VOLUME 4.2

FINANCIAL OFFER TEMPLATES

**Specification for cca 20kWp photovoltaic system installation and charging station at the sports hall Boro Churlevski of Bitola**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No | Description | unit | quantity | unit price | total euro |
| 1 | Installation of Photovoltaic panel system on the roof of the main Sports hall with rated power not more than 20kW includes: | set | 1 |  |  |
| purchase, transport and installation of PV panels with all connections beyond panels and main board and inverter. These include DC cables, AC cables, metal racks, connectors, PV frame mounts, monitoring system for control of support system, control smart meter, etc. |
| DC/AC power inverter with rated output power equal to 20kW |
| purchase, transport and installation of inverter at specificities room at the sports hall |
| Purchase, transport and installation of DC cables, halogen free |
| Single-pole cable with polyclonal copper conductor (Cu) and elastic polymer insulation (XLPO or EM8) |
| Purchase, transport and connection of AC cables, flexible with ethylpropylene type, multipolar |
| Preparatory finishing works including everything else necessary for realization of the activity include all phases needed |
| Purchase, transport and connection of electrical board with following equipment: MCBs, indicative lamps, network analyzers, SPDs, switch disconnectors 0-1, PV energy metering device, appropriate software for monitoring system including open data access and etc., including everything else necessary for realization of the activity include all phases needed |
| 2 | A charging station should be installed, that will allow two cars to be charged simultaneously (including two regular and one fast charger). The connection of the charging station with electrical network supply and with PV roof system etc. The installation should be made according to the applicable laws and legislation. including everything else necessary for realization of the activity,  protective earthing with galvanized tape FeZn 30x4mm etc. Location of the charging station will be near the electricity substation which is near the entrance in the sports hall Boro Chrlevski on the west. Includes all phases needed | set | 1 |  |  |
| 3 | Construction of external parking-lot and configuration of the bus stops for Bitola Municipality including all phases needed (civil works, electrical connection to the system and everything needed also it should include information board design) for two electric vehicles (one utility car and one minibus). Location of the external parking-lot and bus stop for Bitola Municipality will be on the same location of the charging station that will be near the electricity substation which is near the entrance in the sports hall Boro Chrlevski on the west. Include all phases needed. | set | 1 |  |  |
| **TOTAL without VAT (euro) :** | | | | |  |

Note:

The contractor is obliged to perform the work “turnkey project”, and to provide everything necessary related the performance of the work. The contractor should provide complete revised project documentation studies, revised project designs, elaborates, reports, etc., that are needed for construction / installation of cca 20 KW photovoltaic plant on the roof of the main hall in “Sports hall Boro Churlevski Bitola” and for construction charging station (which have to be located near the electricity substation which is near the entrance in the sports hall Boro Chrlevski on the west.), configuration of bus stops for two electri vehicles (one utility car and one minibus) (which have to be located near the electricity substation which is near the entrance in the sports hall Boro Chrlevski on the west.) and all needed works related to connect the photovoltaic system with charging station and network The technical documentation should include all needed phases. For the design of the bus stop the contractor have to provide at least three design ideas from which the Municipality of Bitola will decide which one will be accepted. The contractor has to provide us three companies for revision (audit) of the all needed technical documentation (studies, project design etc.) of which three companies the municipality of Bitola will select one from those companies to audit the project documentation. Also, the contractor is obliged to carry out the complete procedure by obtaining a building permit and every other permissions and other things needed for construction of photovoltaic charging-station for the electric vehicles, for construction of external parking-lot and configuration of the bus stop for Bitola Municipality. The contractor is obliged to make complete construction and installation of photovoltaic plant on the roof of the Sports hall Boro Churlevski, to make complete construction and installation of the charging-station for the electric vehicles (besides the other needed things this will include also appropriate monitoring system and appropriate software for monitoring photovoltaic plant work and charging station work with open data access), for construction of external parking-lot and configuration of the bus stop for Bitola Municipality and connection the photovoltaic plant with charging station including construction works (civil works electrical mechanical, everything needed). It is also the obligation of the contractor to carry out the complete procedure by obtaining a building permit and appropriate permissions for starting the work with photovoltaic charging station. Contractor also have to make appropriate access to the photovoltaic panels on the roof including safe and easy to use leathers, appropriate sets for cleaning and maintenance of the photovoltaic charging station. The contractor should guarantee that he will not damage the roof for the installation of photovoltaics, i.e. he guarantees its water impermeability.

**Description for each position in to the table above**

**Specification for cca 20kWp photovoltaic system installation and charging station at the sports hall Boro Churlevski of Bitola are noted in the table below**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Description** | **unit** | **quantity** |
| **1** | **1.1 Installation of Photovoltaic panel system on the roof of the main Sports hall with rated power of 20kW (not more) includes purchase, transport and installation of PV panels with all connections beyond panels and main board and inverter. These include DC cables, AC cables, metal racks, connectors, PV frame mounts, monitoring system for control of support system, control smart meter, etc.**  **Preparatory finishing works.**  **1.2 DC/AC power inverter with rated output power equal to 20kW**  **purchase, transport and installation of inverter at specificated room at the sports hall, Preparatory finishing works.**  **1.3 Purchase, transport and installation of DC cables, Single-pole cable with polyclonal copper conductor (Cu) and elastic polymer insulation (XLPO or EM8), Preparatory finishing works.**  **1.4 Purchase, transport and connection of AC cables, flexible with ethylpropylene, multipolar. Preparatory finishing works.**  **1.5 Purchase, transport and connection of electrical board with following equipment: MCBs, indicative lamps, network analyzers, SPDs, switch disconnectors 0-1, PV energy metering device and etc. Preparatory finishing works.**  **All those Includes:** | **set** | **1** |
| 1.1 | Installation of Photovoltaic panel system on the roof of the main Sports hall with rated power of 20kW (not more) includes purchase, transport and installation of PV panels with all connections beyond panels and main board and inverter. These include DC cables, AC cables, metal racks, connectors, PV frame mounts, monitoring system for control of support system, control smart meter, etc.  Preparatory finishing works. All those Includes: |  |  |
| 1.1.1 | Procurement, transport, unload and installation of Photovoltaic panels on the roof of the main Sports hall Boro Churlevski in Bitola |  |  |
| 1.1.2 | Photovoltaic panels should be monocrystalline silicon technology, connected properly, encased in anodized aluminum profile frame, while the front will be covered with specially treated glass suitable for use in solar applications |  |  |
| 1.1.3 | The number of photovoltaic panels should be calculated according the technical documentation that will be made bu contractor, with total power of 20kWp (not more) |  |  |
| 1.1.4 | Photovoltaic panels should be all of the same manufacturer, of the same rated power, of the same electrical characteristics and of the same geometric dimensions with bigger efficiency rate |  |  |
| 1.1.5 | The panel should have a maximum system voltage of 1000VDC, operating temperature from -40 ° C to + 85 ° C, static pressure resistance ≥5.400Pa and IP68 protection (junction box).  It will have a junction box with at least 3 sockets and pre-installed cables with positive and negative poles, cross section of 4 or 6mm², and MC4 connectors for easy and waterproof connection. |  |  |
| 1.1.6 | The photovoltaic panels should be installed and mounted on suitable aluminum mounts, placed on the roof so the appropriate bases should be selected, that will allow frames to be installed in portrait or landscape layout, for maximum coverage of the roof. |  |  |
| 1.1.7 | If there are materials on the roof of the building, at the spots where the PV mounting structures will be placed or at spots where they cause shading at the panels, they should be removed. |  |  |
| 1.1.8 | The framework will be IEC 61215, IEC 61730 certified as well as IEC 61701: 2011 and DIN EN 13501-5 categorized. The frames will have a linear efficiency reduction of up to 20% over 25 years. |  |  |
| 1.1.9 | The mounts should be certified by ISO 9001 and ISO 14001. |  |  |
| 1.1.10 | Preparation of complete technical documentation (project documentation with revision for all necessary phases for photovoltaic power system including everything necessary, elaborates etc.) and other documents needed for permition, start with production and etc. |  |  |
| 1.1.11 | Construction of appropriate access to the roof that will be used for maintenance the system (secure leather and etc.) |  |  |
| 1.1.12 | Set for cleaning PV panels |  |  |
| 1.1.13 | Also, it must be included everything else necessary for realization of the activity “Installation of Photovoltaic panels on the roof of the main Sports hall is includes purchase, transport and installation of PV panels with all connections beyond panels and with mail board and inverter, Preparatory finishing works”. Including all phases needed |  |  |
| 1.1.14 | to connect the photovoltaic power plant to the existing lightning protection installation on the roof of the hall |  |  |
| **1.2** | **DC/AC power inverter with rated output power equal to 20kW**  **purchase, transport and installation of inverter at specificated room at the sports hall, Preparatory finishing works. All those Includes:** |  |  |
| 1.2.1 | The inverter input should be suitable for connecting photovoltaic frames, of maximum voltage ≥1000VDC and nominal input voltage ≥600VDC. |  |  |
| 1.2.2 | The inverter should have at least two Maximum Power Point detectors, MPPT trackers. |  |  |
| 1.2.3 | The inverter output should be three-phase, 400V voltage, 50Hz frequency, with adjustable power factor cosϕ from 0.8 inductive to 0.8 capacitive. |  |  |
| 1.2.4 | The inverter should have load switch at the input side (DC), and built-in protections against errors and earth leakages, short-circuit, DC polarity reversion. |  |  |
| 1.2.5 | It should have IP65 (or above) protection and operating temperatures of at least -25°C to +60°C. |  |  |
| 1.2.6 | Should have built-in surge protection (that will provide uninterrupted protection from damaging overvoltages) and a communication unit to record power generation data via RJ45 port and Ethernet. |  |  |
| 1.2.7 | The inverter should have a screen to display the local electrical indications |  |  |
| 1.2.8 | The inverter should have built-in protection against islanding, according to VDE 0126-1 and a 10-year operation warranty. |  |  |
| 1.2.9 | Terminating the DC wiring on the inverter should be implemented via MC4 connectors. |  |  |
| 1.2.10 | The inverter should have built-in Class II surge protection devices and DC switch |  |  |
| 1.2.11 | FTP cat.6A cable should end up at the inverter for interconnecting, transferring, and recording data to a remote computer (SCADA). |  |  |
| 1.2.12 | Also, it must be included everything else necessary for realization of the activity “DC/AC power inverter with rated output power equal to 20kW purchase, transport and installation of inverter at specificity room at the sports hall, Preparatory finishing works.” Including all phases needed |  |  |
| 1.2.13 | Preparation of complete technical documentation (revised project documentation, elaborates etc.) Including everything needed for this activity |  |  |
| **1.3** | **Purchase, transport and installation of DC cables, Single-pole cable with polyclonal copper conductor (Cu) and elastic polymer insulation (XLPO or EM8), Preparatory finishing works. All those Includes:** |  |  |
| 1.3.1 | Suitable for DC nominal voltage of at least 1000 VDC, solar radiation resistance and ambient temperatures from -40°C to +90°C. |  |  |
| 1.3.2 | The cable should be suitable for operation at an outdoor, humid, acidic and alkaline environment. |  |  |
| 1.3.3 | It should have CE certification, EN 60228. It should be halogen free. The cable should be suitable for PV frame applications |  |  |
| 1.3.4 | These cables should be connected to the PV module pre-installed cables and to the inverter via special MC-4 connectors. |  |  |
| 1.3.5 | The general DC routing path will be on perforated metal racks 50x60mm. The racks will be mounted with special "Π" type supports and at least 10cm away. |  |  |
| 1.3.6 | Individual DC wiring paths from each string to the metal rack should be embedded in an Ø16mm cross-section flexible plastic tube with resistance to direct sunlight. |  |  |
| 1.3.7 | The pipe support should be made from the aluminum purlins of the mounting brackets (below the panels) |  |  |
| 1.3.8 | All DC wirings should have a permanent marking on both ends (start and end) of the thermoplastic material, that will be bearing a printed (and / or engraved) string number to which it belongs and the type of pole it supplies e.g. A1.1 + or B2.2-. At the same time, the external insulation of DC cables should be red for the connection of each positive pole and black for the connection of each negative pole |  |  |
| 1.3.9 | Also, it must be included everything else necessary for realization of the activity “Purchase, transport and installation of DC cables, Single-pole cable with polyclonal copper conductor (Cu) and elastic polymer insulation (XLPO or EM8), Preparatory finishing works.” Including all phases needed |  |  |
| 1.3.10 | Preparation of complete technical documentation (revised project documentation, elaborates etc.) Including everything needed for this activity |  |  |
| **1.4** | **Purchase, transport and connection of AC cables, flexible with ethylpropylene, multipolar. Preparatory finishing works. All those Includes:** |  |  |
| 1.4.1 | The cable conductors should be polyclonal, made of flexible copper wires, according to DIN VDE 0295. The operating voltage shall be at least 0.6/1.0kV (Uo/U). The maximum operating temperature of the cable should be at least 90°C. The cable should have IEC 60502-1, EN 60332 and Directive 2014/35 / EU certifications. |  |  |
| 1.4.2 | The dimensions of the roof grate will be 50x60mm.  All metal grates will have a lid and must be connected to the grounding system.  In cases of single cable routing before entering the metal rack, the cables will route to flexible heavy-duty hoses Ø16mm or Ø63mm, that will have a specification for solar radiation resistance |  |  |
| 1.4.3 | Also, it must be included everything else necessary for realization of the activity “Purchase, transport and connection of AC cables, flexible with ethylpropylene FG7OR type, multipolar. Preparatory finishing works.” Including all phases needed |  |  |
| 1.4.4 | Preparation of complete technical documentation (revised project documentation, elaborates etc.) Including everything needed for this activity |  |  |
| **1.5** | **Purchase, transport and connection of electrical board with following equipment: MCBs, indicative lamps, network analyzers, SPDs, switch disconnectors 0-1, PV energy metering device and etc. Preparatory finishing works. All those Includes:** |  |  |
| 1.5.1 | The protection of the inverter will be carried out by Miniature Circuit Breaker (MCB) with characteristic type B operating curve. The sub-board LVB-PV supply cable will be protected by MCB type B |  |  |
| 1.5.2 | Miniature circuit breaker PVs should be suitable for photovoltaic strings. They should be IEC / EN 60947-2 certified |  |  |
| 1.5.3 | The power inverter will end up to a local low voltage wall panel which will be located approximately 1,00m from it. The sub-board will be three-phase, rated voltage 400V and frequency 50Hz. Hereafter this sub-panel will be referred to as the General Low Voltage Photovoltaic Board (LVB-PV) and will be wall mounted in the room. Through a new supply cable, the LVB-PV will be connected to a new panel, the New General Board. |  |  |
| 1.5.4 | Class 2/Type T2 SPDs (8/20 µs) will be used to protect the equipment from indirect lightning strikes. Depending on the grounding system, they can be connected in a common way to a TNC system or in a common and differential way to a TNS and TT system. The SPDs branch must be secured with a separate miniature circuit breaker of the same manufacturer to ensure safe isolation of the branch in the event of a short circuit due to the end of life of the lightning protection element. The coordination/co-operation of the SPD with the disconnector is certified by the manufacturer with a specific proposed type |  |  |
| 1.5.5 | The network analyzer is used for the measurement of electrical parameters: voltage, current, frequency, power factor, active and reactive power, active and reactive energy. It should be placed on a board door. It should be complied with international standards IEC 61554, IEC 60529, IEC 60688, IEC 61326-1, IEC 62053-21, IEC 62053-23, IEC 62053-31 and IEC 61010-1.  Rated voltage is 24-240 V AC/DC. Analyzer should have an illuminated LCD screen, control and programming buttons on its front side, and wiring to the back side of the instrument via removable terminals. The network analyzer should have a self-diagnostic function. It shall be able to be placed in low and medium voltage electrical panels. The current will be measured indirectly using transformers (from 1 to 10000 A) and it will be possible to programed in the analyzer transform ratio (/ 1 or / 5 transform ratio). |  |  |
| 1.5.6 | All AC circuits (inverter, sub-board LVB-PV) will be connected to the grounding system via a suitable protective earth (PE) conductor |  |  |
| 1.5.7 | The application of net-metering requires the installation of two bi-directional metering devices, bridged on the side of the generator, to record the sizes of absorbed (A), injected (E) and total PV produced energy (Π). Absorbed (A) energy is defined as the energy supplied by the Network to the station's consumption. Injected (E) is the energy supplied by the PV system to the Network (in the rare to impossible case where the PV system will generate a greater amount of electrical power than the demand). Produced energy is defined as the total energy produced by the PV system. Therefore, to measure or calculate the above sizes, two electricity meters are required. |  |  |
| 1.5.8 | Counter 1 will be installed on the LVB-PV board. It will be able to access telemetry with a GSM card  The selection of the counter made by the Contractor shall be according to the laws and legislations |  |  |
| 1.5.9 | The indicative lamps on the panels will be low-power (<1.5W) LEDs and will be connected by inserting suitable fuses. The lamp cover will be red (unless otherwise noted in the drawings). |  |  |
| 1.5.10 | Appropriate 0-1 load switches should be used to control and isolate DC loads. They will be sorted according to the Utilization Category required by the application. Their rated operating voltage should be 1000 VDC. They must also comply with the requirements of IEC/EN 60947-1 and IEC/EN 60947-3. |  |  |
| 1.5.11 | The PV system should have a built-in system for recording, registering, storing and remotely monitoring through internet all energy, electrical quantities as well as the history of warnings and failures of the installation |  |  |
| 1.5.12 | In order to implement the surveillance system, the inverter will be connected via RJ45 port and four twisted-pair FTP cable, class 6 (EIA / TIA 568 - 1000Mbps) to a local area network multiplexer (Switch). From this switch will depart a new cable of four twisted pair FTP class 6 (EIA / TIA 568 - 1000Mbps) which will terminate at the nearest telecommunication rack of the building. |  |  |
| 1.5.13 | The management of the inverter information requires the provision of an Ethernet network with transmission speed of 100Mbps (minimum). For this reason, it is foreseen to install a modular IE switch router, which will be mounted on a rail inside the sub-board.  The switch will be powered by an independent single-phase power supply from the nearest board. |  |  |
| 1.5.14 | Distribution electrical board for system for power according to prepared documentation, equipped with appropriate protective equipment with a switching power equal to or greater than 25kA, for installation with a degree of protection IP65, according to a single scheme |  |  |
| 1.5.15 | Appropriate software for monitoring system with open data access |  |  |
| 1.5.16 | Also, it must be included everything else necessary for realization of the activity “Purchase, transport and connection of electrical board with following equipment: MCBs, indicative lamps, network analyzers, SPDs, switch disconnectors 0-1, PV energy metering device and etc. Preparatory finishing works.” Including all phases needed |  |  |
| 1.5.17 | Preparation of complete technical documentation (revised project documentation, elaborates etc.) Including everything needed for this activity |  |  |
| **2** | **A charging station should be installed, that will allow two cars to be charged simultaneously. The installation should be made according to the applicable laws and legislation.** | **set** | **1** |
| 2.1 | It will have a three-phase supply with a maximum current of 32A per phase and a maximum power of 2x22kW, or a single-phase supply of a maximum current of 32A and a maximum output of 2x7.4kW. The voltage will be alternating (AC) 400V (230V for single-phase supply) at a frequency of 50Hz. |  |  |
| 2.2 | It should have two IEC 62196-2 Type 2 Mode 3 sockets with communication and security electronics IEC 61851. It will be possible to share the available power between the two sockets if two cars are simultaneously being charged, also one fast charger socket |  |  |
| 2.3 | It should have an LCD display screen for station status, charge evolution, power consumption etc., as well as charging cable protection system when the electric cars are being charged. |  |  |
| 2.4 | The station should be self-propelled with stainless steel Inox housing, anti-vandal protection and anti-graffiti coating. It will be accessible with an RFID card reader (ISO/IEC 14443A and ISO/IEC 15693) and will be free to access/connect and charge (plug & charge). |  |  |
| 2.5 | The station should have built-in MID power analyzers and a C5 remote control. There will be overvoltage protection on each socket (40A - Type C) and differential protection relay on each socket (RCD Type A 30mA, according to IEC 61008). |  |  |
| 2.6 | The installed charging station should be compliant with OCPP 1.6 communication protocol and with IEC 61851 standard. Direct communication with the power analyzers should be performed and protection operation monitoring. It should be possible to communicate either through a GSM network (with a SIM card) or via an Ethernet cable and an existing LAN / WAN network. Users will be identified by RFID cards or NFC smartphones |  |  |
| 2.7 | Voltage monitoring and charging socket activation should be performed, as well as automatic restarting in the event of a power failure. |  |  |
| 2.8 | The operating temperature range -30˚C to + 50˚C and the permissible ambient humidity up to 99%. The station's waterproof degree IP 54 and the external impact protection IK 10. |  |  |
| 2.9 | The station should include the following add-ons:   * Integrated router for the communication of the station via GPRS mobile network with the back-office management and monitoring system * Additional metal foundation base (for foundation on floors that cannot be attached to with screws) * Station branding with two- or four-sided stickers * Integrated Type B Protection - RCD, Type B 30mA, one per socket (optional instead of Type A RCDs)   Extension of warranty per year (extension of warranty is provided up to three years in addition to the basic 2 + 3 warranty) |  |  |
| 2.10 | The electrical installation should be carried out in accordance with the standards, testing and commissioning in accordance with IEC62446. In addition, system design and design and equipment installation work in accordance with IEC60364-7-712.  The contractor has to submit a project study for approval, including single-line diagrams and plans. |  |  |
| 2.11 | The charger will receive power from the LVB of the installation |  |  |
| 2.12 | It should have spare cables for the charging station of electric vehicles |  |  |
| 2.13 | Also, it must be included, everything else necessary (civil works traffic issues etc.) for realization of the activity “A charging station should be installed, that will allow two cars to be charged simultaneously. The installation should be made according to the applicable laws and legislation.” Including all phases needed |  |  |
| 2.14 | Preparation of complete technical documentation (revised project documentation, elaborates etc.) Including everything needed for this activity |  |  |
| **3** | **Construction of external parking-lot and configuration of the bus stops for Bitola Municipality including all phases needed (civil works, electrical connection to the system and everything needed also it should include information board design) for two electric vehicles (one utility car and one minibus) Location of the external parking-lot and bus stop for Bitola Municipality will be on the same location of the charging station that will be near the electricity substation which is near the entrance in the sports hall Boro Chrlevski on the west. Include all phases needed** | **set** | **1** |
| 3.1 | Included everything needed (civil works: excavation of canals, cutting of asphalt, asphalting of parking places, etc. construction, traffic issues, electrical connections with grounding protection strip FeZn 30x4mm if needed etc.) for realization of the activity “Construction of external parking-lot and configuration of the bus stops for Bitola Municipality.” Including all phases needed |  |  |
| 3.2 | Preparation of complete technical documentation (revised project documentation, elaborates etc.) Including everything needed for this activity |  |  |

Note:

The contractor is obliged to perform the work “turnkey project”, and to provide everything necessary related the performance of the work. The contractor should provide complete revised project documentation studies, revised project designs, elaborates, reports, etc, that are needed for construction / installation of cca 20 KW photovoltaic plant on the roof of the main hall in “Sports hall Boro Churlevski Bitola” and for construction charging station (which have to be located near the electricity substation which is near the entrence in the sports hall Boro Chrlevski on the west.), configuration of bus stops for two electric vehicles (one utility car and one minibus) (which have to be located near the electricity substation which is near the entrence in the sports hall Boro Chrlevski on the west.) and all needed works related to connect the photovoltaic system with charging station and network The technical documentation should include all needed phases.. For the design of the bus stop the contractor have to provide at least three design ideas from which the Municipality of Bitola will decide which one will be accepted. The contractor has to provide us three companies for revision (audit) of the all needed technical documentation (studies, project design etc.) of which three companies the municipality of Bitola will select one from those companies to audit the project documentation. Also, the contractor is obliged to carry out the complete procedure by obtaining a building permit and every other permissions and other things needed for construction of photovoltaic charging-station for the electric vehicles, for construction of external parking-lot and configuration of the bus stop for Bitola Municipality. The contractor is obliged to make complete construction and installation of photovoltaic plant on the roof of the Sports hall Boro Churlevski, to make complete construction and installation of the charging-station for the electric vehicles (besides the other needed things this will include also appropriate monitoring system and appropriate software for monitoring photovoltaic plant work and charging station work with open data access), for construction of external parking-lot and configuration of the bus stop for Bitola Municipality and connection the photovoltaic plant with charging station including construction works (civil works electrical mechanical, everything needed). It is also the obligation of the contractor to carry out the complete procedure by obtaining a building permit and appropriate permissions for starting the work with photovoltaic charging station. Contractor also have to make appropriate access to the photovoltaic panels on the roof including safe and easy to use leathers, appropriate sets for cleaning and maintenance of the photovoltaic charging station. The contractor should guarantee that he will not damage the roof for the installation of photovoltaics, ie he guarantees its water impermeability.

**LUMP SUM CONTRACTS**

**Introduction**

1. The breakdown of the lump-sum price (Volume 4.2.3) is the itemised list of prices showing the build-up of the price in a lump-sum contract. This breakdown of the lump-sum price does not derogate in any way to the clause stating that, in a lump-sum contract, the total contract price remains fixed irrespective of the quantity of work actually carried out.

The amounts due will be calculated:

<The breakdown must coincide with the payment-definition chosen in Article 49 of the special conditions:

For example: through the measurement of the percentage of works carried out in relation to the firm quantities of each item of the breakdown of the lump-sum price and by applying that percentage to the lump-sum price of the related item>

For example: by the tranches specified in Article 49(1)(a) of the special conditions>.

2. The item description given in the breakdown of the lump-sum price in no way limits the contractor’s obligations under the contract to provide all the works described elsewhere.

3. The prices of the breakdown of the lump-sum price include all incidental and contingent expenses and all risks necessary to construct, complete and maintain all works in accordance with the contract. Unless separate items are provided in the breakdown of the lump-sum price, prices include all costs involved in the various items of the breakdown.

4. The lump–sum price and the prices of the breakdown of the lump-sum price are all-inclusive and include any non-exonerated tax or fiscal duty.

**VOLUME 4.2.3 — BREAKDOWN OF THE LUMP-SUM PRICE**

| **Item** | **Description** | **Unit** | **Unit price** | **Firm quantities** | **Lump-sum price**  **[EUR] [local currency]** |
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|  | **Total lump-sum price** |  |  |  |  |
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