Annex Photo Voltaic (PV) Solar Charging Station for Electric Vehicles (eV)

SPECIFICATIONS
BID SCHEDULE

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S P E C I F I C A T I O N

SECTION 1

GENERAL REQUIREMENTS

Administrative Provision:

Contract Method: Construct the work in accordance with the conditions of the Owner/Contractor Agreement.

Work sequence: (a) Sequence of work shall be jointly determined by contractor and U.S. Government. (b) Any or all operations may be carried out simultaneously or in any sequence subject to US Govt. approval.

Coordination: Coordinate work of various trades to assure efficient and orderly sequence of installation of construction elements with provision for accommodating items installed elsewhere.

Field Engineering: Provide field engineering services, establish grades, lines, and levels by use of recognized engineering survey practices. Site bench marks shall be accurately and safely established, maintained and cleared away upon completion of the work. Bench mark shall be related to the nearest permanent bench mark.

Summary of Work:

Work of this contract is comprised of installing and commissioning a PV Solar Charging Station for 5 (five) nos. of electric Vehicles in the Annex Compound. The scope of the work is described in the specifications (SOW). All materials, paints, labor, tools and equipment shall be provided by the contractor and shall also perform operations necessary to complete the work as well as removing, demolishing, dismantling existing works on proposed site. All above requirements will be based on prior joint review and concurrence by the Government and the Contractor.

Contractor's other responsibility: Repair, replace items damaged by work of this contract. Dimensions provided on drawings are based on field survey drawings. Before proceeding with work, verify all dimensions and report any discrepancies.

Cutting and Patching:

Submit written request in advance of cutting or alterations which affects (a) structural integrity of any elements of project, (b) efficiency, maintenance, or safety of any operational element, (c) visual qualities of sight exposed elements (d) work of government or separate contractor.

(b) Execution: Execute cutting, fitting and patching to complete work and to fit the several parts together to integrate with other work, uncover work to install ill-timed work, remove and replace defective and non-conforming work. Inspect existing conditions, including elements subject to damage or movement during cutting and patching. Provide supports to assure structural integrity of surroundings, device and methods to protect other portions of project from damage. Provide protection from elements for areas which may be exposed by work.

Quality Control and Safety Considerations:

Maintain quality control over supplier, manufacturers, products, services, site conditions and workmanship to produce work of specified quality. Perform work by persons qualified to produce workmanship of specified quality. Assure quality of work by complying with manufacturer's instructions, submitting manufacturer's certificates, erecting complete full scale mockup as required by individual specifications.

Contractor's workers must wear shoes, hand gloves, hardhat provided by the contractor to execute the work of this contract. They must also use adequate stepladders and wear safety belts provided by the contractor while working at high altitude. For all sorts of electrical arc and gas welding contractor must obtained Hot Work Permit signed by the Post Safety Officer before commencing such work. Request for Hot Work Permit must be sent to Post Safety Officer at least 24 hours before scheduling any welding work in the building compound.

Construction Facilities and Temporary Controls:

Maintain adequate fire protection. Gasoline and other flammable liquids shall be stored in safety containers and not to be stored inside building. Do not light fires in or about premises. No part of the Chancery compound can be used for temporary accommodation of contractor's laborers or other personnel. The contractor shall provide and maintain all temporary stairs, ladders, ramps, scaffolds, chutes as required for the proper execution of the work. Building water and electric supply can be used by the contractor for construction purposes. No materials, rubbish or debris shall be permitted to drop free but shall be removed by use of fully enclosed transport facilities. Keep all access roads and walks clear of debris, materials, construction plant and equipment during building operation. Protect all blanking, landscaping, trees and site improvements in the area of the site work. The contractor shall take all precautions for preventing injuries to persons or damage to property. The contractor shall carry on his work so that present traveled ways are not obstructed and shall take all measures to protect the work at all times against fire, storm, theft, vandalism and other losses. The contractor shall remove temporary materials, equipment, services and construction prior to substantial completion inspection and clean and repair damage caused by installation or use of temporary facilities.

Escort/Inspection:

Contractor's workers shall be escorted to the work site and during the days work, and all escorts shall be provided by the COR. All workers, materials, tools, etc., provided for the contracted work by the contractor shall be subject to inspection at check and entry points by Security Office personnel.

The contractor shall submit a written work schedule to the COR, indicating number of days and total number of workers required to complete the work within the contracted period of the work, at least three days before the start of the work. All work timings shall be directed by the COR, depending on the availability of escorts and other unavoidable circumstances.

For work locations requiring MSG and/or other American escorts, all work schedules shall be as directed by the COR.

The total time of work done on the project shall be calculated in hours of actual work done per day and shall be based on 8 hours a day and 5 days a week work schedule, except for holidays, to calculate project completion time.

Contract Close out:

When contractor considers work has reached final completion, submit written certificates that contract documents have been reviewed, work has been inspected and the work is complete in accordance with contract documents and ready for owner inspection.

Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substance, polish transparent and glossy surfaces, vacuum soft surfaces. Clean equipment and fixtures to a sanitary condition, clean or replace filters. Clean roofs, gutters, downspouts and drainage system. Clean site; sweep paved areas, rake clean other surfaces. Remove sand, mortar, and debris from surfaces, waste and surplus materials, rubbish, and construction facilities from the project and from the site. Submit all keys of locks installed in the project.

Scope of Work (SOW):

The Solar Charging Station shall consist of a metal carport with solar panels affixed to the roof. The energy generated by the solar panels is converted into electricity. Each parking space within the Solar Charging Station is outfitted with a retractable electrical connector that is used to recharge the electric vehicle(s). The solar powered charging station's connectors shall conform to all national auto manufacturers' specifications and can be used to power the new generation of electric vehicles currently being used by USG.

The Solar Charging Station is designed to the specifications of a current 8' x 15' parking space but can be constructed to accommodate any site or fleet requirement. The Station's grid-tied system shall meet all applicable construction codes of the U.S. and its design requires minimal maintenance. The materials used to construct the carport have a lifetime structural certification and are completely recyclable. The solar modules shall have a 25-year warranty.
The Contractor shall propose two options for the Charging stations. The options shall be as follows:
Options:

(a) Roof Mounted Solution
(b) Open Structure Solution

(a) Roof Mounted Solution:
For roof mounted solution, the contractor shall use an existing metal roof on the south west side of the Annex compound. The contractor shall use top mounting clamps, bottom mounting clamps and hooks for mounting on to the existing roof in a safe manner. The existing structure should be grounded separately to eliminate the possibility of an electrical shock hazard. The structure should be mounted in such a way that it can withstand a wind of 150 km/hr from any direction. Additional reinforcement, if required shall be deemed to be included in the cost of the contractor. There shall be a battery, which will be charged during the day in order to charge the electric vehicles during the night. There shall be four charging points in the station. All Frame metals shall be zinc-plated or galvanized.

(b) Open Structure Solution:
For the open structure solution, the frame shall be completely built by the contractor. The Contractor shall make an 24" x 24" x 48" reinforced concrete base flushed with the ground level for each leg of the structure. The details of the concrete base is provided with this SOW. The structure shall be an aesthetically pleasing plus durable to withstand a wind of 150 km/hr in any direction. The structure shall house 4(four) electric vehicles.

For open structure solution, the 24" x 24" x 48"(depth) with reinforcement of ½" O.C @6" both vertically and horizontally. The 4" pipe shall be placed at a depth of 3' from the G.L. The pipe should be 8" high from the G.L. The solar panels should be installed on top of the frame fixed on the pipe at a level of 8' from the ground level.

Detail Specification of the Solar Panels:

(a) Solar Panel Make: USA

(b) Steel Structure: Should be aesthetically pleasing. The contractor shall demonstration/attach picture with the bid showing, that the total structure is in agreement with the general architecture of the building.

(c) Battery Backup: The battery backup should consist of sealed type lead acid battery (maintenance free). The batteries should be placed in a weather-proof cabinet and shall be able to charge 5 EVs for about 4-6 hours.

(d) Photovoltaic Inverter: The inverter should be USA made. The inverter should convert the dc voltage in 220 volts, 50 HZ AC mains for charging the EVs.

(e) Efficiency: The efficiency of the solar system shall be 70- 80%.

(f) The total wire loss shall be less than 4%.

(g) Power Tolerance: +/-5%.

(h) Max DC output: 20 kW.

(i) Max. DC Voltage: 600 V

(j) Max. AC Voltage: 220 Volts.

(k) Cooling: Natural Cooling

(l) Grounding: All system shall be grounded.

BID SCHEDULE:

Price Schedule:

Sl. NO.	Description	Unit	Unit Price	Quantity	Total Price
1.	PV Array to provide 20 kW of Load to charge 5 nos. of electric vehicles	Lot			
2.	Photovoltaic Inverter to convert DC voltage to AC	Nos.			
3.	Battery for re-charging during night hours as storage. The battery shall charge the 5 eVs for at least 4-6 hours.	Lot			
4.	Steel structures and other items as necessary to complete the project	Lot			
5.	Installation/commissioning	Lot			
	Total (including Profit and Overhead): Option -1 (Roof Mounted): Option – 2 (Open Structure):				

Amount in words (Taka): _____

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Signature of the Contractor Date