

Office of the Organising Secretary, IMHC P O Box 2963, FOURWAYS 2055, Rep. of South Africa Telephone and Fax:+27 (0) 11 888-7163 web site : http://www.cmasa.co.za e-mail : cma@pixie.co.za

Under the office of: The SA Institute of Materials Handling The SA Institution of Mechanical Engineering Conveyor Manufacturers Association of SA Limited



## The Needs of the Contractor

Mr. Brian Rogers Cost Time Resource cc, RSA



The SA Institution of Mechanical Engineering





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SA Institute of Materials Handling By Order

#### THE NEEDS OF THE CONTRACTOR

#### B G Rogers, Cost Time Resource cc

#### Introduction

The main purpose of this paper is to provide enough food for thought so that at the end of the day, hopefully, we can have some lively discussion during the debate "Practical implementation of clients evaluation process on contractors bidding proposal". I am not too sure of the split between client and contractor representation to-day but I feel sure that any contributions made later this afternoon can only improve the "Us" and "Them" atmosphere which can tend to detract from happy and successful projects.

#### A) THE NEEDS OF THE CONTRACTOR - PRIOR TO CONTRACT AWARD -TENDER PHASE

#### **Client's selection of tenderers**

As we are all aware good resources are scarce in the republic and reputable contractor's do not enjoy "MASS" tendering. Clients, who mostly have been in the business for many years, should have enough information to limit their list of tenderers for a specific project/item of equipment to a maximum of five and preferably three.

The Client should ensure his procurement department have vetted and approved in accordance with ISO 9001 their list of preferred vendors after each project and out of courtesy if a vendor has not performed to the satisfaction of the client they should be informed and given a chance to put their house in order.

Clients should not "USE" suppliers to obtain check prices. Any contractor needs to feel costs, time and resources are not being wasted in submitting a check price. The client resorting to this practice will inevitably not achieve his objective because he will not be getting a truly competitive bid. If it is solely to satisfy the in-house tendering procedure i.e. 3 bids then at times this falls short as vendors decline to bid because they feel it is for a check price only.

#### **Client's Tender Documentation**

First priority is to ensure that the Client's tender documentation will provide easily comparative bids to the level of accuracy anticipated from the documentation provided with the tender document. More on this in the next section when I deal with Classes of Estimate and Accuracy.

Define the scope well. This will save much heartache in the contract phase on both sides. Clients do not enjoy being hit with Cost Variation orders and most contractors/vendors would rather not have the hassles of generating them and fighting their case for additional monies.

Decide on the Work Breakdown Structure at the tendering phase and present the tender to suit this breakdown.

Decide on the level of detail wanted in the tender and make sure the documentation can support this level of detail.

Client should make sure that the level of detail is in line with the way the Client wants to control the project. Do NOT call for a basic breakdown of costs and request a level four programme to control the project. If your ultimate aim is to control the project with a level 4 programme (more on this later) then ensure the tender is broken down to the same level. Many attempts to integrate costs and time have failed because of this fundamental variance.

#### THE NEEDS OF THE CONTRACTOR

#### Synopsis of a paper to be presented at BELTCON 10 Tuesday 19th October 1999

#### **PRIOR TO CONTRACT AWARD - TENDER PHASE**

- Client's selection of tenderers.
- Client's tender documentation.
- Class of estimate and accuracy.
- Format of tender pricing Type of contract
- Contractor's submission documentation
- Reasonable time allowance to suit class of estimate and information available/required.
- Tender clarification meeting.
- Ethics
- Letters of regret

#### **CONTRACT PHASE**

- Handover and kick-off meeting.
  - a) Client and Contractor's teams and interfacing
  - b) Scope definition and freeze
  - c) Agreed as sold price
- Project Controls

Programme - parameters, details (Level), submission Commissioning Phasing

Work Breakdown Structure.

Dependent on type of contract - Code of Accounts.

- Reporting requirements
  - Invoicing / Progress Payments / Cash Flow
- Scope change procedure
- Quality Assurance / Control :- Procedure/Requirements
- Preferred Vendor list
- Construction philosophy

#### **CONCLUSIONS and RECOMMENDATIONS**

#### CURRICULUM VITAE of AUTHOR

**VIEWS and OPINIONS** 

THANKS

If a Client wishes to go out to tender before engineering / documentation will support a definitive estimate make sure allowance is made for a definitive estimate within the contract phase of the project but DO NOT then expect a fast track project. If the Client elects to go this route the project control procedure can be adjusted at this phase of the project.

Client should include details of insurance cover carried by them so that the contractor can provide for any additional cover he deems necessary, or client can detail the extent of insurance cover to be taken out by the contractor.

On major projects the Client may elect to call for an project organogram from the Contractor and CV's for key personnel. If, as often happens the adjudication and award period becomes protracted the Contractor may have allocated his resources to the intake of other work. Client should accept this favourably but endeavour to ensure he does not finish up with the Contractor's "B" or "C" team on his project.

#### **Class of Estimate and Accuracy**

Refer to diagrams appendices 1.1,1.2, and figs 2, 3, 4 and 5 following;

## CLASS 1 - DEFINITIVE ESTIMATE

DEVELOPED DURIN	G DETAILED ENGINEERING

## **REQUIRED LEVEL OF DETAIL :-**

Engineering at 70% to 80% Bulk M.T.O.'s Confirmed Project Schedule Fabrication / Installation Quoted / Awarded

**METHOD OF PRICING :-**

Major Equipment from Quotations / Purchase Orders Bulk Materials based on Selected Quotations Fabrication / Installation based on award / Quoted Sub-contracts Definitive Costs for Engineering and Support Services Detailed Costs for Finance, Insurance, etc. Agreed Development Allowances and Contingencies

fig 2 Class 1 - Definitive Estimate

#### CLASS 2 - CONTROL ESTIMATE

#### USED FOR PROJECT CONTROL

**REQUIRED LEVEL OF DATA :-**

Engineering at 30% - 40% Equipment sized and specified, intermediate bulk M.T.O.'s established Approved Project Schedule Established Construction Philosophy

**METHOD OF PRICING :-**

Maximise Supplier Quotations for Major Equipment Obtain costs for Key Bulk Materials Quotes for Major Sub-contracts Preliminary rates for Fabrication / Construction Established costs for Engineering and Support Services Indicate costs for Finance, Insurances etc.

#### Fig. 3 Class 2 - Control Estimate

#### **CLASS 3 BUDGET ESTIMATE**

**USED FOR ECONOMIC EVALUATION AND PRELIMINARY BUDGETS** 

### **REQUIRED LEVEL OF DATA :-**

Process Engineering substantially complete Preliminary P & ID's Preliminary Plans & Layouts Major Equipment, Instruments, Electrical etc., identified Preliminary Programme approved

**METHOD OF PRICING :-**

Major Equipment costed from "in-house" data. Bulk Material quantities from "in-house" data. Engineering, Computing, Finance, Insurance from "in-house" data. Fabrication / Installation relating to location and development Assessment of development allowances and contingencies

fig. 4 Class 3 - Budget Estimate



## fig. 5 Class 4 - Conceptual ( Order Of Magnitude ) Estimate

## Format of Tender pricing and Type of Contract

#### Format of pricing

Client MUST decide on the format of pricing which can be supported with documentation available. The Class of Estimate/Accuracy will dictate the pricing format.

#### **Type of Contract**

Again the Class of Estimate/Accuracy will dictate the type of contract.

Do NOT attempt to go fixed price on a vague scope or loosely engineered package. This will produce large inbuilt contingencies and numerous variation orders during the contract phase and can often result in an "unhappy" project.

There are several types of Contract and the Client should weigh up and evaluate the type of contract for his particular situation.

## Cost Plus Fee (can be adjusted if scope varies)

This form of contract works well provided the Client limits his in-house key personnel on the project. If the Client is using a contractor to undertake specific functions within disciplines then he should have sufficient faith in his choice of contractor to undertake the functions of engineering, procurement, construction and project management assisted by key personnel from the Client's own organisation. Typically this should comprise a Project Director/Sponsor, Project Manager, Project

Engineer, Specialist Engineers, Commissioning Specialists. It is a total waste of resources for the Client to have a project team almost the same size as the contractor's resulting in extended approval times, interface clashes and overruns of estimates.

#### Cost to Definitive Estimate then Fixed Price to Completion

This works well provided there is a "Team" desire to achieve "Frozen P & ID's"/ "Technical Freeze" as quickly as possible and the Client limits his involvement during the fixed price phase.

#### Fixed Price (normally with escalation)

Can only work well if engineering has been completed through to Final P & ID's and scope fully defined.

Escalation is included and calculated from a declared base date, usually date of tender submission.

#### **Fixed and Firm**

Engineering well defined and the Contractor builds in to the price his allowances for contingencies and escalation.

#### **Contractor's Submission Documentation**

Limit the required documentation to be submitted by contractors to allow a fair bid comparison. Do not go overboard with your requirements if it is either not necessary or it is an onerous task to complete properly with the information provided.

## Reasonable Time Allowance to suit class of estimate and information available/required

PLEASE ensure that sufficient time has been allowed for the submission of tender relative to the size/complexity/level of breakdown.

Avoid adding late arrivals to the bidders list.

If for any reason the Client grants an extension to the submission date ensure the other tenderers are also informed and given the benefit of the additional time.

#### **Tender Clarification Meeting**

The Client should convene tender clarification meetings as part of his adjudication process with those tenderers who are in the running to be awarded the contract.

#### Ethics

A controversial topic which has been addressed by both client and contractors, under the auspices of The Conveyor Manufacturers Association who recently "rubber stamped" their revised version of their "Code of Ethics" at their Annual General Meeting. Suffice to say that it takes two to tango and policing on both sides is not easy.

#### Letters of Regret

After final adjudication and award ALWAYS send a nicely worded "Letter of Regret" to the Contractors who have not been lucky enough to be awarded the contract. It takes very little effort and is greatly appreciated for time and money expended by the contractor on tendering.

#### B) CONTRACT PHASE

#### Handover and kick-off meeting

Client and Contractor's teams and interfacing.

In addition to an internal contractor's kick-off meeting when the Sales and Marketing Dept hand over to the Operations Dept it is fundamental for the Client and Contractor to jointly convene a kick-off meeting to introduce key personnel, formulate/approve the project co-ordination procedure and agree on functional philosophies. On major projects this can be broken down into several meetings.

#### Scope definition and freeze

Ideally at the "kick-off" meeting the scope of the contract should be fully defined and frozen. This does not mean a "Technical Freeze" or "Frozen P&ID's" but must reflect an agreed scope for the "As Sold" price.

#### Agreed "As Sold" price

Ideally at this meeting the "As Sold" price should be agreed.

Any carry over of points of dissension in the contract document should be resolved. This most times requires an additional meeting and on major projects can become protracted when as often happens the legal fraternity get involved.

#### **Project Controls**

Client MUST provide the overall programme parameters and any specific phasing required. As most Clients will get involved in the commissioning phase a set of parameters to suit their commissioning requirements should be provided right up front and the detailed Design, Procurement and Erection phases can be programmed to suit the commissioning requirements. This is fundamental to the sequencing of design production through into procurement.

The level of detail for the contractor's programme should have been indicated in the tender documents.(refer appendix 7.1 thro 7.4) for definition of planning levels 1 - 4. Client should indicate the level of detail required to suit incorporation into the Client's overall plan.

If at the combined "kick-off" meeting the Work Breakdown Structure has not been formally agreed between Client and Contractor a Project Controls meeting should be convened to agree the following;

- "As sold" price and breakdown. a)
- b) Work Breakdown Structure (refer appendix 6)
- Code of Accounts (Client to ensure that there are no specific requirements in their C) assets register which could latterly in the project cause coding problems) (Appendices 8A, 8B, 8.1, 8.2 & 8.3)

If the project is a fixed price contract the Client should indicate the format and detail, including Cost Coding, of the required progress payment certificate to accompany the monthly invoice. If possible, avoid trying to merge both Client and Contractor's Cost Code of Accounts or operating two sets of coding.

- Agree Invoicing schedule/payment certificate/Cash Flow requirements d)
- Level of detail for contractor's planning. Ensure that Contractor's Planning software e) is compatible/acceptable to integrate with the Client's Overall Planning system
- Agree on reporting requirements/formats/frequency. f)
- Agree on frequency of progress meetings / venue / agenda and attendees. g)

#### **Scope Change Procedure**

Although invariably not a popular topic with Clients it is in their own best interests for controlling the project and for future tenders / projects that a comprehensive Scope Change Procedure be agreed. The type of contract should NOT make any difference to having a Scope Change Procedure.

Clients should ensure that the selected contractor is producing scope changes for approval timeously and endeavour to approve them as quickly as possible. This will ensure that the cost reporting and forecast cost projections are up to date.

Contractors should ensure that their project team are well versed in the Scope Change Procedure and make sure that "internal" changes are monitored as well as Clients changes. The Project Cost Engineer must retain a Status Register indicating ALL changes, type(internal / external), date raised, initiator, value and breakdown including coding, pending or approved.

#### **Quality Assurance / Control : Procedure Requirements**

Most competent contractors have or are striving to achieve Quality Assurance to ISO 9001 standards/approval. However this need not necessarily be the case with all the contractor's suppliers though again most contractors are endeavouring to get all suppliers to conform. It is my considered opinion that there has been a tendency for some Client's to go overboard in some instances and to go beyond the requirements of "fitness for purpose". The documentation requirements to be initiated and monitored can in many instances for smaller vendors become extremely onerous and I submit that in a lot of instances paperwork will be completed and submitted in volume without the due diligence that should be incorporated.

Having said that, I firmly believe that quality does have to be assured and controlled and I acknowledge that most leading contractor's have installed systems and procedures to monitor these activities.

#### Preferred Vendor List

Most Clients have a preferred vendor's list which ideally should be included with their tender documentation and thus enable the contractor to obtain preferred prices for inclusion in the tender submitted. In the event that this is not the case then a list of preferred vendors must be included with the contract documents for obvious reasons.

#### **Construction Philosophy**

A joint Client / Contractor meeting should be convened to formulate and agree sequencing of construction to achieve Client's programme parameters and commissioning requirements as indicated in the project objectives programme; major lifts / rigging studies and crane requirements; site establishment and manning, construction power and utility requirements, working hours including overtime limitations.

#### Conclusions and Recommendations.

#### Tender Phase.

- At the tender phase try and limit the number of tenderers; select well tried and proven contractors; do not use contractors for a "check" price.
- Client's tender documentation should enable the client to undertake an adjudication procedure which is fair and equitable in all respects, both technically and commercially.
- Make sure the tender documentation includes sufficient information for the contractor to undertake his bid to the level of accuracy expected.
- Allow sufficient time for the bidders to bid against clients requirements.

#### Contract Phase.

- Right from the outset get a project team spirit going. The senior project representatives from the client and contractor should instill this at the kick-off meeting.
- Reach commonality and agreement on project control procedures including scope changes.
- Agree on preferred suppliers and Quality Assurance and Control
- Finalise the construction philosophy including an agreed commissioning sequence.

#### Curriculum Vitae.

Brian Rogers was educated in the UK, winning a scholarship to a well known South London Public School before obtaining a Higher National Certificate in Mechanical Engineering during his tertiary education period. He spent 7 years gaining fabrication experience, both hands-on and managerial, with a major manufacturer renowned for fabricating pressure vessels and tanks. He joined a major UK based contractor in 1965 as a planning engineer and gained considerable experience in Critical Path Planning techniques prior to emigrating to RSA in January 1972. He spent the first 13 years in RSA with a major South African contractor controlled from London. During this period he acquired extensive experience in all aspects of project controls. With the demise of the organisation in 1985 he joined a subsidiary company of Murray and Roberts specialising in acid protection, rubber lining and waterproofing and gained experience of running many minor projects simultaneously. Late in 1988 he returned to major projects and was involved in the planning of the Sua Pan Soda Ash Project. Since then he has operated as Project Controls manager with 2 of SA's leading contractors before deciding at the age of 55 to break away from the corporate environment and operate on a consultancy basis. This has continued since 1993 providing services to 7 local contractors and very recently, for the first time in 35 years, to a major client. He was recently elected to the board of directors of the Cost Engineering Association of South Africa (CEASA) with specific responsibilities to undertake a survey of current membership .

#### Views and Opinions.

The author of this paper would like to state that the views and opinions expressed, both in the paper and during the presentation are entirely his, derived from 35 years in the industry and do not represent those of any organisation that the author has been employed with.

#### <u>Thanks.</u>

I would like to take this opportunity of thanking the committee of IMHC for affording me the opportunity of presenting the paper and to those members of the committee who have offered their valuable time in reading and vetting the content. I sincerely hope that the presentation will contribute towards achieving the purpose as declared in my introduction. To my business partner, Chris, thanks for assisting and unravelling the mysteries of Mr. Gate's MS Word software and tidying up the paper so that it meets the specification requirements of the IMHC. To Steve Wilson (SENET) thanks for the jaundiced eye and comments and also for the use of your laptop for the presentation.

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SCHEDULE O' TIMATE DELIVERABLES

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Appendix No.:- 1.2

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EXPECTED ACCURACY OF ESTIMATE Conceptual :-20% +40% Budget :- 15% +25% Control :--10% +15% Definitive :-5% +7.5%

	DELIVERABLES / INFORMATION REQUIRED	CONCEPTUAL	TYPE OF I BUDGET	TYPE OF ESTIMATE	DEFINITIVE
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	UTILITIES AND SERVICE REQUIREMENTS, BUILDINGS	×			
	AUXILIARY FACILITIES, RAW MATERIALS	x			
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	HISTORICAL DATA FROM SIMILAR PLANTS	×			
	BLOCK FLOW DIAGRAM	x			
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7	Platework Design	15 d	07/02/00	25/02/00	
13	Mechanical	40 d	03/01/00	25/02/00	
4	Mechanical Layouts / Gen Arrgts	40 d	03/01/00	25/02/00	
18	Electrical	35 d	31/01/00	17/03/00	
19	Design & Detaiting	35 d	31/01/00	17/03/00	
ន	Control & Instrumentation	35 d	31/01/00	17/03/00	
24	Design & Detailing	35 d	31/01/00	17/03/00	
38	Procurement Area 100	120 d	07/02/00	21/07/00	
59	Civil & Structural	60 d	14/02/00	05/05/00	
8	Civits - Foundations	20 d	00/20/90	31/03/00	
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8	Structural - Building Steelwork	50 d	21/02/00	28/04/00	
4	Chutes, Liners & Deflector Plates	50 đ	28/02/00	02/02/00	
8	Mechanical	100 d	07/02/00	23/06/00	
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Task Name     Fluid Couplings       Fluid Couplings       Pulleys       Belt Scrapers       Other       Electrical	Dum Dum 80 d 80 d 70 d 70 d 105 d 105 d 100 d 150 d 150 d	Start 21/02/00 21/02/00 28/02/00 28/02/00 28/02/00 06/03/00 06/03/00 06/03/00	Jan Feb	2000 Jun Jui Aug
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Pulleys       Belt Scrapers       Other       Other    Electrical	60 d 50 d 70 d 105 d 100 d 100 d 150 d	21/02/00 28/02/00 21/02/00 28/02/00 28/02/00 06/03/00 06/03/00 06/03/00	/05/00 /05/00 /05/00 /07/00 /07/00 /07/00 /07/00 /07/00 /05/00	
Belt Scrapers Other Electrical	50 d         50 d           70 d         105 d           100 d         100 d           100 d         100 d           150 d         150 d	28/02/00 21/02/00 28/02/00 28/02/00 06/03/00 06/03/00 06/03/00 20/03/00	/05/00 /07/00 /07/00 /07/00 /07/00 /05/00 /05/00	
Other Electrical	70 d 105 d 100 d 100 d 150 d 150 d	21/02/00 28/02/00 28/02/00 06/03/00 06/03/00 06/03/00 20/03/00	/05/00 /05/00 /07/00 /07/00 /07/00 /09/00	
Electrical	105 d 100 d 100 d 150 d 15 d	28/02/00 28/02/00 06/03/00 06/03/00 06/03/00 20/03/00	/07/00 /07/00 /07/00 /05/00 /05/00	
	80 d 100 d 100 d 150 d 15 d	28/02/00 06/03/00 06/03/00 06/03/00 20/03/00	/06/00 /07/00 /07/00 /05/00 /09/00	
70 Motors 8	100 d 100 d 50 d 115 d	06/03/00 06/03/00 06/03/00 20/03/00	00/00) 102/00 105/00 109/00	
72 Miscellaneous 10	100 d 100 d 50 d 115 d	06/03/00 06/03/00 20/03/00	/07/00 /05/00 /09/00	
77 Control & Instrumentation 10	100 d 50 d 115 d	06/03/00 20/03/00	/07/00 /05/00 /09/00	
78 Instrumentation 10	50 d 115 d	20/03/00	/05/00	
80 Miscellaneous	115 d		00/60/	
82 Construction Area 100 11	-	03/04/00		
83 Civil & Structural	95 d	03/04/00	11/08/00	
84 Civils - Foundations	20 q	03/04/00	00/02/00	
87 Structural - Conveyor Syeelwork 5	50 d	08/02/00	14/07/00	
94 Structural - Building Steelwork 4	40 d	12/06/00	04/08/00	
98 Chutes, Liners & Deflector Plates 2	20 d	17/07/00	11/08/00	I
102 Mechanical 4	49 d	22/05/00	27/07/00	
103 Betting	2 q	18/07/00	24/07/00	•
106 Idlers 2	25 d	22/05/00	23/06/00 -	
110 Reducers	3 q	17/07/00	18/07/00	-
112 Fluid Couplings	2 d	17/07/00	18/07/00	-
114 Pulleys 3	31 d	02/00/20	17/07/00	
117 Belt Scrapers	3 d	25/07/00	27/07/00	-
Project: planlevels Task Task Progress	Progress		Milestone	Summary
Appendix No. 6.3- Level 3		Work Pac	Work Packages - Detailed Planning by Discipline	pline Page 2 of 3

				LEVEL 4 DE DETAILED DOCUMENT COCUREMEN CONSTRUCT	/EL 4 DELIVERABLE ETAILED PLANNING CUMENT SCHEDULE UREMENT SCHEDULE STRUCTION DETAIL	LEVEL 4 DELIVERABLES DETAILED PLANNING DOCUMENT SCHEDULES PROCUREMENT SCHEDULES CONSTRUCTION DETAILS
ſ	Took Nome					2000
	I BAK NATIR ACME MATERIALS HANDLING - LEVEL 4 DELIVERABLES	- LEVEL 4 DELIVERABLES	180 d	5tart 03/01/00	08/09/00	Jan   Feb   Mar   Apr   May   Jun   Jul   Aug   Sep
7	AREA 100 - BULK HANDLING	Q	180 d	03/01/00	00/60/80	
e	Design & Detailing Area 100	la 100	65 d	03/01/00	17/03/00	
4	Civil & Structural		35 d	17/01/00	03/03/00	
2	Civil Foundations	tions	25 d	31/01/00	03/03/00	
9	Layout & I	Layout & Loading Details	10 d	31/01/00	11/02/00	
7	Civil Details	is	20 d	02/00	03/03/00	
ø	Structural De	Structural Design & Detailing	25 d	17/01/00	18/02/00	
თ	Conveyor	Conveyor Steelwork Design & Details	20 d	17/01/00	11/02/00	
10	Transfer	Transfer House Design & Details	15 d	31/01/00	18/02/00	
11	Platework Design	sign	15 d	07/02/00	25/02/00	
12	Chutewor	Chutework Design & Details	15 d	02/00/20	25/02/00	
13	Mechanical		40 d	03/01/00	25/02/00	
4	Mechanical Li	Mechanical Layouts / Gen Arrgts	40 d	03/01/00	25/02/00	
15	Conveyor	Conveyor Schedules	15 d	24/01/00	11/02/00	
16	Conveyor	Conveyor Layouts/GA's	40 d	03/01/00	25/02/00	
17	Specns & Reqns	Reqns	20 d	31/01/00	25/02/00	
18	Electrical		35 d	31/01/00	17/03/00	
19	Design & Detailing	ailing	35 d	31/01/00	17/03/00	
2	Conceptual & SLD	al & SLD	10 d	31/01/00	11/02/00	
5	Schedules	Schedules & Details	15 d	14/02/00	03/03/00	
Project:	Project: planlevels	Task	Progress			Milestone ♦ Summary
Date: 1:	0/10/88					
			Level 4 -		Appendix No. 6.4 fiverables - Detail	Appendix No. 6.4 Deliverables - Detailed Planning

LEVEL 4 DELIVERABLES DETAILED PLANNING DOCUMENT SCHEDULES PROCUREMENT SCHEDULES CONSTRUCTION DETAILS	Durn Start	21/02/00	Control & Instrumentation 35 d 31/61/00 17/03/00 mmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm	Design & Detailing 35 d 31/01/00 17/03/00	Conceptual 10 d 31/01/00 11/02/00	Schedules & Details 15 d 14/02/00 03/03/00 mmm	Specns & Reqns         20 d         21/02/00         17/03/00	Procurement Area 100 12/00 21/07/00 21/07/00	Civil & Structural 60 d 14/02/00 05/05/00	Civils - Foundations 20 d 06/03/00 31/03/00	Trestle Foundations 20 d 06/03/00 31/03/00 mmmm	Transfer House Foundations 20 d 06/03/00 31/03/00 Emained	Structural - Conveyor Steelwork 50 d 14/02/00 21/04/00	Conveyor Gantries 40 d 14/02/00 07/04/00	Conveyor Trestles 30 d 14/02/00 24/03/00 24/03/00	Flooring & Handrailing 40 d 14/02/00 07/04/00	Sheeting         50 d         14/02/00         21/04/00	Head Frame Steel         50 d         14/02/00         21/04/00	Tail Frame Steel         30 d         14/02/00         24/03/00	Structural - Building Steelwork 50 d 21/02/00 28/04/00	Transfer House Steelwork 30 d 21/02/00 31/03/00	Transfer House Flooring/H/Railing 40 d 21/02/00 14/04/00	nlevels Task Progress ■ Milestone ♦ Summary		Appendix No. 6.4       Page 2 of 7         Level 4 - Deliverables - Detailed Planning
	ID Task Name	23	23	24	25	26	27	28 Pr	29	30	31	32	33	34	35	36	37	38	36	40	41	42	roject: planlevels	Date: 13/10/99	

		PROCO CON	LEVEL 4 D DETAILE DOCUMEN ROCUREMI	LEVEL 4 DELIVERABLES DETAILED PLANNING DOCUMENT SCHEDULES ROCUREMENT SCHEDULE CONSTRUCTION DETAILS	/EL 4 DELIVERABLES ETAILED PLANNING CUMENT SCHEDULES UREMENT SCHEDULES STRUCTION DETAILS
<u></u>	T act. Manue		1		2000
₽ ₽	Transfer House Sheeting	50 d	21/02/00	28/04/00	
4	Chutes, Liners & Deflector Plates	50 d	28/02/00	02/02/00	
£ł	Chutes	50 d	28/02/00	05/05/00	
46	Liners	40 d	28/02/00	21/04/00	
47	Defelector Plates	40 d	28/02/00	21/04/00	
48	Mechanical	100 d	07/02/00	23/06/00	
49	Belting	P 09	07/02/00	28/04/00	
20	Betting	60 d	07/02/00	28/04/00	
51	Splicing	30 q	20/03/00	28/04/00	
52	Idlers	50 d	14/02/00	21/04/00	
53	Trough Idiers	50 d	14/02/00	21/04/00	
52	Return Idlers	50 d	14/02/00	21/04/00	
55	Impact Idlers	50 d	14/02/00	21/04/00	
56	Reducers	100 d	07/02/00	23/06/00	
57	Reducers	100 d	07/02/00	23/06/00	
58	Fluid Couplings	P 08	21/02/00	00/90/60	
ß	Fluid Couplings	80 d	21/02/00	00/90/60	
8	Pulleys	P 09	21/02/00	12/05/00	
61	Head Pulley	P 09	21/02/00	12/05/00	
62	Tail Pulley	60 d	21/02/00	12/05/00	
ន	Belt Scrapers	50 d	28/02/00	02/02/00	
Project Date: 1	Project: planlevels Date: 13/10/99	Progress		Ē	Mitestone
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				PROC DE	DETAILI CUMEN CUREN CUREN NSTRU	ETAILED PLANNING CUMENT SCHEDULES UREMENT SCHEDULE VSTRUCTION DETAILS	DETAILED PLANNING DOCUMENT SCHEDULES PROCUREMENT SCHEDULES CONSTRUCTION DETAILS				
2	Task Name				tes				5000		T
2		Primary Scrapers		50 d				I war Apr M	Inc unc ABM	Aug Sep	
8	Second	Secondary Scrapers	ſ	20 q	28/02/00	05/05/00					
99	Shoughs	jhs		20 q	28/02/00	02/02/00					
67	Other			70 d	21/02/00	26/05/00					
89	Screw T	Screw Take-ups		P 02	21/02/00	26/05/00					
8	Electrical			105 d	28/02/00	21/07/00	-				
8	Motors			80 d	28/02/00	16/06/00	-				
71	Motors			80 d	28/02/00	16/06/00					
2	Miscellaneous	sno		100 d	06/03/00	21/07/00					
13	Electrica	Electrical Equipment	t	100 d	06/03/00	21/07/00					<u> </u>
74	Racking			50 d	20/03/00	26/05/00					<u> </u>
75	Cabling			50 d	20/03/00	26/05/00					
76	Terminations	ations		40 d	20/03/00	12/05/00					
11	Control & Instrumentation	mentation		100 d	06/03/00	21/07/00					
78	Instrumentation	ttion		100 d	06/03/00	21/07/00					
62	Instrumentation	entation		100 d	06/03/00	21/07/00					
8	Miscellaneous	sn		50 d	20/03/00	26/05/00					
<u>જ</u>	Miscellaneous	Ineous		50 d	20/03/00	26/05/00					
82	Construction Area 100	0		115 d	03/04/00	00/60/80			ink mediana ana ang binang ang ang ang ang ang ang ang ang ang		
ß	Civil & Structural	-		95 d	03/04/00	11/08/00				1	
84	Civils - Foundations	ndations		50 d	03/04/00	00/90/60					
											- I
rrojeci. Date: 13	rtujeci. plaineveis Date: 13/10/99	Task		Progress		ž	Milestone	Summary			
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LEVEL 4 DELIVERABLES DECUNERTIES PAINING DECUNERTIES PAINING DECUNERT		)					
0         Tarefet         0         list          li					VEL 4 C DETAILE DCUMEN CUREMI NSTRU(	DELIVERA ED PLANN UT SCHED ENT SCHE ENT SCHE	ABLES VING DULES EDULES ETAILS
Transfer         Transfer         Transfer         Junit         April         Mont         April         Mont         Junit	2						
Image: construct of a constr	5 8		ations		_		Feb Mar Apr May Jun
Structural material mater	a B	control reference	o Eoundatione				
Structural - Conveyor Systemont,         60 d         000500         147100           Conveyor Systemont,         23 d         200500         200500         200500           Fouring & Handaling         23 d         200500         200500         200500           Fouring & Handaling         23 d         200500         200500         200500           Fouring & Handaling         23 d         200500         147700         200600           Tall Frame Steel         23 d         200500         147700         200600           Tanister House Steel         13 d         120600         147700         200600           Tanister House Steel         23 d         200600         147700         200600           Tanister House Steeling         14         140700         200600         200600           Tanister House Steeling         14         140700         200600         140700           Tanister House Steeling         14         140700         200600         140700           Tanister House Steeling         16 d         170700         200600         140700           Utanister House Steeling         16 d         170700         200600         140700           Utanister House Steeling         16 d         170700	3			0 0 0	24/04/00	00/90/60	
Conveyor Gantries         22d         220500         230600           Conveyor Treates         22d         80000         230600           Floring & Handralling         22d         200500         230600           Floring & Handralling         15d         170600         230600           Floring & Handralling         15d         170600         240600           Tall Frame Steal         15d         120600         07/0700           Tanter L Building Steelwork         15d         120600         07/0700           Tanter House Steel         22d         120600         07/0700           Transfer House Steel         22d         120600         07/0700           Transfer House Steel         22d         170700         040800           Unarter House Steel         23d         170700         040800           Unarter House Steel         23d         170700         040800           Undres         16d         170700         040800           Undres         16d         170700         110800           Undres         16d         170700         240700           Undres         16d         210600         170700           Undres         16d         20060         <	87	Structural - Conve	syor Sy <del>ee</del> lwork	50 d	08/02/00	14/07/00	
Conversor Treates         204         0.005/00         2.006/00	88	Conveyor Gant	tries	25 d	22/05/00	23/06/00	
Floring & Handraling         204         290500         2305000           Sheefing         154         120500         300500           Head Frame Steel         15         220600         140700           Tail Frame Steel         20         805500         220600           Structural - Building Steelwork         40         120600         020600           Tarster House Steelwork         20         140700         140700           Undest         Tarster House Steelwork         20         140700	8	Conveyor Trest		20 d	08/05/00	02/06/00	
Sheeling         15d         120600         300000           Head Frame Steel         15d         2006000         140700           Tal Frame Steel         20         800500         220600         140700           Structural - Building Steelwork         40         120600         077700         200600           Transfer House Steelwork         20         120600         077700         240500         140700           Transfer House Steelwork         20         120600         155         250600         140700           Transfer House Steelwork         20         15         27000         040500         156           Outles         Transfer House Steelwork         15         170700         040500         10000           Outles         Unters         15         170700         040500         10000           Outles         Unters         15         170700         040500           Unters         Unters         15         170700         10000           Unters         Unters         15         170700         10000           Unters         Unters         15         170700         10000           Unters         Unters         15         170700 <td< td=""><td>8</td><td>Flooring &amp; Han</td><th>sdrailing</th><td>20 d</td><td>29/05/00</td><td>23/06/00</td><td></td></td<>	8	Flooring & Han	sdrailing	20 d	29/05/00	23/06/00	
Head Frame Steel         15 d         200600         1407100	91	Sheeting		15 d	12/06/00	30/06/00	
Tail Fame Steel         201         8005/00         2026/00         2020/00	92	Head Frame St	teel	15 d	26/06/00	14/07/00	
Structural - Building Steetwork         40         12066/0         04/08/00           Transfer House Steetwork         20         12/06/00         04/07/00           Transfer House Steetwork         20         13/07/00         04/08/00           Transfer House Steetwork         20         17/07/00         04/08/00           Transfer House Steeting         15         17/07/00         04/08/00           Chutes, Liners & Deflector Plates         15         17/07/00         04/08/00           Uners, Liners & Deflector Plates         16         17/07/00         04/08/00           Uners, Liners & Deflector Plates         10         31/07/00         11/08/00           Deflector Plates         10         31/07/00         24/07/00           Deflector Plates         3         18/07/00         24/07/00           Bething         3         18/07/00         24/07/00           Splicing         2         24/07/00         24/07/00           Splicing         1ask         Instant         Instant	8	Tail Frame Stee	G	20 d	08/05/00	02/06/00	_
Transfer House Steelwork         20 d         12/06/00         0//07/00           Transfer House Steelwork         15 d         26/06/00         14/07/00           Transfer House Sheeling         15 d         17/07/00         04/08/00           Transfer House Sheeling         15 d         17/07/00         04/08/00           Chrites         2 benector Plates         20 d         17/07/00         04/08/00           Chrites         15 d         17/07/00         04/08/00         11/08/00           Uners         15 d         24/07/00         11/08/00         11/08/00           Uners         16 d         24/07/00         11/08/00         24/07/00           Mechanical         45 d         22/06/00         21/08/00         24/07/00           Mechanical         5 d         18/07/00         24/07/00         24/07/00           Belling         3 d         18/07/00         24/07/00         24/07/00           Splicing         2 d         2 d         2 d         2 d         2 d           Splicing         2 d         2 d         2 d         2 d         2 d         2 d           Splicing         2 d         2 d         2 d         2 d         2 d         2 d	8	Structural - Buildin	ng Steelwork	40 d	12/06/00	04/08/00	
Transfer         House Flooring/HrRaling         15 d         260600         1407/00         040800         04080         040800         040800	ß	Transfer House	e Steelwork	20 d	12/06/00	00/20/20	
Transfer House Sheeting       15 d       17/07/00       04/08/00         Churtes, Liners & Deflector Plates       20 d       17/07/00       04/08/00         Churtes       Liners       15 d       17/07/00       04/08/00         Liners       15 d       17/07/00       04/08/00       04/08/00         Liners       15 d       17/07/00       04/08/00       04/08/00         Deflector Plates       10 d       31/07/00       11/08/00       11/08/00         Deflector Plates       10 d       31/07/00       24/07/00       24/07/00         Betting       5 d       18/07/00       24/07/00       24/07/00         Splicing       3 d       18/07/00       24/07/00       24/07/00         Splicing       1ask       Mestone       2 d       2/07/00	8	Transfer House	e Flooring/H/Railing	15 d	26/06/00	14/07/00	
Chrites, Liners & Deflector Plates         20 d         17/07/00         11/08/00 <th< td=""><td>97</td><td>Transfer House</td><th>e Sheeting</th><td>15 d</td><td>17/07/00</td><td>04/08/00</td><td></td></th<>	97	Transfer House	e Sheeting	15 d	17/07/00	04/08/00	
Ohdtes         15 d         1707/00         0408/00         11/	86	Chutes, Liners & D	Deflector Plates	20 d	17/07/00	11/08/00	
Liners         15 d         2407/00         11/08/00           Defelector Plates         10 d         31/07/00         11/08/00           Mechanical         49 d         22/05/00         27/07/00           Mechanical         49 d         22/05/00         27/07/00           Belting         3 d         18/07/00         24/07/00           Splicing         3 d         18/07/00         24/07/00           Splicing         2 d         24/07/00         2/07/00           Instrume         2 d         24/07/00         2/07/00           Splicing         2 d         24/07/00         2/07/00           Instrume         2 d         2/07/00         2/07/00           Splicing         2 d         2/07/00         2/07/00           Instrume         2 d         2/07/00         2/07/00           Splicing         2 d         2 d         2/07/00           Instrume         Freedel         2 d         2/07/00	8	Chutes		15 d	17/07/00	04/08/00	
Defelector Plates         10 d         31/07/00         11/08/00           Mechanical         49 d         22/05/00         21/07/00         24/07/00           Bething         5 d         18/07/00         24/07/00         24/07/00         28/07/00           Splicing         Task         2 d         2 d/07/00         24/07/00         24/07/00         24/07/00           Task         Task         Progress         Miestone          2 d         21/07/00         24/07/00           Task         Task         Miestone         2 d         21/07/00         24/07/00         24/07/00	100	Liners		15 d	24/07/00	11/08/00	
Mechanical         43 d         22/05/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         27/07/00         20/07/00         <	101	Defelector Plate	8	10 d	31/07/00	11/08/00	
Betring         5 d         18/07/00         24/07/00         24/07/00           Betring         3 d         18/07/00         24/07/00         24/07/00           Splicing         2 d         2/07/00         24/07/00         24/07/00           Insk         Task         Progress         Miestone         Miestone           Freeder         Progress         Miestone         Summary	102	Mechanical		49 d	22/05/00	27/07/00	
Betting     3 d     18/07/00     20/07/00       Splicing     2 d     21/07/00     24/07/00       Task     Task     Image: Splicing in the	103	Belting		5 d	18/07/00	24/07/00	•
Splicing     2 d     21/07/00     24/07/00       Task     Task     Progress     Milestone ◆     Summary       Freed 4 - Deliverables - Detailed Planning	104	Belting		3d	18/07/00	20/07/00	
Task Progress Milestone  Milestone  Level 4 - Deliverables - Detailed Planning	105	Splicing		2 d	21/07/00	24/07/00	3 883
	Project Date: 1					Milest	
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ID Task Name	1		Dum	Start	Finish	Jan Feh	Mar	Anr	New	2000	8	Aud	400
	Idlers		25 d	22/05/00	23/06/00	-	_				'n	ĥnư	oen
107	Trough Idiers	ldiers	25 d	22/05/00	23/06/00								
108	Return Idlers	ldlers	25 d	22/05/00	23/06/00								
109	Impact Idlers	ldlers	25 d	22/05/00	23/06/00								
110	Reducers		2 d	17/07/00	18/07/00						-		
111	Reducers	ß	2 d	17/07/00	18/07/00						120g		
112	Fluid Couplings	ings	2 d	17/07/00	18/07/00						•		
113	Fluid Couplings	uplings	2d	17/07/00	18/07/00								
114	Pulleys		31 d	02/00/20	17/07/00					ľ	' <b> </b>		
115	Head Pulley	uliey	1 d	17/07/00	17/07/00						_		
116	Tail Pulley	ley	1 đ	02/06/00	05/06/00					_			
117	Belt Scrapers	IS	3 d	25/07/00	27/07/00								
118	Primary	Primary Scrapers	3d	25/07/00	27/07/00								
119	Seconds	Secondary Scrapers	30	25/07/00	27/07/00								
120	V-Ploughs	hs	3 d	25/07/00	27/07/00						1 533		
121	Miscellaneous	SN	1 d	25/07/00	25/07/00						-		
12	Screw T	Screw Take-ups	1 d	25/07/00	25/07/00						-		
123	Electrical		40 d	17/07/00	00/60/80								
124	Motors		1d	17/07/00	17/07/00						-		
125	Motors		1 d	17/07/00	17/07/00						_		
126	Miscellaneous	sn	40 d	17/07/00	00/60/80								
Project: planlevels Date: 13/10/99		Task	Progress		⊻	Milestone		Summary <sup>1</sup>		ļ			
			Level 4 -		Appendix No. 6.4 liverables - Detail	Appendix No. 6.4 Defiverables - Detailed Planning						Pag	Page 6 of 7
							2						

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		2000 2000										Summary	
	s ss	Feb Mar	$\frac{1}{2}$									Ø	
	LEVEL 4 DELIVERABLES DETAILED PLANNING DOCUMENT SCHEDULES PROCUREMENT SCHEDULES CONSTRUCTION DETAILS	Finish Jan	0	04/08/00	18/08/00	00/60/80	00/60/80	00/60/80	00/60/80	00/60/80	00/60/80	Milestone	
	LEVEL 4 D DETAILE DOCUMEN PROCUREME CONSTRUC	Dum Start		15 d 17/07/00	15 d 31/07/00	20 d 14/08/00	35 d 24/07/00	35 d 24/07/00	35 d 24/07/00	35 d 24/07/00	35 d 24/07/00	Progress	
			quipment			Ø	Itation				SI	Task Task Pro	
		Task Name	Electrical Equipment	Racking	Cabling	Terminations	Control & Instrumentation	Instrumentation	Instruments	Miscellaneous	Miscellaneous		
			1	128	129	130	131	132	133	134	135	Project: planlevels Date: 13/10/99	



#### TYPICAL EXAMPLE OF CODE OF ACCOUNTS

The purpose of a coding system is to provide the means by which the project data may be processed and recorded for the purpose of Accounting, Job Control, Estimating and Cost Control and if required can be extended to record and identify equipment, specifications, requisitions, enquiries, orders etc. It is not always necessary or convenient to use the full coding system and the discretion of the project leader should be called upon to set it up AT THE ESTIMATING PHASE.

**INDIRECT CLASS CODES :-**

Site Management Manhours

Site Indirect Procurement

Head Office Manhours

Head Office Indirect

Procurement

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Y

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### Typical Format :-

Job Number	1 alpha/numeric and 3 numerics
Plant Area	3 alpha/numerics
Class	1 alpha
Sub-class	2 alphas

#### **DIRECT CLASS CODES**

Equipment :-

- B Blowers/Fans/Compressors/Pumps
- C Materials Handling
- E Electrical
- H Heat Transfer
- I Instrumentation and Controls
- K Platework
- M Machinery
- P Piping, Valves and Fittings
- Q Special Equipment
- S Structural Steelwork
- T Transport
- V Vessels, Columns and Tanks

Sub-contracts :-

- A Civil and Building Works
- D Erection / Installation
- F Painting / Insulation

Appendix No. 8A - Typical Summary Code of Accounts

## CLASS C - MATERIALS HANDLING

## MECHANICALS

CMA	Motor
СМВ	Reducer & Base Plate
CMC	H.S.Coupling
CMD	L.S.Coupling
CME	V-Drive
CMF	Motor Mount & Guard
CMG	Brake
СМН	Holdback
CMI	Belting
CMJ	Belt Splicing
СМК	Primary Cleaner
CML	Secondary Cleaner
СММ	V - Plough
CMN	Take-ups

## **IDLERS**

CIA	Transition
CIB	Impact
CIC	Trough
CID	Return
CIE	Trough Training
CIF	<b>Return Training</b>

## PULLEYS

CPA	Head
CPB	Head Snub
CPC	Tail
CPD	LT Bend
CPE	Take-up
CPF	Tail Snub
CPG	Drive
CPH	Drive Snub HT
CPI	Drive Snub LT
CPJ	HT Bend

Appendix No. 8B Detailed Code of Accounts for Materials Handling

**CONTRACTOR :- ACME MATERIALS HANDLING (SA) Pty** 

**DETAILED BREAKDOWN - CIVILS** 

										!				
4 73 A 37	Area LUU	LEVEL 4 Area 100 Buik Handling Conveyor 100CV01	ling Convey	or 100CV01	DESCRIPTION						PRICE	PRICE BREAKDOWN	NMC	
									TOTAL					Construction
Area	Class	Sub Class	Sub Class Sub Class			Ouantity	IInit	Marc	PRICE	Design	Procurement Transport	Transport	Erection	Erection Commission
100	V				Civil /Struct			COPTAT		វិមារទំពាល				
100	V				Foundations									
100	V	¥			Trestle Founds									
100	<b>A</b>	V	V		Excavation									
100	Y	V	æ		Formwork									
100	V	¥	с С		Rebar									
100	V	V	â		Concrete									
100	V I	B			Irxfr Hse Founds									
100	¥	B	<b>V</b>		Excavation									
100	V	B	B		Formwork									
100	A	В	C		Rebar									
100	V	B	D		Concrete									
100	A	С			Other Founds							T		
100	A	С	A_		Excavation									
100	A	c	B		Formwork									
100	A	C	C		Rebar									
100	V	С	Q		Concrete									
				ſ					-	-	-			-

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CONTRACTOR :- ACME MATERIALS HANDLING (SA) Ph

**DETAILED BREAKDOWN - STRUCTURAL & PLATEWORK** 

	Construction	Commission																															
NMO		Erection																															
PRICE BREAKDOWN		Transport																															
PRICE		Procurement Transport																															
		Design Engineering	D																		-												
	TOTAL	PRICE																															
		Mass																															
		Unit																						-									
		Quantity																						-									
DESCRIPTION			Conv Stwrk	Trestles	Trestles 1-5	Gantries	Gantries 1-6	Take-up	I ower & Box	Punchings	Access	Walkway Flooring	Hand & Knee Rails	Sheeting	Doghouse Sheeting	Guards	Bolts	Bldg Stwrk	Trxfr Hse	Support Steel & Bracing	Access	Flooring	Stairtreads	Handrailing	Sheeting	Side Sheeting	Ridge Flashing	Bolts	Platework	Head Chute	Tail Chute	Liners	Deflector Plts
r 100CV01																																	
ing Conveyo		Sub Class			A		В		с С	D		E	F		ს	Н	I			<b>A</b>		æ	С	Q		F	G	I					
Bulk Handling Conveyor 100CV01		Sub Class	C	C	c	C	C	с С	C	C	с U	С	C	C	C	C	с I	B	B	B	B	ß	B	B	B	B	B	B		A	B	C	Q
Area 100		Class	S	S	s	S	S	s	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	К	K	K	K	K
LEVEL 4 Area 100	-	Area	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

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CONTRACTOR :- ACME MATERIALS HANDLING (SA) Phy

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**DETAILED BREAKDOWN - MECHANICALS** 

LEVEL 4	Area 100	LEVEL 4 Area 100 Bulk Handling Conveyor 100CV01	ling Convey	or 100CV01	DESCRIPTION						PRICE	PRICE BREAKDOWN	NMO	
									TOTAL				Cons	Construction
	t	1	1						PRICE	Design	Procurement Transport	Transport	Erection	Erection Commission
Area	Class	Sub Class Sub Class	Sub Class			Quantity	Unit	Mass		Engineering				
100	ပ				Mechi									
100	ပ	Σ			Belting									
100	ပ	Σ	_		Belt									
100	ပ	Σ	ſ		Splicing									
100	ပ	Σ			Idlers									
100	ပ ၂	-	υ		Trough	-								
100	ပ	-	<u> </u>		Return									
100	ပ ၂	-	8		Impact									
100	ပ	M	8		Drives									
100	ပ	Σ	0		Couplings									
100	ပ	٩			Pulleys									
100	ပ	٩.	۷		Head									÷
100	с С	4	ပ		Tail									
100	ပ ျ	W			Scrapers									
100	ပ	W	ч		Primary									
100	ပ	W			Secondary									
100	ပ 	W	W		V - Plough									

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CONTRACTOR :- ACME MATERIALS HANDLING (SA) Pty

À Z SUB\_CLASS BREAKDOWN

							_	_									,												
	Construction	Erection Commission																											
NM	Const	Erection																				-							
PRICE BREAKDOWN		Transport																											
PRICE		Procurement																			 - -								
		Design	Engineering																										
	TOTAL	PRICE	-																										
		_	Mass														-												
			Unit																										
			Quantity																										
DESCRIPTION				Civil /Struct	Foundations	Trestle Founds	Trxfr Hse Founds	Other Founds	Conv Stwrk	Trestles	Gantries	Таке-ир	Access	Sheeting	Guards	Bolts	Bldg Stwrk	Trxfr Hse	Access	Sheeting	Bolts	Platework	Mechi	Belting	Idlers	Drives	Couplings	Pulleys	Scrapers
or 100CV01																													
ing Convey			Sub Class												H	I					Ι					В	D		
LEVEL 3 Area 100 Bulk Handling Conveyor 100CV01			Sub Class			V	8	c C	c	С	c	L C L	L C	c l	c	C	B	B	B	B	B			W	W	W	W	٩	Σ
Area 100			Class	V	A	¥	Y	V	S	S	S	S	S	S	S	S	S	S	S	S	S	ĸ	ပ	ပ	C	C	C	ບ	ပ
LEVEL 3			Area	100	100	100	001	100	100	100	100	100	001	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

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	LEVEL 2	
	<b>EDULE -</b> ]	
	NG SCH	
	TIMATI	
-	<b>ISH EST</b>	
	IYP	

CONTRACTOR :- ACME MATERIALS HANDLING (SA) Pty

AREA BREAKDOWN

truction	Commission			
Const	Erection			
	Transport	ŧ		
	Procurement			
	Design	Engineering	0	
TOTAL	PRICE			
		Mass		
		Unit		
		Quantity		
			Civil /Struct	Mechi
		Sub Class		
		Sub Class		
		Class	V	с С
		Area	100	100
	TOTAL	TOTAL     TOTAL       PRICE     Design	Class Sub	Class     Sub Class     Sub Class     Courtement     Transport     Erection       00     A     Civil /Struct     Quantity     Unit     Mass     Engineering     Procurement     Transport