



شركة السمر لتوليد الكهرباء
Samra Electric Power Co. [SEPCO]

Supply and Installation of 6.6KV/630A Cables and Accessories

Scope of Work: Provide redundant power supply for the phase IV as follows:

1. GT7: Installation of 400V/500A cables as Redundant power Supply from ST4 400V system.
2. ST4: Supply and installation of 6.6KV/630A Cables and Accessories as Redundant power Supply from ST2 6.6 KV system.

Bill of Quantity (BOQ) and Price Summary

No.	Item	Unit	QTY	Unit Price (JD)	Total Price (JD)	Remark
1	Supply Cable 1 X 630 mm ² 6.6/10KV Cu/ XLPE/ CTS/ PVC/ AWA/ PVC in accordance with IEC-60502-2.	L.M	350			
2	Underground Installation of Cable, 3 X (1 X 630 mm ² 6.6/10KV Cu/XLPE/CTS/PVC/AWA/PVC) in the road crossing area, 1 meter depth, inside PVC conduit and concrete encasement, 10 cm asphalt. The price includes any materials, tools, labor and workmanship and according to the instructions of the supervising engineer.	L.M	15			
3	Underground Installation of Cable, 3 X (1 X 630 mm ² 6.6/10KV Cu/XLPE/CTS/PVC/AWA/PVC) in open area, 1 meter depth, soft sand, concrete tiles, warning tape, back filling, basecours. The price includes any materials, tools, labor, and workmanship and according to the instructions of the supervising engineer.	L.M	55			
4	Cable laying (1 X 630 mm ² 6.6/10KV Cu/ XLPE/ CTS/ PVC/ AWA/ PVC). The price includes any materials, tools, labor, and workmanship and according to the instructions of the supervising engineer.	L.M	645			



5	Supply and installation Termination Kit (Heat, 3 X (1 X 630 mm ² 6.6/10KV Cu/ XLPE/ CTS/ PVC/ AWA/ PVC)). The price includes any materials, tools, labor, and workmanship and according to the instructions of the supervising engineer.	Kit	2						
6	Supply and Installation of suitable zero sequence CT 100/1A, 5VA, 5P20, IEC-185. The price includes any materials, tools, labor, and workmanship and according to the instructions of the supervising engineer.	PC	1						
7	Supply and installation Cable Joint (Heat, (1 X 630 mm ² 6.6/10KV Cu/ XLPE/ CTS/ PVC/ AWA/ PVC)). The price includes any materials, tools, labor, and workmanship and according to the instructions of the supervising engineer.	PC	1						
8	Supply and installation of steel conduits 32 mm, hot dop galvanized, grounded. The price includes any materials, tools, labor, and workmanship and according to the instructions of the supervising engineer.	L.M	430						
9	Cable laying and termination (1 X 500 mm ² 0.6/1 KV Cu/XLPE/AWA/PVC). The price includes any materials, tools, labor, and workmanship and according to the instructions of the supervising engineer.	L.M	400						
10	Control Cable laying and termination. The price includes any materials, tools, labor, and workmanship and according to the instructions of the supervising engineer.	L.M	220						
11	Installation of cable tray on steel structure with different levels, opening hole in the STG4 building wall and insulation. The price includes any materials, tools, labor, and workmanship and according to the instructions of the supervising engineer.	L.M	120						
12	Testing for the cables and termination (DC Hipot, and Insulation Resistance). The price includes any materials, tools, labor, and	L.S	L.S						



workmanship and according to the instructions of the supervising engineer.

13	Control, Protection and Interlock configuration, Commissioning and Testing. The price includes any materials, tools, labor, and workmanship and according to the instructions of the supervising engineer.	L.S	L.S
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14	Modify the control of the Emergency Diesel Generator (EDG) of GT7 to be using undervoltage relay philosophy to operate on auto mode instead of the existing PLC control to operate on auto mode. The price includes supplying the under-voltage relay, wiring, tools, labor, and workmanship and according to the instructions of the supervising engineer.	L.S	L.S
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Total Cost Including all Taxes and Fees (JD)

Total Cost Including all Taxes and Fees (JD) in Words

Note:

1. For item #1: additional 300 m of the MV cables (1 X 630 mm²/ 6.6-10KV/ Cu/ XLPE/ CTS/ PVC/ AWA/ PVC) will be supplied by the Owner.
2. For item #9: the cable will be supplied by the Owner (400 m of LV cables 1 X 500 mm²/ 0.6-1 KV/ Cu/ XLPE/ AWA/ PVC).
3. For item #10: The Control Cables will be supplied by the Owner.
4. For Item #11: The Cable trays and covers and supports will be supplied by the Owner.

1. General Conditions:

1. The work site is Samra Power Plant at Zarqa / Al Hashimiyah.
2. The Contractor shall visit the site and review the work area and environment and the tender requirement.
3. The Contractor must comply with the power plant safety instructions.
4. The duration of the work is three months from the date of the work permit, and the Contractor shall adhere to the company working hours and holidays (The working hours are Sunday to Thursday – 8:00 to 16:00).
5. The Contractor shall clean the area after the completion of the works and shift any waste material to the designated places outside the plant boundary.
6. The Contractor shall be classified with minimum 3rd grade in the field of electromechanical.



2. General Technical Specifications

Cables Termination:

- Terminations for armored cables shall comprise compression type of gland with armor and bonding clamps to meet the requirements of type E1 to BS6121 or equivalent and shall be designed to secure the armor wires, to provide electrical continuity between the armor and the threaded fixing component of the gland and to provide watertight seals between the cable's outer sheath and gland and between the inner sheath and threaded fixing component. The glands shall project at least 10 mm above the gland plate to avoid moisture collecting in the cable crutch. Glands shall ground the armor and shields at one end only, preferably the feed end.
- The medium voltage cable shall be terminated in accordance with the cable and termination kit manufacturer instruction.
- All cable trays shall be bonded to earth over its entire length. Where tray runs are not continuous, minimum 16 mm² bonding jumpers shall be run between each run to ensure electrical continuity. The tinned, stranded copper conductor shall be used for the bonding jumper.
- All runs of cable tray shall be fitted with the covers when all cabling has been installed, secured, inspected, tested and commissioned by the Contractor.

Cable Conduits and Accessories

- Conduit, accessories and supports etc. shall be rigid hot dip galvanized steel, purpose made by one manufacturer who specializes in the design and manufacture of conduit and accessories. All conduit and accessories shall be installed to their manufacturer's requirements and recommendations.
- All conduits shall be terminated in threaded hubs or bushings designed to prevent damage to wire. Grounding-type connections shall be provided on all conduit runs which in turn shall be bonded to earth.
- Conduit ends shall be cut square, properly reamed, and threaded to engage not less than five threads. Joints shall be made up tight. Threads shall be coated with approved conductive thread protective compounds. Thread compound shall not interfere with grounding continuity of conduit system.
- Conduit fittings shall be installed as required to provide a neat workmanlike job. Expansion fittings, with bonding jumpers, shall be installed every 65 m in straight continuous runs. Pull fittings, including bends, shall be of adequate size so that the cable can be installed without bending it on a radius less than the cable man

Electrical Ducts, Trenches, and Manholes

- Where required, Electrical duct bank, trenches with covers, lids, and manholes shall be designed and constructed of concrete appropriately sized for earth and hydrostatic pressures, and live loads applied by vehicles, cranes, or cable installation equipment.
- Manholes or access points shall be placed at practical intervals to enable ease of inspection, maintenance, and cable installation.



- Cable crossings under roads and other services shall be installed in underground reinforced concrete duct banks or laid in culverts under roads. The duct banks under roads shall have PVC rated for electrical installation or steel conduits and encased in reinforced concrete.
- Duct banks other than road crossings shall be PVC rated for electrical installation or steel conduits and encased in unreinforced concrete except in areas of expected heavy loads.
- Concrete shall be with nominal 10 mm aggregate. Manholes with removable covers shall be provided as necessary to facilitate cable pulling.
- Where there is a need to remove the road asphalt, the supplier shall repaving with asphalt with the same existing asphalt specifications and restoring work area as before.

Underground Cable Laying

- The Contractor shall take particular care during the excavation.
- Excavations shall be carried out to the width, lengths and depths approved by the owner's engineer. The excavation by any method he considers suitable, subject to the approval of the Owner/Owner's Engineer.
- The cable shall be laid inside PVC conduit.
- Sandy material layer not less than 150 mm shall be installed above the PVC conduit.
- Concrete plates shall be installed.
- Warning tape shall be installed.
- Material for backfill shall be obtained from excavated soil or other sources approved by the Owner's Engineer.
- The Contract Price shall be deemed to have included for the full cost of excavation and filling of the materials including all pumping and temporary works necessary to keep the excavation and filling free from water, sheeting, temporary shoring, bracing, cribbing and timbering, trimming to line and level, stockpiling, handling, compaction, cutting, slope protection, removing surplus excavated material to spoil areas, together with all other costs incurred in complying with the tender requirements.

Protection, Control, and Interlock Configuration

The Contractor shall review the existing protection, control, and interlock (Electrical & Mechanical) configuration for STG2 & STG4 MV & LV system and reconfigure the system and setting and connect the required signals to be compatible with the new installation and connection to ensure safe system operation.

