contracts or on the basis of cubic yards of pavement laid for highway contracts.

**47** Both input and output measures have drawbacks in some

circumstances. Input is used to measure progress toward completion indirectly, based on an established or assumed relationship between a unit of input and productivity. A significant drawback of input measures is that the relationship of the measures to productivity may not hold, because of inefficiencies or other factors. Output is used to measure results directly and is generally the best measure of progress toward completion in circumstances in which a reliable measure of output can be established. However, output measures often cannot be established, and input measures must then be used. The use of either type of measure requires the exercise of judgment and the careful tailoring of the measure to the circumstances.

**48** The efforts-expended method is an input method based on a measure of the work, such as labor hours, labor dollars, machine hours, or material quantities. Under the labor-hours method, for example, extent of progress is measured by the ratio of hours performed to date to estimated total hours at completion. Estimated total labor hours should include (a) the estimated labor hours of the contractor and (b) the estimated labor hours of subcontractors engaged to perform work for the project, if labor hours of subcontractors are a significant element in the performance of the contract. A labor-hours method can measure the extent of progress in terms of efforts expended only if substantial efforts of subcontractors are included in the computation. If the contractor is unable to obtain reasonably dependable estimates of subcontractors' labor hours at the beginning of the project and as work progresses, he should not use the labor-hours method.

**49** The various forms of the efforts-expended method generally are based on the assumption that profits on contracts are derived from the contractor's efforts in all phases of operations, such as designing, procurement, and management. Profit is not assumed to accrue merely as a result of the acquisition of material or other tangible items used in the performance of the contract or the awarding of subcontracts. As previously noted, a significant drawback of efforts-expended methods is that the efforts included in the measure may not all be productive.

**50** Measuring progress toward completion based on the ratio of costs incurred to total estimated costs is also an input method. Some of the costs incurred, particularly in the early stages of the contract, should be disregarded in applying this method because they do not relate to con-

<sup>8</sup>ARB 45, paragraph 4, states:

The committee recommends that the recognized income under the percentage-of-completion method be that percentage of estimated total income, either:

(a) that incurred costs to date bear to estimated total costs after giving effect to estimates of costs to complete based upon most recent information, or

(b) that may be indicated by such other measure of progress toward completion as may be appropriate having due regard to work performed.

Costs as here used might exclude, especially during the early stages of a contract, all or a portion of the cost of such items as materials and subcontracts if it appears that such an exclusion would result in a more meaningful periodic allocation of income.

tract performance. These include the costs of items such as uninstalled materials not specifically produced or fabricated for the project or of subcontractors that have not been performed. For example, for construction projects, the cost of materials not unique to the project that have been purchased or accumulated at job sites but that have not been physically installed do not relate to performance.<sup>9</sup> The costs of such materials should be excluded from costs incurred for the purpose of measuring the extent of progress toward completion. Also, the cost of equipment purchased for use on a contract should be allocated over the period of its expected use unless title to the equipment is transferred to the customer by terms of the contract. For production-type contracts, the complement of expensive components (for example, computers, engines, radars, and complex "black boxes") to be installed into the deliverable items may aggregate a significant portion of the total cost of the contract. In some circumstances, the costs incurred for such components, even though the components were specifically purchased for the project, should not be included in the measurement before the components are installed if inclusion would tend to overstate the percentage of completion otherwise determinable.

**51** The acceptability of the results of input or output measures deemed to be appropriate to the circumstances should be periodically reviewed and confirmed by alternative measures that involve observation and inspection. For example, the results provided by the measure used to determine the extent of progress may be compared to the results of calculations based on physical observations by engineers, architects, or similarly qualified personnel. That type of review provides assurance somewhat similar to that provided for perpetual inventory records by periodic physical inventory counts.

#### **Completion Criteria Under the Completed-Contract Method**

**52** As a general rule, a contract may be regarded as substantially completed if remaining costs and potential risks are insignificant in amount. The overriding objec-

tives are to maintain consistency in determining when contracts are substantially completed and to avoid arbitrary acceleration or deferral of income. The specific criteria used to determine when a contract is substantially completed should be followed consistently and should be disclosed in the note to the financial statements on accounting policies. Circumstances to be considered in determining when a project is substantially completed include, for example, delivery of the product, acceptance by the customer, departure from the site, and compliance with performance specifications.

#### **Income Determination—Revenue Elements**

**53** Estimating the revenue on a contract is an involved process, which is affected by a variety of uncertainties that depend on the outcome of a series of future events. The estimates must be periodically revised throughout the life of the contract as events occur and as uncertainties are resolved.

**54** The major factors that must be considered in determining total estimated revenue include the basic contract price, contract options, change orders, claims, and contract provisions for penalties and incentive payments, including award fees and performance incentives. All those factors and other special contract provisions must be evaluated throughout the life of a contract in estimating total contract revenue to recognize revenues in the periods in which they are earned under the percentage-of-completion method of accounting.

#### **Basic Contract Price—General**

**55** The estimated revenue from a contract is the total amount that a contractor expects to realize from the contract. It is determined primarily by the terms of the contract and the basic contract price. Contract price may be relatively fixed or highly variable and subject to a great deal of uncertainty, depending on the type of contract involved. Appendix B describes basic contract types and major variations in the basic types. The total amount of revenue that ultimately will be realized on a contract is often subject to a variety of changing circumstances and accordingly may not be known with certainty until the parties to the contract have fully performed their obligations. Thus, the determination of total estimated revenue requires careful consideration and the exercise of judgment in assessing the probabilities of future outcomes.

**56** Although fixed-price contracts usually provide for a stated con-

tract price, a specified scope of the work to be performed, and a specified performance schedule, they sometimes have adjustment schedules based on application of economic price adjustment (escalation), price redetermination, incentive, penalty, and other pricing provisions. Determining contract revenue under unit-price contracts generally involves the same factors as under fixed-price contracts. Determining contract revenue from a time-and-material contract requires a careful analysis of the contract, particularly if the contract includes guaranteed maximums or assigns markups to both labor and materials; and the determination involves consideration of some of the factors discussed below in regard to cost-type contracts.

#### **Basic Contract Price—Cost-Type Contracts**

**57** Cost-type contracts have a variety of forms (see Appendix B). The various forms may differ on contract terms that affect accounting, such as provisions for reimbursable costs (which are generally spelled out in the contract), overhead recovery percentages, and fees. A fee may be a fixed amount or a percentage of reimbursable costs or an amount based on performance criteria.<sup>10</sup> Generally, percentage fees may be accrued as the related costs are incurred, since they are a percentage of costs incurred, and profits should therefore be recognized as costs are incurred. Cost-type contracts often include provisions for guaranteed maximum total reimbursable costs or target penalties and rewards relating to underruns and overruns of predetermined target prices, completion dates, plant capacity on completion of the project, or other criteria.

**58** One problem peculiar to cost-type contracts involves the determination of the amounts of reimbursable costs that should be reflected as revenue. Under some contracts, particularly service-type contracts, a contractor acts solely in the capacity of an agent (construction manager) and has no risks associated with costs managed. This relationship may arise, for example, if an owner awards a construction management contract to one entity and a construction contract to another. If the contractor, serving as the construction manager, acts solely as an agent, his revenue should include only the fee and should exclude subcontracts negotiated or managed on behalf of the owner and materials purchased on behalf of the owner.

**59** In other circumstances, a contractor acts as an ordinary principle under a cost-type contract. For example, the contractor may be responsible to employees for salaries and wages and to subcontractors and other creditors for materials and services, and he may have the discretionary responsibility to procure and manage the resources in performing the contract. The contractor should include in revenue all reimbursable costs for which he has risk or on which his fee was based at the time of bid or negotiation. In addition, revenue from overhead percentage recoveries and the earned fee should be included in revenue.

#### **Customer-Furnished Materials**

**60** Another concern associated with measuring revenue relates to materials furnished by a customer or purchased by the contractor as an agent for the customer. Often, particularly for large, complex projects, customers may be more capable of carrying out the procurement function or may have more leverage with suppliers than the contractor. In those circumstances, the contractor generally informs the customer of the nature, type, and characteristics or specifications of the materials required and may even purchase the required materials and pay for them, using customer purchase orders and checks drawn against the customer's bank account. If the contractor is responsible for the nature, type, characteristics, or specifications of material that the customer furnishes or that the contractor purchases as an agent of the customer, or if the contractor is responsible for the ultimate acceptability of performance of the project based on such material, the value of those items should be included as contract price and reflected as revenue and costs in periodic reporting of operations. As a general rule, revenues and costs should include all items for which the contractor has an associated risk, including items on which his contractual fee was based.

#### **Change Orders**

**61** Change orders are modifications of an original contract that effectively change the provisions of the contract without adding new provisions. They may be initiated by either the contractor or the customer, and they include changes in specifications or design, method or manner of performance, facilities, equipment, materials, site, and period for completion of the work. Many

<sup>9</sup> The cost of uninstalled materials specifically produced, fabricated, or constructed for a project should be included in the costs used to measure extent of progress. Such materials consist of items unique to a project that a manufacturer or supplier does not carry in inventory and that must be produced or altered to meet the specifications of the project.

<sup>10</sup> Cost-type government contracts with fees based on a percentage of cost are an exception granted under government regulations.

change orders are unpriced; that is, the work to be performed is defined, but the adjustment to the contract price is to be negotiated later. For some change orders, both scope and price may be unapproved or in dispute. Accounting for change orders depends on the underlying circumstances, which may differ for each change order depending on the customer, the contract, and the nature of the change. Change orders should therefore be evaluated according to their characteristics and the circumstances in which they occur. In some circumstances, change orders as a normal element of a contract may be numerous, and separate identification may be impractical. Such change orders may be evaluated statistically on a composite basis using historical results as modified by current conditions. If such change orders are considered by the parties to be a normal element within the original scope of the contract, no change in the contract price is required. Otherwise, the adjustment to the contract price may be routinely negotiated. Contract revenue and costs should be adjusted to reflect change orders approved by the customer and the contractor regarding both scope and price.

**62** Accounting for unpriced change orders depends on their characteristics and the circumstances in which they occur. Under the completed-contract method, costs attributable to unpriced change orders should be deferred as contract costs if it is probable that aggregate contract costs, including costs attributable to change orders, will be recovered from contract revenues. For all unpriced change orders, recovery should be deemed probable if the future event or events necessary for recovery are likely to occur. Some of the factors to consider in evaluating whether recovery is probable are the customer's written approval of the scope of the change order, separate documentation for change order costs that are identifiable and reasonable, and the entity's favorable experience in negotiating change orders, especially as it relates to the specific type of contract and change order being evaluated. The following guidelines should be followed in accounting for unpriced change orders under the percentage-of-completion method.

Costs attributable to unpriced change orders should be treated as costs of contract performance in the period in which the costs are incurred if it is *not* probable that the costs will be recovered through a change in the contract price.

**b** If it is probable that the costs will be recovered through a change in the contract price, the costs should be deferred (excluded from the cost of contract performance) until the parties have agreed on the change in contract price, or, alternatively, they should be treated as costs of contract performance in the period in which they are incurred, and contract revenue should be recognized to the extent of the costs incurred.

**e** If it is probable that the contract price will be adjusted by an amount that exceeds the costs attributable to the change order and the amount of the excess can be reliably estimated, the original contract price should also be adjusted for that amount when the costs are recognized as costs of contract performance if its realization is probable. However, since the substantiation of the amount of future revenue is difficult, revenue in excess of the costs attributable to unpriced change orders should only be recorded in circumstances in which realization is assured beyond a reasonable doubt, such as circumstances in which an entity's historical experience provides such assurance or in which an entity has received a bona fide pricing offer from a customer and records only the amount of the offer as revenue.

**63** If change orders are in dispute or are unapproved in regard to both scope and price, they should be evaluated as claims (see paragraphs 65 to 67).

#### **Contract Options and Additions**

**64** An option or an addition to an existing contract should be treated as a separate contract in any of the following circumstances:

**a** The product or service to be provided differs significantly from the product or service provided under the original contract.

**b** The price of the new product or service is negotiated without regard to the original contract and involves different economic judgments.

**c** The products or services to be provided under the exercised option or amendment are similar to those under the original contract, but the contract price and anticipated contract cost relationship are significantly different.

However, even if the separate contract does not meet any of these conditions, it may be combined with the original contract if the contracts meet the criteria in paragraph 37 or 38. Exercised options or additions that do not meet the criteria for treatment as separate contracts or as separate contracts combined with the original

contracts should be treated as change orders on the original contracts.

#### **Claims**

**65** Claims are amounts in excess of the agreed contract price (or amounts not included in the original contract price) that a contractor seeks to collect from customers or others for customer-caused delays, errors in specifications and designs, contract terminations, change orders in dispute or unapproved as to both scope and price, or other causes of unanticipated additional costs. Recognition of amounts of additional contract revenue relating to claims is appropriate only if it is probable that the claim will result in additional contract revenue and if the amount can be reliably estimated. Those two requirements are satisfied by the existence of all the following conditions:

**a** The contract or other evidence provides a legal basis for the claim; or a legal opinion has been obtained, stating that under the circumstances there is a reasonable basis to support the claim.

**b** Additional costs are caused by circumstances that were unforeseen at the contract date and are not the result of deficiencies in the contractor's performance.

**c** Costs associated with the claim are identifiable or otherwise determinable and are reasonable in view of the work performed.

**d** The evidence supporting the claim is objective and verifiable, not based on management's "feel" for the situation or on unsupported representations.

If the foregoing requirements are met, revenue from a claim should be recorded only to the extent that contract costs relating to the claim have been incurred. The amounts recorded, if material, should be disclosed in the notes to the financial statements. Costs attributable to claims should be treated as costs of contract performance as incurred.

**66** However, a practice such as recording revenues from claims only when the amounts have been received or awarded may be used. If that practice is followed, the amounts should be disclosed in the notes to the financial statements.

**67** If the requirements in paragraph 65 are not met or if those requirements are met but the claim exceeds the recorded contract costs, a contingent asset should be disclosed in accordance with FASB Statement no. 5, paragraph 17.

#### **Income Determination**

##### **—Cost Elements**

**68** Contract costs must be identified, estimated, and accumulated with a reasonable degree of accuracy in determining income

earned. At any time during the life of a contract, total estimated contract cost consists of two components: costs incurred to date and estimated cost to complete the contract. A company should be able to determine costs incurred on a contract with a relatively high degree of precision, depending on the adequacy and effectiveness of its cost accounting system. The procedures or systems used in accounting for costs vary from relatively simple, manual procedures that produce relatively modest amounts of detailed analysis to sophisticated, computer-based systems that produce a great deal of detailed analysis. Despite the diversity of systems and procedures, however, an objective of each system or of each set of procedures should be to accumulate costs properly and consistently by contract with a sufficient degree of accuracy to assure a basis for the satisfactory measurement of earnings.

#### **Contract Costs**

**69** Contract costs are accumulated in the same manner as inventory costs and are charged to operations as the related revenue from contracts is recognized. Contract costs generally include all direct costs, such as materials, direct labor, and subcontracts, and indirect costs identifiable with or allocable to the contracts. However, practice varies for certain types of indirect costs considered allocable to contracts, for example, support costs (such as central preparation and processing of job payrolls, billing and collection costs, and bidding and estimating costs).

**70** Authoritative pronouncements requiring pronouncements account costs to be considered period costs if they cannot be clearly related to production, either directly or by an allocation based on their discernible future benefits.

**71** Income is recognized over the term of the contract under the percentage-of-completion method or is recognized as units are delivered under the units-of-delivery modification and is deferred until performance is substantially complete under the completed-contract method. None of the characteristics peculiar to those methods, however, require accounting for contract costs to deviate in principle from the basic framework established in existing authoritative literature applicable to inventories or business enterprises in general.

**72** A contracting entity should apply the following general principles in accounting for costs of construction-type and those production-type contracts covered by

this statement. The principles are consistent with generally accepted accounting principles for inventory and production costs in other areas, and their application requires the exercise of judgment.

**a** All direct costs, such as material, labor, and subcontracting costs, should be included in contract costs.

**b** Indirect costs allocable to contracts include the costs of indirect labor, contract supervision, tools and equipment, supplies, quality control and inspection, insurance, repairs and maintenance, depreciation and amortization, and, in some circumstances, support costs, such as central preparation and processing of payrolls. For government contractors, other types of costs that are allowable or allocable under pertinent government contract regulations may be allocated to contracts as indirect costs if otherwise allowable under GAAP.<sup>11</sup> Methods of allocating indirect costs should be systematic and rational. They include, for example, allocations based on direct labor costs, direct labor hours, or a combination of direct labor and material costs. The appropriateness of allocations of indirect costs and of the methods of allocation depend on the circumstances and involve judgment.

**c** General and administrative costs ordinarily should be charged to expense as incurred but may be accounted for as contract costs under the completed-contract method of accounting<sup>12</sup> or, in some circumstances, as indirect contract costs by government contractors.<sup>13</sup>

**d** Selling costs should be excluded from contract costs and charged to expense as incurred

unless they meet the criteria for precontract costs in paragraph 75. **e** Costs under cost-type contracts should be charged to contract costs in conformity with generally accepted accounting principles in the same manner as costs under other types of contracts because unrealistic profit margins may result in circumstances in which reimbursable cost accumulations omit substantial contract costs (with a resulting larger fee) or include substantial unallocable general and administrative costs (with a resulting smaller fee).

**f** In computing estimated gross profit or providing for losses on contracts, estimates of cost to complete should reflect all of the types of costs included in contract costs.

**g** Inventoriable costs should not be carried at amounts that when added to the estimated cost to complete are greater than the estimated realizable value of the related contracts.

Interest costs should be accounted for in accordance with FASB Statement no. 34, *Capitalization of Interest Cost*.

#### Precontract Costs

**73** In practice, costs are deferred in anticipation of future contract sales in a variety of circumstances. The costs may consist of (a) costs incurred in anticipation of a specific contract that will result in no future benefit unless the contract is obtained (such as the costs of mobilization, engineering, architectural, or other services incurred on the basis of commitments or other indications of interest in negotiating a contract), (b) costs incurred for assets to be used in connection with specific anticipated contracts (for example, costs for the purchase of production equipment, materials, or supplies), (c) costs incurred to acquire or produce goods in excess of the amounts required under a contract in anticipation of future orders for the same item, and (d) learning, start-up, or mobilization costs incurred for anticipated but unidentified contracts.

**74** Learning or start-up costs are sometimes incurred in connection with the performance of a contract or a group of contracts. In some circumstances, follow-on or future contracts for the same goods or services are anticipated. Such costs usually consist of labor, overhead, rework, or other special costs that must be incurred to complete the existing contract or contracts in progress and are distinguished from research and development costs.<sup>14</sup>

A direct relationship between such costs and the anticipated future contracts is often difficult to establish, and the receipt of future contracts often cannot reasonably be anticipated.

**75** The division recommends the following accounting for precontract costs:

**a** Costs that are incurred for a specific anticipated contract and that will result in no future benefits unless the contract is obtained should not be included in contract costs in inventory before the receipt of the contract. However, such costs may be otherwise deferred, subject to evaluation of their probable recoverability, but only if the costs can be directly associated with a specific anticipated contract and if their recoverability from that contract is probable.

**b** Costs incurred for assets, such as costs for the purchase of materials, production equipment, or supplies, that are expected to be used in connection with anticipated contracts may be deferred outside the contract cost or inventory classification if their recovery from future contract revenue or from other dispositions of the assets is probable.

**c** Costs incurred to acquire or produce goods in excess of the amounts required for an existing contract in anticipation of future orders for the same items may be treated as inventory if their recoverability is probable.

**d** Learning or start-up costs incurred in connection with existing contracts and in anticipation of follow-on or future contracts for the same goods or services should be charged to existing contracts.<sup>15</sup>

**e** Costs appropriately deferred in anticipation of a contract should be included in contract costs on the receipt of the anticipated contract.

**f** Costs related to anticipated contracts that are charged to expenses as incurred because their recovery is not considered probable should not be reinstated by a credit to income on the subsequent receipt of the contract.

#### Cost Adjustments Arising from Back Charges

**76** Back charges are billings for work performed or costs incurred by one party that, in accordance with the agreement, should have been performed or incurred by the party to whom billed. These frequently are disputed items. For example, owners bill back charges to general contractors, and gen-

eral contractors bill back charges to subcontractors. Examples of back charges include charges for cleanup work and charges for a subcontractor's use of a general contractor's equipment.

**77** A common practice is to net back charges in the estimating process. The division recommends the following procedures in accounting for back charges:

Back charges to others should be recorded as receivables and, to the extent considered collectible, should be applied to reduce contract costs. However, if the billed party disputes the propriety or amount of the charge, the back charge is in effect a claim, and the criteria for recording claims apply.

Back charges from others should be recorded as payables and as additional contract costs to the extent that it is probable that the amounts will be paid.

#### Estimated Cost to Complete

**78** The estimated cost to complete, the other component of total estimated contract cost, is a significant variable in the process of determining income earned and is thus a significant factor in accounting for contracts. The latest estimate may be determined in a variety of ways and may be the same as the original estimate. Practices in estimating total contract costs vary, and guidance is needed in this area because of the impact of those practices on accounting. The following practices should be followed:

A systematic and consistent procedures that are correlated with the cost accounting system should be used to provide a basis for periodically comparing actual and estimated costs.

In estimating total contract costs, the quantities and prices of all significant elements of cost should be identified.

The estimating procedures should provide that estimated cost to complete includes the same elements of cost that are included in actual accumulated costs; also, those elements should reflect expected price increases.

The effects of future wage and price escalations should be taken into account in cost estimates, especially when the contract performance will be carried out over a significant period of time. Escalation provisions should not be blanket overall provisions but should cover labor, materials, and indirect costs based on percentages or amounts that take into consideration experience and other pertinent data.

Estimates of cost to complete should be reviewed periodically and revised as appropriate to reflect new information.

<sup>11</sup>The AICPA industry audit guide, *Audits of Government Contractors*, states, "Practice varies among government contractors as to the extent to which costs are included in inventory. Some contractors include all direct costs and only certain indirect costs. . . . Other contractors record in inventory accounts all costs identified with the contract including allocated general and administrative . . . expenses." The guide points out that many accountants believe that the practice of allocating general and administrative expenses to contract costs, which is permitted under the completed-contract method by ARB 45, paragraph 10, may appropriately be extended to government contractors because they believe that "all costs under the contract are directly associated with the contract revenue, and both should be recognized in the same period."

<sup>12</sup>Paragraph 10 of ARB 45, *Long-Term Construction-Type Contracts*, states, "When the completed-contract method is used, it may be appropriate to allocate general and administrative expenses to contract costs rather than to periodic income. This may result in a better matching of costs and revenues than would result from treating such expenses as period cost, particularly in years when no contracts were completed."

<sup>13</sup>See the discussion of the AICPA industry audit guide, *Audits of Government Contractors*, in footnote 11.

<sup>14</sup>Statement of Financial Accounting Standards no. 2, *Accounting for Research and Development Costs*, requires that research and development costs be charged to expense when incurred.

<sup>15</sup>See footnote 3, which indicates that the division is preparing a statement of position on program accounting for consideration by the FASB.

## Computation of Income Earned for a Period Under the Percentage-of-Completion Method

79 Total estimated gross profit on a contract, the difference between total estimated contract revenue and total estimated contract cost, must be determined before the amount earned on the contract for a period can be determined. The portion of total revenue earned or the total amount of gross profit earned to date is determined by the measurement of the extent of progress toward completion using one of the methods discussed in paragraphs 44 to 51 of this statement. The computation of income earned for a period involves a determination of the portion of total estimated contract revenue that has been earned to date (earned revenue) and the portion of total estimated contract cost related to that revenue (cost of earned revenue). Two different approaches to determining earned revenue and cost of earned revenue are widely used in practice. Either of the alternative approaches may be used on a consistent basis.<sup>16</sup>

### Alternative A

80 The advocates of this method believe that the portion of total estimated contract revenue earned to date should be determined by the measurement of the extent of progress toward completion and that, in accordance with the matching concept, the measurement of extent of progress toward completion should also be used to allocate a portion of total estimated contract cost to the revenue recognized for the period. They believe that this procedure results in reporting earned revenue, cost of earned revenue, and gross profit consistent with the measurement of contract performance. Moreover, they believe that, if there are no changes in estimates during the performance of a contract, the procedure also results in a consistent gross profit percentage from period to period. However, they recognize that a consistent gross profit percentage is rarely obtained in practice because of the need to be responsive in the accounting process to changes in estimates of contract revenues, costs, earned revenue, and gross profits. In accordance with this procedure, earned revenue, cost of earned revenue, and gross profit should be determined as follows:

*A Earned Revenue* to date should be computed by multiplying total estimated contract revenue by the

percentage of completion (as determined by one of the acceptable methods of measuring the extent of progress toward completion). The excess of the amount over the earned revenue reported in prior periods is the earned revenue that should be recognized in the income statement for the current period.

*b Cost of Earned Revenue* for the period should be computed in a similar manner. Cost of earned revenue to date should be computed by multiplying total estimated contract cost by the percentage of completion on the contract. The excess of that amount over the cost of earned revenue reported in prior periods is the cost of earned revenue that should be recognized in the income statement for the current period. The difference between total cost incurred to date and cost of earned revenue to date should be reported on the balance sheet.

*c Gross Profit* on a contract for a period is the excess of earned revenue over the cost of earned revenue.

### Alternative B

81 The advocates of this method believe that the measurement of the extent of progress toward completion should be used to determine the amount of gross profit earned to date and that the earned revenue to date is the sum of the total cost incurred on the contract and the amount of gross profit earned. They believe that the cost of work performed on a contract for a period, including materials, labor, subcontractors, and other costs, should be the cost of earned revenue for the period. They believe that the amount of costs incurred can be objectively determined, does not depend on estimates, and should be the amount that enters into the accounting determination of income earned. They recognize that, under the procedure that they advocate, gross profit percentages will vary from period to period unless the cost-to-cost method is used to measure the extent of progress toward completion. However, they believe that varying profit percentages are consistent with the existing authoritative literature when costs incurred do not provide an appropriate measure of the extent of progress toward completion. In accordance with Alternative B, earned revenue, cost of earned revenue, and gross profit are determined as follows:

*a Earned Revenue* is the amount of gross profit earned on a contract for a period plus the costs incurred on the contract during the period.

*b Cost of Earned Revenue* is the cost incurred during the period, excluding the cost of materials not

unique to a contract that have not been used for the contract and costs incurred for subcontracted work that is still to be performed.

*c Gross Profit* earned on a contract should be computed by multiplying the total estimated gross profit on the contract by the percentage of completion (as determined by one of the acceptable methods of measuring extent of progress toward completion). The excess of that amount over the amount of gross profit reported in prior periods is the earned gross profit that should be recognized in the income statement for the current period.

### Revised Estimates

82 Adjustments to the original estimates of the total contract revenue, total contract cost, or extent of progress toward completion are often required as work progresses under the contract and as experience is gained, even though the scope of the work required under the contract may not change. The nature of accounting for contracts is such that refinements of the estimating process for changing conditions and new developments are continuous and characteristic of the process. Additional information that enhances and refines the estimating process is often obtained after the balance sheet date but before the issuance of the financial statements; such information should result in an adjustment of the unused financial statements. Events occurring after the date of the financial statements that are outside the normal exposure and risk aspects of the contract should not be considered refinements of the estimating process of the prior year but should be disclosed as subsequent events.

83 Revisions in revenue, cost, and profit estimates or in measurements of the extent of progress toward completion are changes in accounting estimates as defined in APB Opinion 20, *Accounting Changes*.<sup>17</sup> That opinion has been interpreted to permit the following two alternative methods of accounting for changes in accounting estimates:

*Cumulative Catch-up*. Account for the change in estimate in the period of change so that the balance sheet at the end of the period of change and the accounting in subsequent periods are as they would have been if the revised estimate had been the original estimate.

<sup>17</sup>Paragraph 31 of APB Opinion 20, *Accounting Changes*, requires that "the effect of a change in accounting estimate should be accounted for in (a) the period of change if the change affects that period only or (b) the period of change and future periods if the change affects both."

*Reallocation*. Account for the effect of the change ratably over the period of change in estimate and subsequent periods.

Although both methods are used in practice to account for changes in estimates of total revenue, total costs, or extent of progress under the percentage-of-completion method, the cumulative catch-up method is more widely used. Accordingly, to narrow the areas of differences in practice, such changes should be accounted for by the cumulative catch-up method.

84 Although estimating is a continuous and normal process for contractors, the second sentence of APB Opinion 20, paragraph 33, recommends disclosure of the effect of significant revisions if the effect is material.<sup>18</sup>

### Provisions for Anticipated Losses on Contracts

85 When the current estimates of total contract revenue and contract cost indicate a loss, a provision for the entire loss on the contract should be made. Provisions for losses should be made in the period in which they become evident under either the percentage-of-completion method or the completed-contract method. If a group of contracts are combined based on the criteria in paragraph 37 or 38, they should be treated as a unit in determining the necessity for a provision for a loss. If contracts are segmented based on the criteria in paragraph 40, 41, or 42 of this statement, the individual segments should be considered separately in determining the need for a provision for a loss.

86 Losses on cost-type contracts, although less frequent, may arise if, for example, a contract provides for guaranteed maximum reimbursable costs or target penalties. In recognizing losses for accounting purposes, the contractor's normal cost accounting methods should be used in determining the total cost overrun on the contract, and losses should include provisions for performance penalties.

87 The costs used in arriving at the estimated loss on a contract should include all costs of the type allocable to contracts under paragraph 72 of this statement. Other factors that should be considered

<sup>18</sup>APB Opinion 20, paragraph 33, states, "The effect on income before extraordinary items, net income and related per share amounts of the current period should be disclosed for a change in estimate that affects several future periods, such as a change in service lives of depreciable assets or actuarial assumptions affecting pension costs. Disclosure of the effect on those income statement amounts is not necessary for estimates made each period in the ordinary course of accounting for items such as uncollectible accounts or inventory obsolescence; however, disclosure is recommended if the effect of a change in the estimate is material."

<sup>16</sup>The use of Alternative A in the discussion and in the presentation of some of the provisions of this statement is for convenience and consistency and is not intended to imply that Alternative A is the preferred approach.

in arriving at the projected loss on a contract include target penalties and rewards, nonreimbursable costs on cost-plus contracts, change orders, and potential price redeterminations. In circumstances in which general and administrative expenses are treated as contract costs under the completed-contract method of accounting, the estimated loss should include the same types of general and administrative expenses.

88 The provision for loss arises because estimated cost for the contract exceeds estimated revenue. Consequently, the provision for loss should be accounted for in the income statement as an additional contract cost rather than as a reduction of contract revenue, which is a function of contract price, not cost. Unless the provision is material in amount or unusual or infrequent in nature, the provision should be included in contract cost and need not be shown separately in the income statement. If it is shown separately, it should be shown as a component of the cost included in the computation of gross profit.

89 Provisions for losses on contracts should be shown separately as liabilities on the balance sheet, if significant, except in circumstances in which related costs are accumulated on the balance

sheet, in which case the provisions may be deducted from the related accumulated costs. In a classified balance sheet, a provision shown as a liability should be shown as a current liability.

#### Transition

90 An accounting change from the completed-contract method or from the percentage-of-completion method to conform to the recommendations of this statement of position should be made retroactively by restating the financial statements of prior periods. The restatement should be made on the basis of current information if historical information is not available. If the information for restatement of prior periods is not available on either a historical or current basis, financial statements and summaries should be restated for as many consecutive prior periods preceding the transition date of this statement as is practicable, and the cumulative effect on the retained earnings at the beginning of the earliest period restated (or at the beginning of the period in which the statement is first applied if it is not practicable to restate any prior periods) should be included in determining net income for that period (see paragraph 20 of APB Opinion 20, *Accounting Changes*).

91 Accounting changes to conform to the recommendations of this statement of position, other than those stated in paragraph 90, should be made prospectively for contracting transactions, new contracts, and contract revisions entered into on or after the effective date of this statement. The division recommends the application of the provisions of this statement for fiscal years, and interim periods in such fiscal years, beginning after June 30, 1981. The division encourages earlier application of this statement, including retroactive application to all contracts regardless of when they were entered into. Disclosures should be made in the financial statements in the period of change in accordance with APB Opinion 20, paragraph 28.

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## Statement of Position No. 81-2—Reporting Practices Concerning Hospital-Related Organizations\*

### Proposal to the Financial Accounting Standards Board to Amend AICPA Industry Audit Guide Hospital Audit Guide

**Note:** The American Institute of Certified Public Accountants has issued a series of industry-oriented audit guides that present recommendations on auditing procedures and auditors' reports and, in some instances, an accounting principles, and a series of accounting guides that present recommendations on accounting principles. Based on experience in the application of these guides, AICPA committees, subcommittees, or task forces may from time to time conclude that it is desirable to change a guide. A statement of position is used to revise or clarify certain of the recommendations in the guide to which it relates. A statement of position represents the considered judgment of the responsible AICPA committee, subcommittee, or task force.

To the extent that a statement of position is concerned with

auditing procedures and auditors' reports, its degree of authority is the same as that of the audit guide to which it relates. As to such matters, members should be aware that they may be called upon to justify departures from the recommendations of the committee, subcommittee, or task force.

To the extent that a statement of position relates to standards of financial accounting or reporting (accounting principles), the recommendations of the committee, subcommittee, or task force are subject to ultimate disposition by the Financial Accounting Standards Board. The recommendations are made for the purpose of urging the FASB to promulgate standards that the committee, subcommittee, or task force believes will be in the public interest.

*For reasons of space, Appendices A, "Sample Hospital Foundation"; B, "Related Party Transactions"; and C, "Summary of Requirements of the Hospital" have been omitted.*

### Reporting Practices Concerning Hospital-Related Organizations

1 In recent years there has been an increasing trend toward the creation of separate organizations, frequently referred to as foundations, to raise and hold certain funds for hospitals.

2 Those organizations appear to have been created to broaden the philanthropic base of hospitals and to preserve discretionary funds to support desired programs. There is a growing fear that governmental programs and controls will require the expenditure of such funds to subsidize nondiscretionary services. Organizers of separate fund-raising entities hope that exposure of the funds to such threats may be avoided, or at least lessened, by the use of separate organizations.

3 Some people believe that the financial statements of the separate organizations should not be combined with those of the related hospitals because combining them would result in a requirement to use contributed discretionary funds to defray a portion of the

costs of care for patients who are covered by programs such as Medicare, Medicaid, and Blue Cross. Others share that concern but believe that it should be dealt with independently of accounting considerations and that accounting and reporting should be determined without reference to those potential effects.

4 There is also concern that, if the form of the combination reflects the unrestricted resources of the related organization as unrestricted resources of the hospital, the difference in the availability of the related organization's resources because of its separate legal status would not be clearly disclosed.

5 The AICPA's *Hospital Audit Guide* presently calls for combined financial reporting for related organizations "if significant resources or operations of a hospital are handled by such organizations . . . [and they] are under control of (or common control with) hospitals. . . ." However, the guide does not give sufficient guidance about what constitutes "control" or "hospital resources." As a consequence, a variety of reporting practices are being followed, and the financial statements of some related organizations are combined with