ANNEX "A"

TERMS OF REFRENCES

SUPPLY, INSTALLATION AND COMMISSIONING OF LIGHTNENIG/SURGE PROTECTION AND THE RELATED GROUNDING SYSTEM FOR UN OFFICES IN IRAN

This TOR specifies the requirements for provision, installation, commissioning and after sales services of Lightening/Surge protection and the related grounding system for totally seven UN offices (sites) in Tehran, Esfahan, Shiraz, Kerman, Mashhad and Dogharoun as per the Table 1 "Sites" of this document.

The goal of this project is to capacitate UN offices in Iran to protect their staff and infrastructure against electrical surges (lightning strikes /induced) and implementing safety measures e.g., grounding cables to minimize the associated risks.

1. **Deliverables of the project:**
   - 1.1 Provision of all the equipment and materials required for the project as explained in the Table 2 "LoM" of this document.
   - 1.2 Removal of the existing systems as applicable. The removed items will remain under the ownership of the sites and not be transferred to the contractor
   - 1.3 Installation and commissioning of the equipment as explained in the Article 3 "Technical requirements" of this document
   - 1.4 Provision of documents containing all technical details e.g., Materials, sizes, diagram, etc.
   - 1.5 After sales services of three years including warranty of equipment and craftmanship as well as technical support

2. **Responsibilities of the contractor:**
   - 2.1 The contractor shall carry out all electrical and civil work for the project
   - 2.2 Transportation of the equipment and the involved personnel and machineries to the sites is the responsibility of the contractor and UNHCR will not pay any additional fees for that.
   - 2.3 <u>The Contractor shall submit the detailed design of each system before the construction starts.</u>

3. **Technical requirements:**
   - 3.1 Grounding system:
     - The contractor shall establish a grounding system in the sites as applicable.
     - The system shall consist of buried copper grounding plates, with number of electrodes

and connectors, sufficient for catching the lighting strikes and the related induced charges

- The type of the ground cable should be bare copper stranded conductor (Hard draw copper wires) not less than 95 mm2
- The connections should be of exothermic welding

3.2 Lightning arrester

- The contractor is required to establish the lightning arrestor system from the grounding system to the lightning rod
- The arrester should be of Franklin type made of copper
- The cable should be Hard drawn copper
- The shielding shall be designed with appropriate shielding angles and clearances to provide adequate lightning protection to all conductors and equipment in the building.
- The shield wire shall be terminated with strain clamp. The overhead shield wire shall be directly connected to substation gantries.

3.3 Surge protection system

- The contractor shall install surge protector devices to the radio coaxial cables
- Device to be hole mounted in a grounding plate
- Surge protectors should be well protected from water and dust with amalgamating sealing taping

3.4 Solar panel system (commissioning only)

- The company should re-commission the existing Solar panels in each site to the charger and batteries

4. Financial Proposal

4.1 The bidders should include the unit and total price of each item under Table 2 and submit it via the financial proposal form (Annex D). The final payable amount will be calculated based on the delivered items as the final quantity might be different from what mentioned in Table 2 LoM.

4.2 Service charges should be included / mentioned in the Table 3 of the ToR and again to be submitted via the financial proposal form (Annex D). The mentioned fee must include any cost and charges associated with the implementation and UNHCR bears no other charges.

The bidders should include the unit and total price of each item under Table 2 and Table 3 and include it in the Financial proposal form Annex “D”

4.3 Any other items deemed necessary by the bidder should be included in the financial proposal. This includes both goods and services

5. Technical Proposals:

The provided technical proposal MUST include three following elements:

5.1 Technical Explanation: The contractor shall present a detailed work plan indicating the project timetable, the sequence of implementing phases, starting and ending dates of the project for each site, the methodology and clear technical specificities of the project, explaining the resources that company will provide for the project including number of staff as well as the resume of the technician for each requirement / site.

5.2 List of confirmed Materials[1] should be included in the Technical proposal with all needed information of each single item (Brand, Model, Manufacturing country, etc.)

> The bidders should include all information of every single item under Table 2 in the Technical proposal form Annex "C" (Brand, Model, Manufacturing

- In addition to above, if a Company has another suggestion (e.g. other brands), it should be provided to UNHCR, as a separated proposal inside the same technical envelope.

Important note:

The company should be able to work after standard working hours (i.e., after 1600 Hrs) as well as in the weekends if requested by UNHCR.

6. Tables:

Table 1: sites

#	Site name	Address	GPS Coordinates
1	WHO Tehran	Ministry of Health and Med. Edu., Eyvanak Blvd, Shahrak-Qods	N 35.75422 - E 51.35680
2	UNHCR Tehran	3, East Emdad St., N. Shiraz Ave., Vanak	N 35.761986 - E 51.399169
3	UNHCR Kerman	42, Hezar-o-Yekshab Ave, Jomhouri Islami Blvd	N 30.28486 - E 57.03692
4	UNHCR Mashhad	45, Sajjad Blvd	N 36.31751 - E 59.55680
5	UNHCR Shiraz	Parvin Etesami Blvd, Janbazan Blvd, Modares Blvd	N 29.575239 - E 52.596814
6	UNHCR Esfahan	21, Aaref St., Jaber Ansari Ave., Kaveh Blvd	N 32.707271 - E 51.673549

[1] Proposals without a precise-detailed List of Materials will NOT be considered

7	UNHCR Dogharoun	Ansar Camp, Dogharoun, Taybad, Khorasan province	N 34.713831 - E 60.994324

Table 2: LoM (please use financial proposal form Annex “D” for your financial offer
(لطفا از فرم مخصوص پیشنهاد مالی پیوست "دی" برای ارائه پیشنهاد مالی استفاده کنید)

Grounding System

#	Description	Unit	QTY	Unit price	Total
1	Copper plate 660×660×3 صفحه مسی ۳ × ٦٦٠ × ٦٦٠	Piece	6		
2	Copper plate 400×400×3 صفحه مسی ۳ × ٤٠٠ × ٤٠٠	Piece	6		
3	Cross Aerial Copper Cable 70 سیم مسی هوایی مقطع ۷۰	Meter	70		
4	Equipment for welding copper cable to copper plate جوش مخصوص سیم مسی به صفحه مسی	Set	18		
5	Carbon-based material reducer OHM - 15Kg bag کیسه ۱۵ کیلویی - OHM مواد کاهنده پایه کربن	Bag	150		
6	Reducer super active bentonite BSAD - 20Kg bag کیسه ۲۰ کیلویی - BSAD بنتونیت سوپر اکتیو کاهنده	Bag	150		
7	High voltage Polyethylene earth pit with link حوضچه ارت پلی اتیلن فشارقوی با لینک	Piece	6		
8	Cable Lug No 50 کابلشو نمره ۵۰	Piece	6		
Grand Total					

Lightning Arrestor

#	Description	Unit	QTY	Unit price	Total
1	Franklin Cable Lug - 20 Diameter & 1500 mm Height میله برق گیر گیر فرانکلین به قطر ۲۰ و ارتفاع ۱۵۰۰ میلیمتر	Piece	6		
2	Lightning Rod branch سرشاخه صاعقه گیر	Piece	6		
3	Half meter stand and installation connector for setting up the lightning rod پایه نیم متری و کانکشن نصب جهت نصب صاعقه گیر	Set	6		
4	lighting arrester stand – wired پایه برقگیر سیم خور	Piece	6		
5	Solar flashing lights چراغ چشمک زن سولار	Piece	6		
6	Flashing light Installation base پایه نصب چراغ جشمک زن	Piece	6		
7	Cross Aerial Copper Cable 70 سیم مسی هوایی مقطع ۷۰	Meter	500		
8	Earth pit test box with Busbar & Insulator تابلو تست باکس با شین و مقره	Piece	6		
9	Steel clamp for connecting the cable to the mast بست استیل جهت اتصال سیم به دکل	Piece	70		
10	Clamp for connecting wire 50 to the wall کلمپ اتصال سیم ۵۰ به دیوار	Piece	120		
11	Suitable Cable Lug کابلشو با نمره مناسب	Piece	15		
Grand Total					

Surge protector devices

#	Description	Unit	QTY	Unit price	Total
1	Surge protector with following specifications محافظ کابل کواکسیال (صاعقه گیر) • Able to withstand minimum 100Watt input power from the radio • Frequency range 1.5-700MHz (cannot be lower than 500MHz) • Impedance 50 Ohm only • Throughput energy 3.5mJ, current 50KA • Connectors to be **N-female type on both ends**	Piece	18		

Table 3: Fees for services (please use below table for your financial offer)

Service	Qty	Unit Price	Total
Grounding system establishment راه اندازی سیستم ارت	6		
Lightning arrester system installation راه اندازی سیستم صاعقه گیر	6		
Surge protection system installation نصب محافظ صاعقه روی کابل	18		
Solar panel system commissioning only راه اندازی پنل خورشیدی (۳ تا ۶ پنل – فقط اتصال)	7		