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SACQSP
CPD PROGRAMME
12/03
3 Hours

THE SOUTH AFRICAN COUNCIL FOR THE QUANTITY SURVEYING PROFESSION

PROGRAMMES FOR CONTINUOUS PROFESSIONAL DEVELOPMENT: (CPD)

AN INVESTIGATION OF THE PARTIES RESPONSIBLE FOR DELAYS IN THE SOUTH AFRICAN CONSTRUCTION INDUSTRY

by

S. Gabriel and N. Harinarain

UNIVERSITY OF KWAZULU-NATAL, DURBAN

The South African Council
for the
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MODULE OUTLINE

			MODULE ID 12/03		**SACQSP CPD PROGRAMME**
AUTHOR'S DETAILS:					
Name:	S. Gabriel and N. Harinarain C/o The Registrar, SACQSP				
Address:	PO Box 654 Halfway House 1685				
Telephone:	3122560	Fax:	3122562	Code:	011
E-mail:	registrar@sacqsp.co.za				
TITLE	**AN INVESTIGATION OF THE PARTIES RESPONSIBLE FOR DELAYS IN THE SOUTH AFRICAN CONSTRUCTION INDUSTRY** **(This paper was delivered at SACQSP Research Conference: QS 20/20 VISION BEYOND 2010 on 10th October 2008. Midrand, South Africa)**				
SHORT SYNOPSIS:	The paper is important because it identifies the most important causes of delays and the parties that may be responsible for delays and the possible corrective actions that are available				
GOALS	**After completion of modules learners should be able to:** ▪ Understand the causes of delays and parties that may be responsible ▪ Identify the most important causes of delays and implement possible solutions and corrective action				
OUTCOMES	**After reading the modules learners should** be informed about the causes of delays and risks related to parties that may influence delays and how delay problems can be addressed				
PREREQUISITES/ SKILL LEVEL:	Learners should have had exposure through experience or prior learning to the built environment and contract practice				
MATERIAL OR EQUIPMENT NEEDED:	The attached module material				

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LEARNER WORKLOAD:		
	Sections of the syllabus	**Duration**
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	3. Study	½ hour
	4. Evaluation (Tests at back of this module)	½ hour
	Total duration	**3 hours**
ASSIGNMENTS	Learners must work through the module and develop some self-assessment questions and do them for own reference and knowledge	
	Evaluation: See Addendum A at back of this module	
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AN INVESTIGATION OF THE PARTIES RESPONSIBLE FOR DELAYS IN THE SOUTH AFRICAN CONSTRUCTION INDUSTRY.

Gabriel, S1, Harinarain, N2

School of Civil Engineering, Surveying & Construction, Faculty of Engineering, University of KwaZulu-Natal, Durban, South Africa. 1203501507@ukzn.ac.za. 2Harinarain@ukzn.ac.za. Tel. No. 0312602687.

ABSTRACT

Purpose of this paper –The construction industry is subject to numerous changes which often cause delays in a construction project that leads to ripple effects on the entire construction process. This paper aims to investigate the most significant and frequent delays in the South African construction industry and consequently the party responsible for such delays.

Methodology/Scope – This aim was achieved by meeting three objectives. Firstly, all possible delays occurring in the South African construction industry were identified by conducting an intensive literature review. Secondly, the identified delays were refined and new possible delays were added by conducting questionnaires. The third step involved ranking and analysing the identified delays by conducting interviews with building contractors and professionals and finally interviews were used to determine where the responsibility lies. For the purpose of this paper, qualitative and quantitative data have been collected, analysed and interpreted.

Findings – A list of 190 causes of delays were reviewed and refined by building contractors and professionals and a new delay of not incorporating value engineering was added to the list. In light of the responses of the interviews conducted, it can be concluded that delays can be allocated into various categories. Delays can now also be categorised in terms of responsibility for example client-related, contractor related, engineer related, etc. The most important delays have also been identified by professionals and contractors in the industry and commented on.

Practical Implications – Previous international literature identified delays and categorised them into groups. A comparison of international literature to South Africa will form an important and enlightening aspect of this paper as an important delay in Turkey might be inconsequential to South Africa. Based on a review of the available literature it is the intention of this paper to draw attention to such matters and consequently, determining who is responsible so that solutions can be found.

Value – An investigation of this nature is relevant as the contractor is held responsible for the majority of delays resulting in penalties. This paper will consider all possible delays in the industry and the responsible party. This will enable corrective action to take place to minimise delays in construction.

Keywords – delay, building contractor, extensions of time, responsible parties.

1. INTRODUCTION

Time is crucial for building contractors and consequently clients and contractors are continually seeking compensation when the contract overruns its completion date. The situation of delays in the construction process frequently leads to disputes regarding claims for additional time and additional expenses (Finsen, 1999). However, the question that can be asked is what are the causes of such delays?

This paper intends to provide a forward-thinking view for quantity surveying professionals to use this research as a guideline to mitigate construction disputes regarding delays. The responsible party(s) can be immediately deal with in a fair and equitable manner. Currently construction projects have been experiencing delays that can lead to a project's detriment. For example the Moses Mabida Stadium and the King Shaka Airport have experienced delays due to strikes and International Federation of Football Association (FIFA) were concerned that South Africa would not be ready to host the 2010 Soccer World Cup (Sapa, 2008). The outcome of this paper can help realign business and planning strategies regarding delays so that after 2010 delays can be minimized as responsibility can be appropriately assigned and lengthy disputes can be shortened.

Marais and Martin (2008) investigated delays and its potential to reduce situations resulting in claims and losses. The researchers specifically focused their study on delays due to inclement weather. This research was conducted where a specific type of delay has been investigated and what impact it had on the South African construction industry. However, to date there has been no research in the identification and ranking of the most frequent delays in construction. The question that can be asked is who are the primary contributors of delays in the South African construction industry?

If responsibility of delays can be appropriately and fairly dealt with, it could possibly eliminate lengthy disputes which arise from the determination of extension of time (Rubin *et al.* 1992). This will minimise long arbitration processes and avoid litigation.

International researchers Long *et al.* (2004), Odeh and Battaineh (2002), Kumaraswamy and Chan (1998) and Majid and McCaffer (1998) identified delays and categorised them into groups. Some of the groups used were contractor related, client related, labour related, etc. A comparison of international literature to South Africa formed an important and enlightening aspect of this paper as an important delay in Turkey might be inconsequential to South Africa. Based on a review of the available literature it is the intention of this paper to draw attention to such matters, determining who is responsible and recommending solutions to minimising delays and improve maintenance of delays.

1.2. Objectives of the paper

The main objectives of this paper were:

- To identify all possible delays occurring in South Africa by conducting an intensive literature review.
- To refine the list of delays obtained from the literature review and add new possible delays occurring in the South African construction industry categories by handing out questionnaires to building contractors and professionals.
- To analyse the causes of delays for the responsible party(s) and rank the identified delays by conducting interviews with building contractors and professionals for industry comments and criticisms.

2. LITERATURE REVIEW

Arditi *et al.* (1985) concluded that the effects of construction delays are not confined to the construction industry and have far reaching effects on Turkey's overall economy as construction investments account for almost half of all investments. The focus of the study was to investigate the direct bearing of construction delays on a number of industries, services and professions. One of the main reasons for delays was the shortages of resources such as qualified manpower, technical personnel, construction materials and equipment.

Nigerian researchers Aibinu *et al.* (2002) studied the effects of delays in construction and concluded that cost was a cause of delay in construction. Research of causes and effects of delays was undertaken in Malaysia by Sambasivan and Soon (2007), who identified the main delay as contractors' improper planning. Jordanian researchers Odeh and Battaineh (2002) concluded that for contractors, labour productivity was the most important delay factor and for consultants inadequate contractor experience was the highest on the list while Nigerian researchers, Aibinu and Jagboro (2002) discovered that cost overruns and time overruns were the most frequent effects of delays occurring in Nigeria.

2.1. Types of delays

Delays can be grouped into various categories and Anthill and Woodhead (1990) divided time overruns (delays) into three categories:

1. Those over which neither party to contract has any control;
2. Those over which the construction owner (or his/her representative) has control;
3. Those over which the contractor (or any subcontractor) has control.

It is generally recognised that delays of type 1 are part of the contractor's normal and legitimate monetary risk, and hence should give neither party grounds for monetary recompense, but that the contract completion date should be extended in order to protect contractors from liquidated damages claims for late completion. It also recognised that for delays for type 2 the contractor should receive fair and reasonable recompense (cost and time), whereas for type 3 delays the contractor must bear full responsibility (Kaming *et al.*, 1997).

In New Delhi, India, Iyer *et al.* (2007) stated that the delay occurring in a project can be classified into a number of types depending upon the stages at which it occurs as well as the outcome, i.e., claims. This defines the criticality of the delay in the overall project completion and its impact thereafter.

The consideration to excuse or not to excuse would depend on several factors such as whether a party can or cannot foresee the situation causing delay at the time of entering into the contract; and the impact of delay on project performance. This led to the classification of delays as 'excusable' or 'non-excusable'. The *excusability* of a delay refers to the allowance of a time extension while the *compensability* refers to ability of the contractor to recover any appropriate costs. The abovementioned categories are a result of the possible combinations of excusability and compensability factors (Alaghbari *et al.*, 2007; Iyer *et al.*, 2007; Abdul-Rahman *et al.*, 2006; Williams, 2003; Zack Jr., 2000; Al-Saggaf, 1998 ; Rubin *et al.*, 1992).

Delays in the building contracts were analysed and the following categorises of delays were established:

A. Excusable delays

Rubin *et al.* (1992) states these are delays that are not caused by the contractor and for which the contractor is entitled to an extension of time under the contract. In order to be excusable in the technical sense, that is to warrant an extension of contract time or other recovery, the delay must be on the critical path for completion of the job. In simpler terms, the delay must directly affect the ultimate completion of the job. Correspondingly, if the delay, whatever the cause, is not on the critical path, thereby not affecting the ultimate completion date of the work, there will be no compensation.

Weather is often regarded as an excusable delay that justifies a time extension under the contract. Contract clauses often speak of "abnormal" or "unusually severe" weather, or in some cases weather that is "unforeseeable." The contractor must prove that these descriptive terms apply if he wishes a time extension to be granted (Rubin *et al.,* 1992). Researchers, Kumaraswamy and Chan (2002) and Al-Momani (2000) of Hong Kong and Jordan respectively indicated that inclement weather was one of the major causes of delays in Jordan. Sullivan and Harris (1986) as cited by Ogunlana *et al*., (1996) stated that in the United Kingdom, inclement weather accounted for 19% of the delays and in Saudi Arabia the hot weather effect on construction activities was ranked fifth according to the relative importance index carried out by Assaf and Al-Hejji (2006).

Construction is exposed to climatic extremes, which vary with the geographical location of the project (Kaming *et al.,* 1997). South Africa is located at the southern tip of Africa and generally has a temperate climate, due in part to it being surrounded by the Atlantic and Indian Oceans on three sides. It is located in the climatically milder southern hemisphere. Due to this varied topography and oceanic influence, a great variety of climatic zones exist (Wikepedia, 2008). Rain would definitely stop works and the hot weather is not problem free which result in weather being regarded as a major delay for construction projects. Marais and Martin (2008) in their investigation of improving the understanding and the usage of programming methods dealing with anticipated weather delays in South Africa stated that weather conditions have ripple effects on other construction durations such as the productivity of equipment and labour and impacts on the safety measures to be taken at the time. It essentially determines the sequence of building activities.

B. Non excusable delays

Rubin *et al.* (1992) states these delays are caused by the contractor. It includes failure to coordinate work, too few men on the job, equipment furnished by the contractor that is late, low productivity, defective work that must be replaced or removed, etc. Such delays are compensable to the owner in the form of liquidated or actual damages paid by the contractor for late completion, or could be the basis for contract termination by the owner or for an order to accelerate the work.

An example of a non excusable delay is the occurrence of site accidents. Because construction sites are regarded as one the most dangerous workplaces, safety is of the utmost importance. Construction sites are complex and risky due to work at heights, complicated on site plants and equipment operation, techniques, materials and hazards which also increase the probability of accidents (Choudry and Fang, 2008; Teo *et al.,* 2005; Baxendale and Jones, 2000).

C. Excusable / compensable delays

These are delays due to act or omission of the owner, for example, lack of site access or late arrival of owner-furnished material and equipment. In such cases the contractor would be entitled to compensation for extra costs incurred unless there is an enforceable contract clause barring such recovery (Al-Saggaf, 1998; Rubin *et al.,* 1992).

According to Arain *et al.,* (2006) and Arain and Pheng (2005) change orders or variations are inevitable in construction projects as the needs of the owner changes. This can impact upon the course of design or construction. These client-initiated changes can lead to variations in drawings and contract documents, ultimately leading to a change in the contract price or contract schedule. This

brings about unnecessary contract negotiations that are time consuming and resulting in the project completion date being extended. Hsieh, *et al.* (2004) in discussing metropolitan public works in Taipei, Taiwan confidently state that cost and time overruns are often the direct product of mismanagement of changes.

D. Excusable/non-compensable

These types of delay cannot be attributable to either the client or contractor and time extension is the only remedy for these types of delays.

However, on a typical construction project, delays do not always fall into the above-mentioned categories. Quite often there are multiple factors that cause or contribute to delays. These are called concurrent delays. This term is used to describe two or more delays that occur at the same time, each of which if it had occurred alone would have affected the ultimate completion date. In order to analyse these types of overlapping delays a critical path method chart or some other kind of visual representation of job progress is needed as they can be difficult to sort out (Yates and Epstein, 2006; Rubin *et al.*, 1992).

3. RESEARCH METHODOLOGY

This paper was to identify the responsible party(s) contributing to the causes of delays during the construction process. This involved conducting firstly a comprehensive literature review and identifying all the possible causes of delays occurring in South Africa. A questionnaire was then sent to building contractors and professionals to obtain any additional delays occurring and thereafter interviews that analysed and ranked the identified delays as well as any comments and criticisms and lastly determining the responsible party(s).

Walliman (2001) stated that the scale of research is influenced by the level of complexity of the survey and the scope of the survey. These two major factors were taken into account as the researcher formulated a list of 221 causes of delays that were obtained from an exhaustive literature review and which were then refined and categorised as excusable, non-excusable, excusable/compensable or excusable/non-compensable delays to a list of 190 causes of delays. The questionnaires were answered by consultants and contractors in Durban, KwaZulu-Natal. The researcher then conducted interviews where consultants and contractors who were asked to assign a responsible party to a corresponding cause of delay as well as rank the list of delays in order of most important to least important.

The researcher has accumulated qualitative and quantitative data in the form of various books, journal articles and conference papers on the causes of delays experienced by international countries like Jordan, Turkey, Nigeria, Thailand, Saudi Arabia and Hong Kong, etc. In addition, close-ended and open-ended questions were utilised in the questionnaire to gather a qualitative response from respondents.

Selecting the type of sampling technique is inherent for any research therefore the researcher chose to utilise the non-probability sampling technique in which the purposive sampling method was chosen. The researcher believed that this sampling technique would yield the most comprehensive understanding of construction delays experienced by building contractors and other professionals. The population study of building contractors and professional quantity surveyors were selected from the KwaZulu-Natal Master Builders' Association members' directory and the Association South African Quantity Surveyors members' directory respectively. The total population consisted of 121 building contractors and 60 professional quantity surveyors in Durban, KwaZulu-Natal and was limited to contractors and professional quantity surveyors with the area dialing code (031). The researcher contacted 20 contractors of the sample population telephonically and based on the availability of the population, questionnaires and interviews were conducted with sixteen contractors. Thirty consultants were contacted telephonically and fifteen interviews were conducted.

The respondents were asked to review the delays and add any additional delays if they deemed it necessary. Thereafter structured interviews were conducted with the building contractors and the professional quantity surveyors.

4. DISCUSSION OF RESULTS

4.1. Questionnaire results

To determine if the 190 causes of delays were applicable to South African building contractors and professionals, a questionnaire was utilised which examined their comments and criticisms. From the contractor's point of view, seventy-five percent of the respondents were generally in agreement of the list of delays. The remaining twenty-five percent stated that poor site management and supervision, lack of communication between the consultant and contractor, delays in subcontractors work, inadequate contractor experience and exceptionally low bids stated that these delays were not compensable to the owner and cannot be deemed as non-excusable delays. Twenty five percent of the respondents agreed that inadequate design team experience was not a reason for a delay of any kind on a construction project.

Of the professionals that responded to the questionnaire, 86 of the respondents stated that certain causes of delays listed depended on type of project, the situation at that point in time and if the delay was on the critical path of the project. In addition, the respondents agreed that all 190 causes of delays can be experienced; either causing minor or major delays on a construction project.

New delays were supplied by 30% of the sample population. The additional delays consisted of architects not incorporating value engineering in their designs, work being allocated to juniors which manifests into a lack of skills on the part of the professional and the consideration of the exchange rate when obtaining imported materials and foreign professionals' expertise. Respondents expressed their anxiety with the national supplier of electricity, Eskom's decision to introduce preventative measures to meet the maximum demand for electricity such as power outages nationally. Respondents were concerned regarding this current energy situation and had stated that although, obtaining energy did not pose a problem currently, it could however be a foreseeable problem.

Due to the majority of public sector projects involved in, one respondent, frequently experienced delays on projects due to the introduction of the Expanded Public Works Programme (EPWP). This is part of the South African National Public Works Programme which was developed to reduce the amount of unskilled labour in South Africa. The respondent said that this programme hampered and reduced the contractor's productivity.

Another respondent, believed that the integration of the Black Economic Empowerment (BEE) policies were cumbersome and caused some delays on projects even though they enforced BEE policies within it's firm. The respondent stated that they were now encouraged to accept tenders from BEE companies that they were not familiar with and had had no prior dealings with. The respondent also stated that some of the BEE companies were not experienced enough to handle the larger projects and resulted in delays due to their inefficiency.

Twelve point five percent of the contractors stressed that a frequent delay experienced by them was the availability of transport for labourers. They stated that the labourers wanted increases in their wages so they could afford travelling expenses. This was under consideration because if there was a decrease in the amount labourers, the ripple effect of low productivity would impact negatively on the progress of the construction works.

4.2. Interview results

4.2.1. Ranking of delays

A ranking system of 1 to 5 was used by the researcher to obtain a rank system whereby: 1=Not important and 5=Extremely important. Respondents were asked to rank the list of causes of delays according to the above-mentioned scale. The researchers then calculated the mean, mode and median. This information produced an average ranking score of each delay, the value that occurred most frequently and the number separating the higher half of the sample from the lower half.

Table 1 illustrates the most important delays experienced by consultants and contractors. These tables represent a section of the 190 causes of delays and based only on the portions of each category answered by respondents. This list has been limited due to the nature of this paper. This table shows the correlation of both the consultants' and the contractors' responses. Consultants felt that poor site management and supervision is very important while contractors ranked it as important to a project. Delays due to subcontractors' work were ranked as very important to contractors but important to consultants. Consultants were more concerned with buildability and ranked it as very important.

Delays in design information, mistakes and discrepancies in design documents, inadequate design team experience, lack of communication between consultant and contractor, inadequate contractor experience, unrealistic contract durations imposed by client, unavailability of the site access area and works in conflict with existing utilities were ranked the same and were equally important to both contractors and consultants.

Table 1: Causes of delays that were ranked by consultants as the most important delays.

Cause of Delay	Category	Ranked by Consultant	Ranked by Contractor
1. Shortage of materials in markets	Excusable/non-compensable	4	5
2. Defective materials provided by the client	Excusable/compensable	3	5
3. Environmental restrictions	Excusable/non-compensable	5	3
4. Inclement weather	Excusable	4	5
5. Delays in design information	Excusable	4	4
6. Mistakes and discrepancies in design documents	Excusable	4	4
7. Inadequate design team experience	Excusable	3	3
8. Impractical design	Excusable	3	3
9. Poor site management and supervision	Non-excusable	4	3
10. Lack of communication between consultant and contractor	Non-excusable	4	4
11. Delays in subcontractors' work	Non-excusable	3	4
12. Inadequate contractor experience	Non-excusable	4	4
13. Unrealistic contract durations imposed by client	Excusable/compensable	3	3
14. Client-initiated variations/changes of scope	Excusable/compensable	4	3
15. Unavailability of the site access area	Excusable/compensable	3	3
16. Imbalance in the risk allocation	Excusable/compensable	3	4
17. Necessary variations	Excusable/non-compensable	4	3
18. Buildability	Excusable/non-compensable	4	3
19. Works in conflict with existing utilities	Excusable/non-compensable	3	3
20. Project construction complexity	Excusable/non-compensable	3	4

Contractors regarded shortage of materials in markets, defective materials provided by the client and inclement weather as extremely important in terms of delays that occur during construction works. Consultants on the other hand found these delays as either important and were not perceived to be as crucial to them as contractors perceived them to be.

Consultants indicated that environmental restrictions were extremely important to a construction project as it can have far reaching effects.

4.2.2 Determining the responsible party

After reviewing the causes of delays acquired from various literary sources, respondents were interviewed and requested to assign a responsible party to each cause of delay. Table 2 below illustrates a sample of who the responsible party is for a specific cause of delay. The date was obtained from consultants and contractors in industry..

Fifty percent of the professional respondents felt that the architect in conjunction with the engineer were responsible for delays in design information compared to the 41% of the contractors. In addition, of the contractors, 9% felt that the client and quantity surveyor should also be responsible for delays in design information.

Both groups of respondents were in consensus that 50% of the responsibility should be allocated to the architect and 50% to the engineer for delays caused by mistakes and discrepancies in design documents.

Consultants indicated that 50% of the responsibility for inadequate design team experience should be assigned to architect and 50% to the engineer. On the other hand, 5% of the contractors' stated held responsible for this type of delay. The remaining 40% stated that the architect and the engineer were only responsible.

Consultants' responses to delays caused by impractical design varied as 30% each believed that the architect, engineer and the project manager should be assigned responsibility. The remaining 10% felt that the government should be responsible; whereas contractors were in agreement responsibility should be shared equally between the architect and the engineer.

Professional quantity surveyors and building contractors responses were 100% in agreement that delays that occurred as non excusable delays were the sole responsibility of the contractor, similarly for excusable/compensable delays, the respondents thought that the client should bear full responsibility for delays occurring under this category.

According to 20% of the consultants and 16% of the contractors, the responsibility for poor site management and supervision should be assigned to be contractor, the construction manager, the inspector, the engineer and the project manager, while the remaining 20% of the contractors stated that the subcontractor can also be accountable for such a delay.

For delays occurring due to lack of communication between the consultant and the contractor, delays in subcontractors' work and inadequate contractor experience both the contractors and professionals stated that responsibility can be attributable to professional team, the contractor and subcontractor and the contractor respectively.

There was a general agreement between the contractors and professionals as to who should be responsible for delays that were categorised as excusable/compensable. One hundred percent of the consultants and contractors agreed that the client is completely responsible for unrealistic contract duration imposed by the client, client initiated variation of changes of scope and unavailability of the site access area. For delays caused by an imbalance of risk allocation, 33.3% of the contractors and the consultants stated that the client, the quantity surveyor and the project manager can be held responsible.

Due to the nature of excusable/non-compensable delays, varied responses were encountered by both the professionals and the contractors. There was a general correlation in both the professionals and contractors responses as both sample populations felt that the professional team were responsible for excusable/non-compensable delays. This is illustrated in table 2 where 20% of both the contractors and consultants felt that responsibility for necessary variations can be shared among the professional team.

The responses of the contractor and consultant differed by 2% as 29% of the professionals and at the same time 27% of the contractors agreed that for any delays caused by works in conflict with existing utilities the architect, contractor and engineer can be held liable. The remaining 19% of the contractors stated that the client can also be held accountable while 3% of the consultants stated that the quantity surveyor, construction manager, inspector and project manager should also be held liable.

Twenty five percent of the contractors and consultants indicated that a buildability delay should be the liability of the architect, contractor, engineer and project manager. The project construction complexity should be the responsibility of the architect, contractor, client and project manager as stated by 25% of the contractors and professionals.

4.2.3. General comments

Twenty one percent of the respondents agreed that they experienced a lack of communication between involved parties and this caused a major problem for construction problems. In this instance, the professional team took responsibility for this type of delay. Of the total population of respondents, 6% stated that the owner should not be entitled to compensation by the contractor if delays such as poor site management and supervision, lack of communication between consultant and contractor, delays in subcontractors work, inadequate contractor experience and exceptionally low bids occur.
Seventy percent of the respondents felt delays that occurred due to any contractual matters were adequately dealt with in the construction contract signed, particularly the JBCC Principal Building agreement (2007).

Financial problems experienced by the contractor was regarded as crucial in the construction industry as most contractors are not liquid enough to handle projects and rely on payment by the client to continue the project. This can cause a major delay in construction projects.

The professional respondents agreed that any pre-construction delays that appeared in the list should be the responsibility of the contractor as the contractor should be fully aware of all project details the consequences thereof before binding himself to the construction project. Responsibility of delays regarding location, project construction complexity, environmental restrictions and exceptionally low bids should be for the contractor's accountability and he should be liable.

5. SUMMARY AND CONCLUSIONS

The major objectives of this paper were to identify the causes of delays specific to South Africa together with the responsible party for a specific cause of delay. From the results obtained the list of 190 causes of delays were reviewed and refined by building contractors and professionals and 4 new delays were added to the list. These consisted of not incorporating value engineering, the introduction of the EPWP, the integration of the BEE policies and the availability of transport for labourers.

Table 2: Responsibility table reflecting the party most responsible

NO	CAUSE	RESPONSIBLE PARTIES																					
		Architect		Contractor		Subcontractor		Client		Supplier		Quantity Surveyor		CM		Inspector		Engineer		Project Manager		Government	
	EXCUSABLE DELAYS - Delays that are not caused by the contractor and which the contractor is entitled to an extension of time under the contract.	PROFESSIONAL	CONTRACTOR	PROFESSIONAL	CONTRACTOR	PROFESSIONAL	CONTRACTOR	PROFESSIONAL	CONTRACTOR	PROFESSIONAL	CONTRACTOR	PROFESSIONAL	CONTRACTOR	PROFESSIONAL	CONTRACTOR	PROFESSIONAL	CONTRACTOR	PROFESSIONAL	CONTRACTOR	PROFESSIONAL	CONTRACTOR	PROFESSIONAL	CONTRACTOR
1	Delays in design information	50%	41.0%						9.0%				9.0%					50%	41.0%				
2	Mistakes and discrepancies in design documents	50%	50%															50%	50%				
3	Inadequate design team experience	50%	40.0%										5.0%		5.0%		5.0%	50%	40.0%		5.0%		
4	Impractical design	30.0%	50%															30.0%	50%	30.0%		13.0%	
	NON-EXCUSABLE DELAYS - Delays that are caused by the contractor and are compensable to the owner.																						
1	Poor site management and supervision			20%	16.0%		20.0%							20.0%	16.0%	20.0%	16.0%	20.0%	16.0%	20.0%	16.0%		
2	Lack of communication between consultant and contractor	14.3%	14.3%	14.3%	14.3%							14.3%	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%	14.3%		
3	Delays in subcontractors work			50%	50%	50%	50%																
4	Inadequate contractor experience			100%	100%																		
	EXCUSABLE/COMPENSABLE DELAYS - Delays due to act or omission of the owner and the contractor would be entitled to damages or extra costs.																						
1	Unrealistic contract durations imposed by client							100%	100%														
2	Client-initiated variations/Changes of scope							100%	100%														
3	Unavailability of the site access area							100%	100%														
4	Imbalance in the risk allocation							33.3%	33.3%			33.3%	33.3%							33.3%	33.3%		
	EXCUSABLE / NON-COMPENSABLE - Delays where neither party is at fault and extension of time is the only remedy.																						
1	Necessary variations	20%	20%	20%	20%	20%	20%	20%	20%									20%	20%				
2	Buildability	25%	25%	25%	25%													25%	25%	25%	25%		
3	Works in conflict with existing utilities	29.0%	27.0%	29.0%	27.0%				19.0%			3.0%		3.0%		3.0%		30.0%	27.0%	3.0%			
4	Project construction complexity	25%	25%	25%	25%			25%	25%											25%	25%		

There was a strong agreement towards the importance of all delays among the different respondent groups as it could potentially affect either the cost to the client or result in severe delay penalties being imposed on the responsible parties.

In order to uncover the causes of delays, they were classified into 4 categories. The most important delays have also been identified by professionals and contractors in the industry and commented on. The delay that ranked the highest for contractors was inclement weather as this delay, though foreseen can be unpredictable, can stop construction work for lengthy periods of time. Consultants ranked delays due to environmental restrictions as one of the major delays that are extremely important. Environmental restrictions can possibly suspend construction works indefinitely or stop the project completely. These identified delays can now be concentrated on and contribute to a successful project.

Delays that were regarded as very important to contractors and consultants were mistakes and
discrepancies in design documents, delays in design information and inadequate contractor experience. Both groups of respondents felt that communication is vital during a project and there was strong correlation that responsibility for the lack of communication can be attributable to all parties involved. Contractors generally took responsibility for most non-excusable delays.

These identified delays can now be concentrated on and contribute to the successfulness of a project. This will also lead to the responsible party to be fairly and appropriately dealt with.

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