



**Kenya Marine Fisheries Socioeconomic
Development Project (KEMFSED)
P.O. Box 58187-00200
NAIROBI**



**MINISTRY OF MINING, BLUE ECONOMY AND MARITIME
AFFAIRS**

Request for Bids

**ADDENDUM TO
CONSTRUCTION OF KIDONGO FISH LANDING SITE**

Employer: State Department for Blue Economy & Fisheries
Project: Kenya Marine Fisheries Socio-Economic
Development Project (KEMFSED)
Contract Title: **CONSTRUCTION OF KIDONGO FISH
LANDING SITE**
Country: Republic of Kenya
Loan No./Credit No./Grant No.: 6540-KE
RFBNo.: KE-MOMBE&MA-MSA-2024-008-CW
Date Addendum Issued on: **20th March 2024**
Date

VOLUME 2 OF 4

**ADDENDUM TO KIDONGO FISH LANDING SITE
BILLS OF QUANTITIES**

ADDENDUM FOR CONSTRUCTION OF KIDONGO FISH LANDING SITE

You are hereby advised to insert this ELECTRICAL BILLS OF QUANTITIES to the advertised BILLS OF QUANTITIES for CONSTRUCTION OF KIDONGO FISH LANDING SITE.

See attached blank ELECTRICAL BILLS OF QUANTITIES.

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	(All Rates are V.A.T Inclusive) BILL NO. 15; ELECTRICAL WORKS				
	SCHEDULE 1: ELECTRICAL WORKS Supply Install, Test and Commission Following:- LIGHTING POINTS				
15.1.1	Lighting points wired in 3x4.5mm ² PVC/SC copper cables drawn in concealed 20mm diameter heavy gauge PVC conduit including all boxes, saddles and accessories for				
	i)One way switching	No.	64		
	ii)Two Way switching	No.	30		
15.1.2	10A plastic switch plates as follows				
	i)One gang one way	No.	25		
	ii)One gang two way	No.	15		
	iv)Intermediate switch	No.	1		
	LIGHTING FITTINGS				
15.1.3	Light fittings complete with all the necessary fixing accessories and rated energy lamps as follows:-				
	i) Exit Light	No.	8		
	ii) Type 600X600	No.	5		
	iii)Type 2	No.	35		
	iv) Type 2D	No.	6		
	v) Type 4	No.	20		
	vi) Type N	No.	8		
	vii) Type 4C	No.	3		
	ix) Type M	No.	14		
15.1.4	Motion Sensors for lighting in washrooms	No.	12		
	POWER OUTLETS				
15.1.5	Socket outlet point in Ring wiring of 3x2.5 mm ² PVC-SC-Cu cables drawn inside 20mm diameter HG conduits	No.	34		
15.1.6	13A Twin switched moduled socket outlet plate	No.	34		
15.1.7	20A Double Pole outlet point comprising of wiring in 3x4.0 mm ² PVC-SC-Cu cables drawn inside 20mm diameter HG conduits	No.	18		
15.1.8	20A Double pole switch complete with neon light	No.	18		
	ELECTRICAL SWEEP FANS				
15.1.9	Ceiling fan points wired in 3x2.5mm ² PVC/SC copper cables drawn in concealed 20mm diameter heavy gauge PVC conduit including all boxes, saddles and all accessories	No.	6		
15.1.10	CEILING FANS				
	i) 49W 1400mm 3-arm 5- speed, Ceiling fan complete with the regulator	No.	6		
15.1.11	Ceiling fan hook (M-10) complete with rawl bolt.	No.	6		
	TOTAL C/F TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	BALANCE B/F/ FROM PREVIOUS PAGE				
	<u>FIRE DETECTION AND ALARM SYSTEM</u>				
15.1.12	Fire alarm panel/Fire alarm bell/Break glass Unit Points/Smoke detector points comprising iring in 3x1.5mm ² fire risistant cables concealed in PVC conduits concealed in ceiling space but excluding bell and break glass unit	No.	25		
15.1.13	Addressable Call point	No.	11		
15.1.14	Addressable Sounder complete with beacon	No.	11		
15.1.15	Addressable Smoke detectors complete with base	No.	13		
15.1.16	Heat detectors complete with base	No.	1		
15.1.17	Single Loop, Expandable to 8, Intelligent Addressable fire alarm panel with atleast 200 addresses complete with full network capability,stand-by batteries and intergral battery charger, touch screen, thermal printer and CAN modules	No.	1		
	<u>TELEVISION, CCTV AND DATA WORKS</u>				
15.1.18	16 SWG,(450 x 300 x 100)mm ³ flush mounted galvanised powder coated draw box for telephone & data works	4	No		
15.1.19	Telephone/Data outlet point comprising of concealed 20mm diameter HG PVC conduits plus draw wire	20	No		
15.1.20	RJ45, Single Data outlet plate a) Single	10	No		
	<u>DISTRIBUTION BOARDS</u>				
15.1.22	4-Way TP/N distribution board flush mounted complete 1No. 125A TPN integral isolator.	No.	1		
15.1.23	8-Way TP/N distribution board flush mounted complete 1No. 100A TPN integral isolator.	No.	2		
15.1.24	4-Way TP/N distribution board flush mounted complete 1No. 100A TPN integral isolator.	No.	2		
15.1.25	6- way SP/N Consumer Unit flush mounted complete 1No. SP/N intergral isolator	No	2		
15.1.26	MCBs for the above boards				
	i)16A SP	No.	15		
	ii)20ASP	No.	17		
	iii)32ASP	No.	11		
	iv)32ATP	No.	6		
	vi) Blanking Plates	No.	32		
	<u>SUB-MAINS CABLES</u>				
15.1.26	4 core 25mm ² PVCC/SWA/PVC (armoured) + 1X16mm ² single Core copper cables drawn inside HG conduits	LM	200		
15.1.27	4 core 16mm ² PVCC/SWA/PVC (armoured) + 1X16mm ² single Core copper cables drawn inside HG conduits	LM	100		
	TOTAL C/F TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	BALANCE B/F/ FROM PREVIOUS PAGE				
15.1.27	4 core 10mm ² PVCC/SWA/PVC (armoured) + 1X10mm ² single Core copper cables drawn inside HG conduits	LM	100		
15.1.28	3 core 10mm ² PVC/SWA/PVC (armoured) copper cables drawn inside 50mm diameter HG conduits	Lm	125		
15.1.29	Cable glands for the above cable	No.	12		
15.1.30	Cable lugs for the above cable complete with hydraulic crimping	No.	24		
15.1.31	Single phase isolator point comprising of wiring in 3x6.0 mm ² PVC-SC-Cu cables drawn inside 20mm diameter HG conduits	No	4		
15.1.32	32A Single phase Isolator complete with 3 pin industrial socket and plug	No	4		
15.1.33	Three phase isolator point comprising of wiring in 5x6.0 mm ² PVC-SC-Cu cables drawn inside 20mm diameter HG conduits	No.	8		
15.1.34	32A Three phase Isolator complete with 5 pin industrial socket and plug	No.	8		
15.1.35	Powder Coated Electrical Pedestal Socket Box with provision for 4No. Standard Twin sockets and 4 No. Standard double data outlet	No.	2		
	TOTAL GROUND FLOOR C/F TO COLLECTION SUMMARY PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
15.2.1	<p><u>SCHEDULE 2 MAIN POWER DISTRIBUTION</u></p> <p>Free-standing purpose made front access sub main switchboard, modular, metal clad, manufactured in 12 SWG galvanised mild steel sheet and finished in cream (or appropriate colour) powder coating as shown on the schematic. The switchboard should consist of a PLC section. The switchboard to be complete with the following:-</p> <p>i) Digital multimeter with CTs and fuse protection capable of measuring voltage in the range 0 – 1000V, 3-phase, current in the range 0-630A, 3-phase, and all power system parameters (KW, KVA, KW/HR, KVArS, Frequency, P.F., harmonics and all the parameters). The multimeter should be complete with selector switches for viewing/displaying the various parameters.</p> <p>ii) Set of neon phase presence indicator lamps</p> <p>iii) 250A adjustable TPN MCCB main incomer and having a short-circuit breaking capacity of 100KA at 415Vac, 50Hz.</p> <p>iv) 4No. 250A TPN copper bus bars</p> <p>v) 3 No. 100A 3 P TPN MCCBs</p> <p>vi) 3 No. 63A SPN MCBs</p> <p>vii) 2 No. 63A TPN MCBs</p> <p>vii) 2 No. 32A TPN MCBs</p> <p>viii) Sufficient spare capacity for future development all fitted with 2 No. 63A SP MCBs & 1 No. 63A TP MCCB</p> <p>x) Sealable studs for all cover plate screws and all necessary accessories</p> <p>xi) 6mm perspex viewing window</p> <p>xii) Heavy duty rubber lining for all the perspex viewing windows</p> <p>xiii) 415V three-phase surge diverter, wired as shown, complete with enclosure with viewing window.</p> <p>xiv) 60 KVAR's automatic Power Factor Correction Capacitor Bank comprising the following:-</p> <p>b) 1 No 25 KVAR's 415 V,50Hz, 3-Phase</p> <p>b) 3 No 10 KVAR's 415 V,50Hz, 3-Phase</p> <p>b) 1 No 5 KVAR's 415 V,50Hz, 3-Phase</p> <p>c) 5 No Special contactors for capacitor switching</p> <p>d) 5 No Fuse bases and fuses for each capacitor protection</p> <p>e) 5 No Step indicator lamps</p> <p>f) 5 No Control circuit protection fuse/fuse holder</p> <p>g) 1 No. 5-Step automatic control regulator for maintaining power factor at the set level and regulating the switching of capacitor steps</p> <p>h) 1 No 250/5A Current transformer (to be mounted after the mains incoming circuit breaker)</p> <p><i>The bank to be made from low-loss bio-degradable capacitive units, complete with earthed enclosure. All the contactors, controls and indicator lamps, including a digital read-out screen, to be included.</i></p>	Item	1		
TOTAL C/F TO NEXT PAGE					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	BALANCE B/F FROM PREVIOUS PAGE				
	<i>xv) Allow for Fireman's switch connection as indicated in the schematic drawing</i>				
	xvi) Comprehensive protective multiple earthing of the board in 1500mm long 12mm diameter pure electrolytic copper earth rod deep driven to permanent moisture level, copper clamp. 120mm ² green earth lead complete with all accessories. (Note: Use parallel rods if effective earthing cannot be achieved with 1 No. rod).				
15.2.2	95mm ² PVC/SWA/PVC 4C armoured copper cable laid in ducts in trench from KPLC Meter to main low voltage board complete with glands and lugs	LM	100		
15.2.3	50mm ² PVC/SWA/PVC 4C armoured copper cable laid in ducts in trench from KPLC Meter to main low voltage board complete with glands and lugs	LM	100		
	UNDERGROUND CABLE DUCTING				
15.2.4	Allow for 300mm deep trenching and back filling for the cable mentioned before, Telecommunication and street lighting.	Lm	100		
15.2.5	Ducting for the above in 150mm HGPVC Pipes complete with haunching	Lm	100		
15.2.6	Allow for cable markers in concrete tiles marked "HATARI" for the item above	No.	8		
	<u>WATER PUMPS PROVISIONS</u>				
15.2.7	3 core 6mm ² PVC/SWA/PVC (armoured) copper cables drawn inside 32mm diameter HG conduits	Lm	80		
15.2.8	32A Single phase Isolator complete with 3 pin industrial socket and plug	No.	2		
	<u>BIO- DIGESTER/BIO REACTOR PROVISIONS</u>				
15.2.9	4 core 25mm ² PVC/SWA/PVC (armoured) copper cables drawn inside 32mm diameter HG conduits	Lm	100		
15.2.10	Cable glands for the above cable	No.	2		
15.2.11	Cable lugs for the above cable complete with hydraulic crimping	No.	10		
	TOTAL FOR POWER DISTRIBUTION C/F TO SUMMARY PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	<u>SCHEDULE 3</u>				
	<u>40KW SOLAR SYSTEM</u>				
15.3.1	72- cell 575W Monocrystalline Solar Modules, Efficiency 80%,Cell Specific Safety - Class II, Application Class A, Life time - 25Years, Guarantee - 10Years Rated Current (Im) 8.8A Rated voltage (Vm) 17,5v, Cell Efficiency - 15.0%	No.	70		
15.3.2	25KWh Deep Cycle Gel Battery Life span - 5Years, Guarantee - 2 Years	No.	1		
15.3.3	DC/AC off-grid 48V Power inverter full protection function:over-voltage, over-frequency, over-current, over-temperature, AC short-circuit automatic protection Rated Output power 40KW MPPT efficiency of upto 99.5% Pure Sinewave output	No.	1		
15.3.4	Solar MPPT charge controller with the following characteristics; PV open circuit voltage 500V, Max PV power 40KW, PV rated current 100A, MPPT input voltage 100-150vdc LCD display: Solar panel current, Solar panel voltage, Solar panel power, Battery group voltage,charge & current Protection function against solar reverse charge, solar reverse connection, battery reverse connection, battery overcharge , battery overcurrent	No.	1		
15.3.5	Racks/brackets to fit for item "4.31" above. To be Alluminium or approved equivalent resisting corrosion	No.	75		
15.3.6	Non-corrosive brackets to fit item "4.32" above	No.	75		
15.3.7	Non-corrosive brackets to fit item "4.33" above	No.	2		
15.3.8	Non-corrosive brackets to fit item "4.34" above	No.	1		
15.3.9	Solar surge protection device rated for 60VDC or to the Engineers approval	No.	1		
15.3.10	List any other item necessary to complete the installation of the 40KW solar system <i>Contractor to note that the inverter and batteries together with their associate works should be housed in a container. Rates included should include the container housing</i>	Lot	1		
	TOTAL FOR HYBRID SOLAR POWER C/F TO SUMMARY PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	<u>SCHEDULE 4</u>				
	<u>STANDBY POWER SUPPLY SYSTEM (GENERATOR SET)</u>				
	GENERATING SET				
15.4.1	Supply, deliver to site, install, test and commission a prime rated 50 KVA 3 phase, 415V, 50Hz diesel generating set with a continuous power factor of 0.8 lagging as directed by the Engineer's specifications. The generator set is to be complete with a sound attenuated canopy and an integral base/belly daily service fuel tank with an operational running capacity of 8 hours.	No	1		
15.4.2	Supply, deliver to site and install a steel exhaust pipe of not less than 14 SWG and of adequate diameter running from the generating set to the outside of the generator house	LM	10		
15.4.3	Connect the exhaust pipe above in item above using steel pipes of adequate diameter, and flexible piping off engine exhaust manifold complete with heavy duty silencer	Item	1		
15.4.4	Complete earthing of generating set to electrical engineer's approval	Item	1		
	<u>AMF CONTROL PANEL</u>				
	Supply, deliver to site, install, test and commission the following:				
15.4.5	An electrical control panel complete with 150A incoming MCCBs and contactors for automatic change over operation and complete with all other control accessories	No	1		
15.4.6	Suitable rated manual by-pass switch with clearly labeled NORMAL-OFF-BYPASS positions, and shall such be wired that when the switch is on either OFF or BYPASS position, the generator shall receive no signal to start	No.	1		
15.4.7	240V AC/12V DC mains power supply trickle battery charger as directed by the Engineer's specifications. The trickle charger shall charge the battery when the set is on IDLE mode , otherwise when the set is RUNNING , the battery shall be charged by the generator charger .	No.	1		
15.4.8	12 volts battery as directed by the Engineer's specifications	No.	1		
15.4.9	<u>RECOMMENDED SPARE PARTS AND LUBRICATORS</u>				
	For the supply to the site of the following spare parts and lubricators:				
15.4.10	Oil Filters	No.	2		
15.4.11	Air Filters	No.	2		
15.4.12	Fuel filters to suit the set	No.	2		
15.4.13	Set of Fan belts to suit the set	No.	1		
15.4.14	10 litres container of sump oil of grade.....*	No.	1		
	TOTAL C/F TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	BALANCE B/F FROM PREVIOUS PAGE				
15.4.14	2 kilogram grease in a tin of grade*	No.	1		
15.4.15	10 litre plastic container of distilled water	No.	1		
15.4.16	20 litre of engine oil in a tin of grade*	No.	1		
15.4.17	Any other spare parts recommended by Tenderer **	Sum	1		
	*The tenderer to fill in the Grade quality to be supplied				
	**The tenderer to fill in the details and price of items but the price not to be included in total carried forward to summary page				
	<u>SCHEDULE 4 -TOOLS TO BE SUPPLIED WITH THE SET</u>				
	For the supply to site of the following tools:				
15.4.18	Metal tool box with lock and two keys	No.	1		
15.4.19	Set of 8 No. Chrome vanadium ring spanners in sizes to suit the set	No.	1		
15.4.20	Set of 3 screwdrivers, 75mm, 200mm and 300mm plus one 200mm Philips type	No.	1		
15.4.21	- ditto -but open ended spanners	No.	1		
15.4.22	Set of feeler gauges	No.	1		
15.4.23	Set of 8 No. Ratchets in sizes to suit the set	No.	1		
15.4.24	Grease gun to suit greasing points complete with compressor	No.	1		
15.4.25	Oil can, trigger type	No.	1		
15.4.26	Any other special tools which the tenderer recommends should be purchased as an optional:*	Item	1		
	<u>NOTE*</u> Tenderer should give detail and prices of item 5.7.26 but the price not to be included in total carried forward.				
	TOTAL FOR 100KVA GENERATOR C/F TO SUMMARY PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	<p data-bbox="337 205 610 258"><u>SCHEDULE 5</u> <u>SOLAR STREET LIGHTING</u></p>				
15.5.1	Type P4	No.	12		
15.5.2	Type M	No.	12		
15.5.3	7 meter Long Class B Galvanized Iron Solar Street Lighting pole as per detail for Type M lighting	No.	3		
15.5.4	7 meter Long Class B Galvanized Iron Solar Street Lighting pole as per detail for Type M lighting	No.	12		
15.5.5	Excavate holes to take the poles above, average depth 1000mm, install pole back-fill with concrete, and compact to natural ground level.	No.	15		
	TOTAL FOR SOLAR STREET LIGHTING C/F TO SUMMARY PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	ELEMENT 6 Supply, install, test, commission and set to work (To the full satisfaction of all parties to the contract) the following: -				
	CCTV				
15.6.1	Dome Camera 4MP resolution, Excellent low light performance, Efficient H.265+ compression technology, IP67, 24/7 colourful imaging	No.	8		
15.6.2	Ditto but Bullet Cameras	No.	4		
15.6.3	Network Video Recording System base to be mounted in a 9U data Cabinet with the following features:- <ul style="list-style-type: none"> • Up to 16 channel IP cameras can be connected • Up to 576 Mbps high incoming bandwidth ensures IP cameras can be connected • 2 HDMI (different source) and 1 VGA interfaces HDD can be used for continuous video recording <ul style="list-style-type: none"> • 16 HDD can be used for continuous video recording • Supports some specialist cameras, including people counting camera/ANPR (automatic number plate recognition) camera/fisheye camera • Advanced streaming technology enables smooth live view in poor network conditions • Supports RAID 0, 1, 5, 6, 10 and N+1 hot spare for even more reliable data storage, effectively avoids data loss risks 	No.	1		
15.6.4	24 Port layer 2 100Mbps POE SFP Switch with Min 30W Power availability per port	No.	2		
15.6.5	GBIC transceiver modules (LC to LC) multimode for the switches above	No.	2		
15.6.6	Fibre Patch Panels for Data cable termination	No.	2		
15.6.7	9 U 600X600 wall mounted data cabinet complete with all accessories including power supply points	No.	2		
15.6.8	10TB Surveillance Hard Disk Drive	No.	5		
15.6.9	STP Cat 6 structured cables	Rolls	12		
15.6.10	STP Cat. 6 patch cord, 3M for the Cameras.	No.	15		
15.6.11	UPT Cat. 6A patch cord, 1M	No.	15		
15.6.12	Associated Fiber and UTP (CAT 6) cabling between field devices and Main Switch	Item	1		
	TOTAL FOR CCTV CARRIED FORWARD TO SUMMARY PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	SCHEDULE 7				
	GENERAL ITEMS				
15.7.1	Carry out comprehensive 24-hour power analysis, after installing main switchboard, but before switching on load with a digital power meter (with printer) to: i) Record and print all the power system parameters. ii) Submit 3 copies of the print-outs. <i>(Note: Parameters must be satisfactory before building is switched on).</i>	Item			
15.7.2	Allow for presentation of all the required samples as per specifications, Bills of Quantities and Drawings.	Item			
15.7.3	Working/ Shop Drawings Prepare and submit three sets of record (shop) plan and isometric layout drawings to easily readable scale, A1 or A0 paper size format as follows: i) general arrangement drawings of all mechanical services, equipment, plant etc ii) routes-types and sizes and arrangement of all pipeworks iii) any other details as per specifications Drawings are to be submitted in soft copy (AutoCad/REVIT 2023) and hard copy to the client, the architect and the engineer. The soft copies to be stored in SSD drive. Allow for preparation and submitting draft and three final copies of operation, instruction and maintenance manuals to Engineers approvals.	Item			
15.7.4	As Installed Drawings As above but for as built/ installed drawings	Item			
15.7.5	Prepare and submit Maintenance Manuals for all items installed.				
15.7.6	All other items of general preliminary to cover, but not limited to:- i)Attendance on all other sub-contractors, such as for Communication Services, Mechanical Installations, Security Installations, Sound Equipment/ Wiring Installations, Generator Installations, Lift Services, Solar Water Heating, V-Sat services etc. ii)Hiring and keeping a Supervisor/Foreman on site iii)Constant supervision of the works. iv)Provision of all the required spares. v)Testing and Inspection of materials/works. vi)Provision of labour camps. vii)Storage of materials. viii)Initial maintenance (During Defects Liability) ix)Providing water/electricity for the works. x)Protection of the works/materials xi)Clearing away on completion. xii)Preparing Final Account. xiii)Providing all Test Certificates, etc.	Item			
	Provisional Sum for Contribution to KPLC for power upgrade	Item			
	TOTAL C/F TO NEXT PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
15.7.7	<p>BALANCE B/F FROM PREVIOUS PAGE</p> <p>Allow for sub-contractors charges for liaison with Kenya Power and Lighting comprising the following:-</p> <ul style="list-style-type: none"> i)Extracting load details from the drawings ii)Calculating total load, together with necessary diversity iii)Verifying the details with the engineer. iv)If need be getting the required documentation and letters from client for the purposes of Additional Load Applications v)Filling all the required forms, and generating correspondences for power application. vi)Presenting application and getting reference number. vii)Making regular follow-ups with Kenya Power viii)Facilitating inspection, approvals and certification by Kenya Power ix)Providing attendance and materials required for power connection. x)Filling out and submitting Commencement and Completion certificates xi)Handing over all approved drawings and certificates to the client. xii)Performing all other services required for power supply to site. xiii)Building/modifying all power manholes to KPLC standards. xiv)All other incidental KPLC requirements/charges. 				
	TOTAL FOR AUDITORIUM AUDIO-VISUAL C/F TO SUMMARY PAGE				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMT
	<u>ELECTRICAL INSTALLATIONS SUMMARY PAGE</u>				
15.1	TOTAL FOR SCHEDULE 1 GROUND FLOOR				
15.2	TOTAL FOR SCHEDULE 2 MAINS DISTRIBUTION				
15.3	TOTAL FOR SCHEDULE 3 SOLAR POWER				
15.4	TOTAL FOR SCHEDULE 4 STANDBY GENERATOR				
15.5	TOTAL FOR SCHEDULE 5 SOLAR STREET LIGHTING				
15.6	TOTAL FOR SCHEDULE 6 CCTV				
15.7	TOTAL FOR SCHEDULE 7 GENERAL ITEMS				
	TOTAL FOR ELECTRICAL WORKS, CARRIED TO GRAND SUMMARY				