

PART 2: PRICING DATA
ECC3 Option B

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option B	
C2.2	The <i>bill of quantities</i>	

C2.1 Pricing assumptions: Option B

1. How work is priced and assessed for payment

Clause 11 in NEC3 Engineering and Construction Contract (ECC3) Option B states:

Identified and defined terms 11
11.2

(21) The Bill of Quantities is the *bill of quantities* as changed in accordance with this contract to accommodate implemented compensation events and for accepted quotations for acceleration.

(28) The Price for Work Done to Date is the total of

- the quantity of the work which the *Contractor* has completed for each item in the Bill of Quantities multiplied by the rate and
- a proportion of each lump sum which is the proportion of the work covered by the item which the *Contractor* has completed.

Completed work is work without Defects which would either delay or be covered by immediately following work.

(31) The Prices are the lump sums and the amounts obtained by multiplying the rates by the quantities for the items in the Bill of Quantities.

This confirms that Option B is a re-measurement contract and the bill comprises only items measured using quantities and rates or stated as lump sums. Value related items are not used. Time related items are items measured using rates where the rate is a unit of time.

2. Function of the Bill of Quantities

Clause 55.1 in Option B states, "Information in the Bill of Quantities is not Works Information or Site Information". This confirms that specifications and descriptions of the work or any constraints on how it is to be done are not included in the Bill, but in the Works Information. This is further confirmed by Clause 20.1 which states, "The *Contractor* Provides the Works in accordance with the Works Information". Hence the *Contractor* does **not** Provide the Works in accordance with the Bill of Quantities. The Bill of Quantities is only a pricing document.

3. Guidance before pricing and measuring

Employers preparing tenders or contract documents, and tendering contractors are advised to consult the sections dealing with the bill of quantities in the NEC3 Engineering and Construction Contract Guidance Notes before preparing the *bill of quantities* or before entering rates and lump sums into the *bill*.

There is no general provision in Option B for payment for materials on Site before incorporation into the *works*. If secondary Option X14 Advanced payment has not been used then the tendering contractor may obtain the same effect by inserting appropriate items in the method related charges where the *method of measurement* allows, or alternatively making allowance in the rates of the *bill of quantities* for the financing of Plant and Materials until they are incorporated in the *works*.

When compensation events arise, the default position is that the Bill of Quantities is not used to calculate the cost effect of the event. Defined Cost and the resulting Fee is used and Defined Cost includes all components of cost which the *Contractor* is likely to incur, including so called P & G items. Rates and lump sums from the Bill of Quantities, or from any other source, may be used instead of Defined Cost and the Fee only if the *Contractor* and *Project Manager* agree. If they are unable to agree, then Defined Cost

plus Fee is used.

4. Measurement and payment

4.1. Symbols

The units of measurement described in the Bill of Quantities are metric units abbreviated as follows:

Abbreviation	Unit
%	percent
h	hour
ha	hectare
kg	kilogram
kl	kilolitre
km	kilometre
km-pass	kilometre-pass
kPa	kilopascal
kW	kilowatt
l	litre
m	metre
mm	millimetre
m ²	square metre
m ² -pass	square metre pass
m ³	cubic metre
m ³ -km	cubic metre-kilometre
MN	meganewton
MN.m	meganewton-metre
MPa	megapascal
No.	number
sum	Lump sum
t	tonne (1000kg)

4.2. General assumptions

- 4.2.1. Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance has been made in the quantities for waste.
- 4.2.2. The Prices and rates stated for each item in the Bill of Quantities shall be treated as being fully inclusive of all work, risks, liabilities, obligations, overheads, profit and everything necessary as incurred or required by the *Contractor* in carrying out or providing that item.
- 4.2.3. An item against which no Price is entered will be treated as covered by other Prices or rates in the *bill of quantities*.
- 4.2.4. The quantities contained in the Bill of Quantities may not be final and do not necessarily represent the actual amount of work to be done. The quantities of work assessed and certified for payment by the *Project Manager* at each assessment date will be used for determining payments due.
- 4.2.5. The short descriptions of the items of payment given in the *bill of quantities* are only for the purposes of identifying the items. Detail regarding the extent of the work entailed under each item is provided in the Works Information.

4.3. Departures from the *method of measurement*

4.3.1.

4.4. Amplification of or assumptions about measurement items

The following is provided to assist in the interpretation of descriptions given in the *method of measurement*. In the event of any ambiguity or inconsistency between the statements in the *method of measurement* and this section, the interpretation given in this section shall be used.

4.4.1.

C2.2 the *bill of quantities*

ITEM NO	DESCRIPTION	UNIT	NO OF	QTY	RATE	AMOUNT
	BILL NO 1					
	PRELIMINARIES AND GENERAL					
	Fixed					
	Site Establishment - For Site containers, Scaffolding, Geotechnical Investigation and Mobile Ablutions	Sum		4		
	Site De-Establishment - For Site containers, Scaffolding, Geotechnical Investigation and Mobile Ablutions	Sum		4		
	Medicals - Entry	Once Off		43		
	Medicals - Exit	Once Off		43		
	PPE	Once Off		43		
	Safety File	Once Off		1		
	Security Clearance/Screening Certification (Obtained from SAPS, MIE or Accredited Institution)	Once Off		43		
	240L Recycling Bin	Once Off		2		
	Time Related					
	Site Office - 3m x 9m includes Standard Wall mounted AC Units, Blinds and COC	Monthly	2	7		
	Site Canteen/Kitchen - 3m x 6m includes Standard Wall mounted AC Units, Blinds, Worktop, Sink, Undercupboard, 10L Geyser and COC	Monthly	2	7		
	Site Storage - 2.4m x 6m	Monthly	2	7		
	Supply - Mobile Ablution Facility (For male and female) (Serviceable weekly)	Monthly	2	7		
	Transportation of Site Management Crew - LDV	Monthly	2	7		
	Transportation of Site Crew - 22 Seater	Monthly	2	7		
	Transportation for Geotechnical Investigation	Km	4	40		
	Scaffolding	Days		213		
	TLB Hire for Geotechnical Investigation	Hourly		9		

	SITE CREW					
A	Geotechnical Investigation Team					
	Geotechnical Engineer (10 years minimum with ECSA registration)	Hrs	1	9		
	Geotechnical Technician (5 years with ECSA registration)	Hrs	1	9		
B	Design Team					
	Chief Structural Engineer (10 years minimum with ECSA registration)	Hrs	1	84		
	Structural Engineer (5 years with ECSA registration)	Hrs	1	420		
	Draughtsman (7 years minimum)	Hrs	1	120		
C	Survey Team					
	Chief Land Surveyor (10 years minimum with professional registration)	Hrs	1	40		
	Land Surveyor (5 years with professional registration)	Hrs	1	120		
D	Construction Resources					
	Site Manager (10 years minimum)	Hrs	1	1038		
	Supervisor (10 years minimum)	Hrs	1	1038		
	Safety Officer (7 years minimum)	Hrs	1	1038		
	Quality Officer (5 years minimum)	Hrs	1	519		
	Clerk (5 years minimum)	Hrs	1	1038		
	Welder (7 years minimum)	Hrs	1	519		
	General Workers (5 years minimum) - 3No	Hrs	3	1038		
	General Workers - 6No	Hrs	6	1038		
	TLB Operator	Hrs	1	9		
	Carried to Final Summary					
	BUILDERS WORK					
	BILL NO 1: PRELIMINARIES AND GENERAL					
ITEM NO	DESCRIPTION	UNIT		QTY	RATE	AMOUNT
	BILL NO 2					
	EARTHWORKS					
	GEOTECHNICAL INVESTIGATION					
	Field Work and Professional Services					
	Profiling Trial Pits	No/Test		8		
	Hand DCP	No/Test		8		

	Final Geotechnical Investigation Report - Produced by Pr Eng - Geologist	Hourly		20		
	Creation of plans using ARCGIS software	No		4		
	Laboratory Work					
	Foundation Indicator	No/Test		5		
	CBR Test including MOD AASHTO and Shear Box	No/Test		4		
	Deformability Test - Collapse potential test	No/Test		4		
	Deformability Test - Double oedometer test	No/Test		2		
	Compaction Test - CBR with MOD AASTHO, Moisture-Density relation at Optimum Moisture Content	No/Test		4		
	Chemical Test - Soil Conductivity and Corrosivity Classification, pH	No/Test		3		
	Submission of soil samples to an accredited laboratory and issuing of analysis instructions	Sum		1		
	Site Clearance:					
	Allow for clearing the area of the site to be built upon of grass, weeds, shrubs, debris, etc, including grubbing up all roots, scoffling up as required and cart away all vegetation and debris	m ²		507,88		
	Strip average 300mm thick layer of topsoil and stockpile on site where directed	m ³		30,47		
	Carting away of excavated material:					
	Description of carting away of excavated material shall be deemed to include for loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on site.					
	EXCAVATIONS, FILLING, ETC OTHER THAN BULK:					
	Excavation in earth not exceeding 2m deep:					
	Bases	m ³		149,27		
	Bases (Rip 150mm and compact) - In Situ material	m ³		15,18		

	Bases - plinth for gratings	m ³	11,49		
	<u>Risk of collapse of excavations</u>				
	Sides of trench and hole excavations not exceeding 1.5m deep	m ²	431,27		
	Keeping excavations free of water				
	Keeping excavations free of all water other than subterranean water	Item	1		
	EARTH FILLING, ETC.				
	Import G5 material from commercial sources and use to fill, compact to 93% Mod. AASHTO maximum density:				
	Backfilling to trenches, holes, etc.	m ³	37,62		
	Earth filling obtained from the excavations and/or prescribed stock piles on site compacted to a density of at least 98% Mod. AASHTO maximum density:				
	Backfilling to trenches, holes, etc.	m ³	43,45		
	Compaction of surfaces:				
	Compaction of existing ground surface under floors, paving, etc including scarifying for a depth of 300mm, breaking down oversize material, adding suitable material where necessary and compacting to 98% Mod AASHTO density	m ²	457,88		
	Carried to Final Summary				
	BUILDERS WORK				
	BILL NO 2: EARTHWORKS				
ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	BILL NO 3				
	CONCRETE, FORMWORK AND REINFORCEMENT				

	CONCRETE WORK					
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES					
	15MPa/19mm concrete:					
	Surface blinding under footings and bases	m ³		7,59		
	REINFORCED CONCRETE CAST ON/IN FORMWORK					
	35MPa/19mm concrete:					
	Bases	m ³		50,60		
	Stub columns	m ³		3,02		
	Plinths	m ³		3,13		
	FORMWORK					
	SMOOTH FORMWORK (DEGREE OF ACCURACY II)					
	Smooth formwork to sides:					
	Boxing in smooth formwork to form:					
	Chamfer along top edges	m		59,8		
	ROUGH FORMWORK (DEGREE OF ACCURACY III)					
	Rough formwork to sides:					
	Bases	m ²		145,70		
	Stub columns	m ²		37,38		
	REINFORCEMENT					
	High tensile steel reinforcement to structural concrete work:					
	-					
	High tensile steel bar reinforcement					
	Y16	t		7,31		
	Y12	t		0,16		
	Y10	t		0,26		

	FABRIC REINFORCEMENT					
	-					
	Type 888 fabric reinforcement in concrete plinths	m ²		7,35		
	-					
	CONCRETE SUNDRIES					
	35MPa non-shrink "SIKA212" grout:					
	-					
	Bedding approximately 15mm thick under 350 x 300mm base plate, including chamfered edges all round	No		42		
	Carried to Final Summary					
	BUILDERS WORK					
	BILL NO 3: CONCRETE, FORMWORK AND REINFORCEMENT					
ITEM NO	DESCRIPTION	UNIT		QTY	RATE	AMOUNT
	BILL NO 4					
	ROOF COVERING & CLADDING					
	0.58mm Chromadek Klip-Lok 700 concealed profile aluminium troughed interlocking roof sheeting in single lengths and accessories, fixed to steel purlins:					
	Roof covering with pitches not exceeding 25 degrees	m ²		1178,24		
	Sides sheeting	m ²		736,40		
	Accessories:					
	Side/Barge flashings	m		84,48		
	Ridge cappings	m		122,73		
	Curve sheeting (Bull nose)	m		21,12		
	Carried to Final Summary					
	BUILDERS WORK					
	BILL NO 4: ROOF COVERING					

ITEM NO	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	BILL NO 5				
	STRUCTURAL STEEL				
	Drawings and shop details:				
	The Contractor shall be responsible for preparing shop drawings and details which must be submitted to the Employer for approval prior to commencement of fabrication				
	GALVANISED STEEL COLUMNS AND BEAMS				
	Welded columns in single lengths with flat base, cap bearer and connection plates, bolted to concrete stub columns				
	203 x 133 x 30kg/m I-section columns	t	4,10		
	150 x 75 x 6.5 x 10 Columns	t	1,23		
	Welded beams in single lengths with flat base and connection plates, bolted to steel				
	406 x 140 x 39kg/m I-section beams (eave beams)	t	2,43		
	305 x 102 x 32.8kg/m I-section beams	t	1,58		
	203 x 133 x 30kg/m I-section beams	t	7,01		
	150 x 75 x 6.5 x 10 I-section beams	t	6,82		
	Sundries				
	120 x 120 x 12 Angle sections	t	8,82		
	GALVANISED STEEL RAFTERS				
	Welded rafters including cleats, flat section bearers, gussets and connection plates etc bolted to steel				
	203 x 133 x 30kg/m I-beam rafter	t	6,62		

	Sundries					
	50 x 50 x 4mm L section 550mm long - Knee bracing	t		0,24		
	PURLINS, GIRTHS, BRACING, etc					
	Purlins and grits, bolted to steel:					
	200 x 75 x 20 x 3.5mm Lipped channel section	t		15,62		
	BOLTS, FASTENERS, etc					
	FIXATION - [To be measured as a percentage as per the Engineer recommendation]	%		6%		
	SUNDRIES:					
	Shop drawings	Sum		1		
	[NOTE: This design cost would definitely change due to Contractor's Design that must be submitted and pending Eskom approval]					
	Carried to Final Summary					
	BUILDERS WORK					
	BILL NO 5: STRUCTURAL STEEL					
ITEM NO	DESCRIPTION	UNIT		QTY	RATE	AMOUNT
	BILL NO 6					
	METALWORK					
	STAINLESS STEEL / MILD STEEL HANDRAILS, STAIRWAYS AND GRATING					
	40x4.5mm Galvanised Steel Grating					
	700mm x 1500mm (Walkways)	m2		289,73		
	1400mm x 1500mm (Middle section)	m2		144,86		
	Stainless steel ball type tubular welded to side mounted stanchion (S90) handrails 1000mm high with 33mm top and bottom handrails.	m		579		

	42mm Stanchions at 1500mm centres onto 60 x 4.5 x 150mm foot plate fixed to 100 x 50mm channel section with all the necessary bolts, nuts, washers, etc					
	Stainless steel stairway	No		4		
	[NOTE: Engineer to provide full description of what the stairway would entail which members to be used, stanchions centres and height and the width of the treads]					
	Carried to Final Summary					
	BUILDERS WORK					
	BILL NO 6: METALWORK					
ITEM NO	DESCRIPTION	UNIT		QTY	RATE	AMOUNT
	BILL NO 7					
	ELECTRICAL WORKS					
	Emergency Light Unit: Type: Mag44; Voltage: 230V; 50Hz; Current: 110Ma; Power: 100W; Battery Type: Ni Cad; Battery Quantity: 10 Cells; Lamp Type: 10Watt; Lamp Quantity: 1Lamp With Led Strip; Dimensions: Wd 265 X Lg 375 X Ht 175 Mm; Terminal Type: Porcelain; Color: Red; Mounting Method: Spigot Bracket; Application: Emergency Lights; Standard: Sans10142 2021 Ed3 Amd1; Sans 60598-2-1 Ip66 High Pressure Die Cast Aluminium Red Painted For Emergency Indication Light	No		52		
	Light: Type: Industrial; Power: 70W; Potential: 230 Vac; Color: White; Oem P/N: Magurp; The Magurp Led (Universal Retrofit Plate) Is Designed To Fit The Majority Of Commercially Available Ip65 Industrial Bulkheads Lights, This Universal Retrofit Plate Is Suitable For Bulkhead Lights Mag44, The Magurp Shall Be Supplied With Linear Led Driver 198-234Vac 50Hz Suitable For The Led Pcb, The Led Driver Shall Be Of The Contant Current Type	No		104		

	Cable, Electrical: Voltage: 1 Kv; Core Quantity: 4; Conductor Material: Copper; Conductor Size: 2.5 Mm2; Armor: No Armor; Design Type: Flexible; Bedding Layer Material: Pvc Bedding Insulated; Standard: Sabs; Covering: Pvc Rubber; Specification: Iec 287; Iec60502; Weight Per Unit Measure: 630 Kg/Km; Temperature Rating: 30°C	m		300		
	Conduit: Type: Steel Protective; Size: 15mm; Material: Steel; Connection: M16; Reference No: Ac2201/16; M16 X 1.5; Mechanical Protection & Electrical Insulation of Sensor Cables; Extension Cables and Signal Cables for fittings	m		100		
	Breaker, Circuit: Potential: 400 V; Current: 16 A; Pole: 2; Color: Gray; Type: Mcb; Interrupt Capacity: 10 Ka; Manuf P/N: Ep102 Ucc 16A	No		12		
	Carried to Final Summary					
	BUILDERS WORK					
	BILL NO 7: ELECTRICAL WORKS					
ITEM NO	DESCRIPTION	UNIT		QTY	RATE	AMOUNT
	BILL NO 8					
	FIRE SUPPRESSION AND PROTECTION					
	Civil works	Sum		1		
	Viking J-1 Alarm check valve with associated accessories, to tie in to existing system	No		2		
	Piping 3inch c/w joints, supports and accessories	m		300		
	Piping 2inch c/w joints, supports and accessories	m		300		
	Piping 1inch c/w joints, supports and accessories	m		300		
	Sealed glass bulb sprinkler	No		160		
	Connections	Sum		1		

	Testing, commissioning, training and documentation	Sum		1		
	Professional Fees	Sum		1		
	Carried to Final Summary					
	BUILDERS WORK					
	BILL NO 8: FIRE SUPPRESSION AND PROTECTION					
	SUMMARY					
	-					
BILL 1	PRELIMINARIES & GENERAL					
	-					
BILL 2	EARTHWORKS					
	-					
BILL 3	CONCRETE, FORMWORK AND REINFORCEMENT					
	-					
BILL 4	ROOF COVERING & CLADDING					
	-					
BILL 5	STRUCTURAL STEEL					
	-					
BILL 6	METALWORK					
	-					
BILL 7	ELECTRICAL WORKS					
	-					
BILL 8	FIRE SUPPRESSION AND PROTECTION					
	TOTAL AMOUNT EXCL. VAT					