



**VAAL UNIVERSITY
OF TECHNOLOGY**

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ELECTRICAL ENGINEERING

BILL OF QUANTITIES

FOR

VUT RENOVATION OF TRANSPORT & LAB

PREPARED FOR:



VAAL UNIVERSITY OF TECHNOLOGY
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REV A (OPTIMISED)

MAY-24

ELECTRICAL BILL OF QUANTITIES (BOQ)

GENERAL NOTES

- 1 The conditions of contract and the application of the Contract Price Adjustment Provisions shall be as set out in the Main Document:
- 2 This Bill of Quantities forms part of, and must be read in conjunction with all electrical specification and drawings.
- 3 No alteration, erasure or addition is to be made in the text of the Bill of Quantities. Should any alteration, erasure or addition be made, it will not be recognised but the original wording of the Bill of Quantities will be adhered to.

- 4 Tenderers shall complete the Bills of Quantities and detail the unit rate and total amount of No. item.

The total shall constitute the tender price of adjudication.

NOTE:

- 5 Tenderers are advised to check their item extension and total additions, as arithmetical errors in the priced Bills of Quantities shall not be considered as having an effect on the tender amount
- 6 The Department will check the completed Bill of Quantities and reserves the right to adjust any individual price and to rectify any discrepancy whilst the total tender price as quoted remains unaltered.
- 7 The quantities given in the Bill for cable, cable markers, cable route, and earth wire cannot be regarded as exact and are subject to measurement on site after completion of the service and adjustments will be made according to the quantities.
- 8 The unit rate for each item in the Bills of Quantities shall include for all materials, labour, profit, transport, etc., everything necessary for the routing of cables and complete installation of the work in accordance with the description.

VUT RENOVATION OF TRANSPORT AND LAB

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>BILL No. 1</u> <u>PRELIMINARY & GENERAL</u>				
1.1	<u>SITE ESTABLISHMENTS</u>	sum	1		
1.1.1	Site Office (Camp and Fencing).				
1.1.2	Site Office equipment				
1.1.3	Store.				
1.2	<u>ADMINISTRATIVE COSTS</u>	sum	1		
1.2.1	Site Personnel				
1.2.2	Supervisory Staff.				
1.2.3	Insurances.				
1.2.4	Surety/Bank guarantee.				
1.3	<u>GENERAL COSTS</u>				
1.3.1	Handing over of commissioned works and a comprehensive "As-built" Data Pack : Three (3) hard copies in A4-sized binders and one (1) soft copy on Disc.	sum	1		
1.3.2	Certificates of Compliance as per SANS 10142 for the complete works.	sum	1		
1.3.3	Decommission of electrical equipment	sum	1		
1.4	<u>SITE CLEAN-UP</u>				
1.4.1	Clean-up of the construction site after completion of the Works, to the satisfaction of both the Engineer and the Client.	sum	1		
1.5	<u>DISPOSAL OF REDUNDANT MATERIAL</u>				
1.5.1	The Contractor shall make provision for the disconnection, removal, loading, transport and safe disposal of all redundant materials inclusive of distribution boards, switchgear, luminaires and electrical sundry materials in accordance with standard safe practices.	sum	1		
1.5.2	The Contractor shall obtain a Safe Disposal Certificate from a <u>registered</u> hazardous waste site as confirmation of the safe disposal of all flourescent lamps identified as been redundant. The certificate shall indicate the waste type, volume and hazardous waste site used.	sum	1		
1.6	<u>GENERAL INFORMATION</u> <i>Provisional Amounts Throughout These Bills Of Quantities Shall Only Be Used With The Written Consent And Authorization Of The Engineer and/or Client.</i>				
AMOUNT CARRIED FORWARD TO SUMMARY FOR BILLS OF QUANTITIES					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<p>BILL No. 2 LOW VOLTAGE DISTRIBUTION (400/231V) DISTRIBUTION BOARDS & ASSOCIATED CABLE WORK</p> <p>2.1 GENERAL INFORMATION Low Voltage Distribution Switchboard shall be as per relevant specifications, scope of works, drawings, technical information. Switchgear offered shall be of the specified ABB Electric range/s, or equivalent and approved.</p> <p>2.2 EQUIPMENT OFFERED The Tenderer shall indicate the manufacturer/supplier of the equipment that will form part of his tender offer. The Tenderer's offer shall be for the full quota of Modifying the existing Distribution Switchboards as per this bills of quantities.</p> <p>2.2.1 Switchboards offered: Manufacturer / Supplier: _____</p> <p>2.2.2 Switchgear offered: Manufacturer / Supplier: _____</p> <p>2.2.3 Delivery Period offered: _____ Weeks</p> <p>2.3 DISTRIBUTION SWITCHBOARDS Distribution Switchboards shall be new, factory-wired and for installation indoors and/or outdoors. Switchboards shall be powder coated, have a minimum IP35 rating (indoors), IP65 rating (outdoors) and be c/w steelwork, frames, sub-frames, chassis, covers, lockable doors, busbars, internal wiring, auxillary equipment, fixing accessories, labelling and signage. Allow for 30% spare capacity.</p> <p>The associated switchgear is specified in DB Schematics</p> <p>2.3.1 DB -VT/G <i>Main * Indoor * Recessed Wall Mounted</i></p> <p>a) Design, Supply, Manufacture and Delivery c/w the supply and installation of associated switchgear as per <u>DB Schematics layout</u>.</p> <p>b) Tagging and Labeling of all Circuits</p> <p>c) Allow for building works in preparation for the installation of the new distribution switchboard.</p> <p>d) Install new distribution switchboard in position; connect all cables and small power/lighting circuits and make good for commissioning.</p> <p>e) Allow for Commissioning FAT, and Site Acceptance Tests (SAT).</p>		ea	1		
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ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<i>Brought Forward from PREVIOUS PAGE</i>				
2.4	<u>CABLE WORKS</u> Low Voltage cable as may be laid in ground, wire channels, sleeves and / or on racking and in configurations as indicated on site as follows: 600/1000V Cable; Stranded Cu Conductors; PVC SWA PVC; (SANS 1507-3)				
2.4.1	10mm ² x 3 core stranded Cu				
	a) Supply	m	10		
	b) Install	m	10		
2.4.2	4mm ² x 3 core stranded Cu				
	a) Supply	m	30		
	b) Install	m	30		
2.4.3	2.5mm ² x 3 core stranded Cu				
	a) Supply	m	20		
	b) Install	m	20		
	Cable terminations c/w glands, shrouds, termination lugs and fixing accessories for the above cables.				
2.4.4	10mm ² x 3 core stranded Cu				
	a) Supply	ea	2		
	b) Install	ea	2		
2.4.5	4mm ² x 3 core stranded Cu				
	a) Supply	ea	10		
	b) Install	ea	10		
2.4.6	2.5mm ² x 3 core stranded Cu				
	a) Supply	ea	2		
	b) Install	ea	2		
2.5	<u>ADDITIONAL WORKS</u> <u>Provisionals</u>				
2.5.1	Provisional amount for such additional switchgears requirements not covered above and as yet to be confirmed.	sum	1		
AMOUNT CARRIED FORWARD TO SUMMARY FOR BILLS OF QUANTITIES				R	-

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<u>BILL No. 3</u> <u>LOW VOLTAGE INSTALLATIONS</u> <u>SMALL POWER</u>				
3.1	<u>GENERAL INFORMATION</u> Low Voltage Small Power installations shall be as per relevant specifications, schedules, scope of works, drawings and technical information. Small power outlets shall be marked with adequate labels by way of indicating the relevant point of supply (i.e. distribution board and circuit number). Small Power Outlets and Switch Disconnectors offered shall generally be of the Crabtree Classic range, or equivalent and approved.				
3.2	<u>EQUIPMENT OFFERED</u> The Tenderer shall indicate the manufacturer/supplier of the equipment that will form part of his tender offer.				
3.2.1	<u>Powerskirting offered:</u> Manufacturer / Supplier:				
3.2.2	<u>Small Power Switching Accessories offered:</u> Manufacturer / Supplier: CRABTREE CLASSIC				
3.3	<u>POWERSKIRTING</u> Powerskirting of the O-Line Multiskirt range, or equivalent and approved. Surface wall mounted and/or suspended in ceiling void, c/w all covers, splices, end caps, mounting fixtures, adaptors, clamps, hangers and accessories:				
3.3.1	MS2 - Powerskirting (2 Tier)				
	a) Supply	m	20		
	b) Install	m	20		
3.3.2	MS2 - Powerskirting (2 Tier) - Elbow / Tee				
	a) Supply	ea	4		
	b) Install	ea	4		
3.4	<u>CONDUIT AND ACCESSORIES</u> Conduit, as may be required, to be placed into position for casting into concrete/screed/ brickwork and/or surface mounted onto concrete/brickwork, c/w all jointing, short lengths, wall boxes, couplings, bends, conduit boxes, loop-in boxes, saddles and mounting accessories.				
3.4.1	20mm - PVC				
	a) Supply	m	30		
	b) Install	m	30		
3.4.2	25mm - PVC				
	a) Supply	m	30		
	b) Install	m	30		
3.4.3	25mm - Galvanised				
	a) Supply	m	70		
	b) Install	m	70		
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ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<i>Brought Forward from PREVIOUS PAGE</i>					
3.4.4	<u>Weatherproof Socket - Box</u> The supply and installation of surface mounted outlet boxes c/w fixing and mounting accessories. Weatherproof Box to accomodate Switched 16A Double Socket a) Supply b) Install	ea ea	4 4		
3.4.6	<u>Draw Boxes - Galvanised</u> The supply and installation of draw boxes, including the termination of conduits with ferrels and locknuts. 100 x 150 x 50mm a) Supply b) Install	ea ea			
3.5	<u>GENERAL PURPOSE CABLE</u> Single core; 600/1000V rated; high conductivity annealed stranded copper conductors to SANS 1411-1; PVC insulated to SANS 1411-2; manufactured to SANS 1507-3; as may be drawn in powerskirting, wiring duct, conduit and/or sleeves:				
3.5.1	4mm ² PVC insulated stranded Cu a) Supply b) Install	m m	300 300		
3.5.2	2.5mm ² PVC insulated stranded Cu a) Supply b) Install	m m	300 300		
3.5.3	2.5mm ² PVC insulated stranded Cu (Earth - Yellow/Green) a) Supply b) Install	m m	150 150		
3.5.4	1.5mm ² PVC insulated stranded Cu (Earth - Yellow/Green) a) Supply b) Install	m m	150 150		
<i>Carried Forward to NEXT PAGE</i>					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<i>Brought Forward from PREVIOUS PAGE</i>					
3.6	<u>SWITCHING ACCESSORIES - POWERSKIRTING</u> Service outlets mounted on power skirting complete with covers and fixing accessories: <u>Powerskirt - Switched Socket Outlets; 250Vac; 16A; IP20</u>				
3.6.1	Single, (<u>White</u>) a) Supply	ea	12		
	b) Install	ea	12		
3.6.2	<u>Cottage Pedestal c/w Switched Socket Outlets and fixing accessories (O-Line).</u> 16 Ampere, 220/250V, 2 x Single SSO on each side (Double)				
	a) Supply	ea			
	b) Install	ea			
3.6.3	Single, (<u>Red</u> , flat earth pin) a) Supply	ea	6		
	b) Install	ea	6		
3.6.4	<u>Powerskirt - Communication Outlets; IP20</u> Data socket outlet (RJ45) a) Supply	ea	6		
	b) Install	ea	6		
3.6.5	<u>100x100 Switch Disconnecter; 250Vac; IP20</u> IP66 2P 63A ISOLATOR, (<u>White</u>) -Mechanical Equipment a) Supply	ea	4		
	b) Install	ea	4		
3.7	<u>SWITCHING ACCESSORIES - GENERAL</u> Outdoor service outlets flush and/or surface wall mounted, c/w cover plates, mounting and fixing accessories: <u>100x100 Switch; 250Vac; 16A; IP65</u>				
3.7.1	socketoutlet a) Supply	ea	4		
	b) Install	ea	4		
3.8	<u>ADDITIONAL WORKS</u> <u>Electrical Bonding</u>				
3.8.1	Allowance for the electrical bonding of building structures and services as per SANS 10142	sum	1		
3.8.2	<u>Provisionals</u> Provisional amount for wireways and switching accessories not covered above and as yet to be confirmed.	sum	1		
AMOUNT CARRIED FORWARD TO SUMMARY FOR BILLS OF QUANTITIES					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<p><u>BILL No. 4</u> <u>LOW VOLTAGE INSTALLATIONS</u> <u>LIGHTING</u></p> <p>4.1 <u>GENERAL INFORMATION</u> Low Voltage Lighting installations shall be as per the relevant specifications, schedules, scope of works, drawings and technical information. Light switches shall be marked with adequate labels by way of indicating the relevant point of supply (i.e. distribution board and circuit number). Lighting switches offered shall generally be of the Crabtree Classic range, or equivalent and approved. Luminaires offered shall be of the specified ranges, or equivalent and approved.</p> <p>4.2 <u>EQUIPMENT OFFERED</u> The Tenderer shall indicate the manufacturer/supplier of the equipment that will form part of his tender offer.</p> <p>4.2.1 <u>Lighting Switching Accessories offered:</u> Manufacturer / Supplier: CRABTREE CLASSIC</p> <p>4.2.2 <u>Luminaires offered:</u> Manufacturer / Supplier: RUBICON LIGHTING</p> <p>Note: Wiring duct and conduit measured elsewhere.</p> <p>4.3 <u>SWITCHING ACCESSORIES - GENERAL</u> Light switches; flush and/or surface wall-mounted; c/w enamel coated cover plates and fixing accessories: <u>50x100 Light Switches; 250Vac; 16A; IP20</u></p> <p>4.3.1 1- Lever, 1-Way Outdoor Weatherproof Switches</p>	<p>a) Supply</p> <p>b) Install</p>	<p>ea</p> <p>ea</p>	<p>1</p> <p>1</p>		
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ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
<i>Brought Forward from PREVIOUS PAGE</i>					
4.4	<u>LUMINAIRES</u> Supply and installation of all luminaires c/w lamps. Allow for the mounting onto cable trays, concrete, brickwork, walls and/or ceilings c/w all brackets,supports, conduit boxes, mounting and fixing accessories.				
4.4.1	Type A Manufacturer / Supplier : RUBICON LIGHTING Saxa Triproof HL-1200 36W/4320lm 4000K a) Supply b) Install	ea ea	8 8		
4.4.3	Type B Manufacturer / Supplier : RUBICON LIGHTING WRA : Surface Bulkhead - Round; 15W; 220V LED; Opal glass lens; ECG; IP65 a) Supply b) Install	ea ea	1 1		
4.4.4	Photo cell a) Supply b) Install	ea ea			
4.5	<u>ADDITIONAL WORKS</u> <u>Provisionals</u>				
4.5.1	Provisional amount for outdoor and indoor lighting systems not covered above and as yet to be confirmed.	sum	1		
AMOUNT CARRIED FORWARD TO SUMMARY FOR BILLS OF QUANTITIES					

<u>ELECTRICAL WORKS</u>			
<u>OVERALL SUMMARY OF THE ELECTRICAL WORKS</u>			
BIL No	BILL DESCRIPTION		AMOUNT
1	<u>PRELIMINARIES & GENERALS BILL No. 1</u>		R -
2	<u>BILL No. 2</u>		R -
3	<u>BILL No. 3</u>		R -
4	<u>BILL No. 4</u>		R -
		SUB-TOTAL	R -
		VAT @ 15%	R -
TOTAL PRICE FOR THE ELECTRICAL INSTALLATION : INCLUDING VAT (ADD ITEMS 1 TO 4 ABOVE)			R -
<p>NOTE: THIS TOTAL SHALL BE CARRIED FORWARD TO FINAL SUMMARY OF THE MAIN TENDER DOCUMENT</p> <p>1 <u>PARTICULARS OF THE ELECTRICAL SUB-CONTRACTOR</u></p> <p>2 Name of Electrical Contractor : _____</p> <p>3 Physical Address: : _____</p> <p>4 Postal Address: : _____ : _____</p> <p>5 Name of Authorised Person: _____</p>			