

SOLICITATION, OFFER, AND AWARD <i>(Construction, Alteration, or Repair)</i>	1. SOLICITATION NO. BEG-1073-08-IQ-00005-KSH	2. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)	3. DATE ISSUED 08/28/2008	PAGE OF PAGES 1 2
	IMPORTANT -- The "offer" section on the reverse must be fully completed by offeror.			

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO.	6. PROJECT NO.
-----------------	-------------------------------------	----------------

7. ISSUED BY Broadcasting Board of Governors International Broadcasting Bureau Office of Contracts (M/CON) Room 4007, Switzer Building 330 C Street (SW) Washington DC 20237	CODE M/CON/CR	8. ADDRESS OFFER TO See Block 7
--	------------------	------------------------------------

9. FOR INFORMATION CALL: 	a. NAME Karen Harper	b. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) (202) 205-9030
--	-------------------------	---

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder."
 10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS (Title, identifying no., date)

- Tax ID Number: Not Available
 DUNS Number: Not Available
1. BEG-1073-08-IQ-00005-KSH (08/28/08)
 2. J.1 - KUWAIT STATION GENERAL SITE PLAN
 3. J.1.1 - TRANSMITTER EQUIPMENT LAYOUT
 4. J.1.2 - EQUIPMENT PAD LAYOUT
 5. J.2 - SW SITE AS-BUILT DRAWINGS (CD)
 6. J.3 - CONCEPTUAL BUILDING PLAN - 2 BAYS
 7. J.4 - CONCEPTUAL BUILDING PLAN - 4 BAYS
 8. J.5 - SCHEDULE OF DELIVERABLES
 9. J.6 - SAFETY & HEALTH
 10. J.7 - ELECTRICAL ONE-LINE DIAGRAM
 11. J.8 - CONTENTS OF TYPICAL QC PLAN
 12. J.9 - IBB CAD STANDARDS
 13. J.10 - SF 25 - PERFORMANCE BOND FORM, J.11 - SF 25A - PAYMENT BOND FORM
 15. J.12 - COST PROPSAL BREAKDOWN SHEET
 16. J.13 - (a) ACH VENDOR/MISCELLANEOUS PAYMENT ENROLLMENT FORM (U.S. BANKS ONLY),
(b) FOREIGN VENDOR PAYMENT FORM
 17. J.14 - DISCLOSURE OF LOBBYING ACTIVITIES (SF LLL)

11. The Contractor shall begin performance _____ 14 _____ calendar days and complete it within _____ 195 _____ calendar days after receiving <input type="checkbox"/> award, <input checked="" type="checkbox"/> notice to proceed. The performance period is <input type="checkbox"/> mandatory <input checked="" type="checkbox"/> negotiable. (See _____.)
--

12a. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? (If "YES", indicate within how many calendar days after award in Item 12b.)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	12b. CALENDAR DAYS 14
---	---	--------------------------

13. ADDITIONAL SOLICITATION REQUIREMENTS:

a. Sealed offers in original and _____ copies to perform the work required are due at the place specified in Item 8 by _____ 1100 _____ (hour) local time
 09/26/2008 (date). If this is a sealed bid solicitation, offers will be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

b. An offer guarantee is, is not required.

c. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

d. Offers providing less than _____ 60 _____ calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

OFFER (Must be fully completed by offeror)

14. NAME AND ADDRESS OF OFFEROR (Include ZIP Code)	15. TELEPHONE NO. (Include area code)
	16. REMITTANCE ADDRESS (Include only if different than item 14.)
CODE _____ FACILITY CODE _____	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. (Insert any number equal to or greater than the minimum requirement stated in item 13d. Failure to insert any number means the offeror accepts the minimum in item 13d.)

AMOUNTS

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGEMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)

AMENDMENT NO.									
DATE.									
20a. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)					20b. SIGNATURE			20c. OFFER DATE	

AWARD (To be completed by Government)

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA		
24. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)	ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO <input type="checkbox"/> 10 U.S.C. 2304(c) () <input type="checkbox"/> 41 U.S.C. 253(c) ()	
26. ADMINISTERED BY Broadcasting Board of Governors International Broadcasting Bureau Office of Contracts (M/CON) Room 4007, Switzer Building 330 C Street (SW) Washington DC 20237	CODE <u>M/CON/CR</u>	27. PAYMENT WILL BE MADE BY	

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

<input type="checkbox"/> 28. NEGOTIATED AGREEMENT (Contractor is required to sign this document and return _____ copies to issuing office.) Contractor agrees to furnish and deliver all items or perform all work requirements identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations.	<input type="checkbox"/> 29. AWARD (Contractor is not required to sign this document.) Your offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.		
30a. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN (Type or print)	31a. NAME OF CONTRACTING OFFICER (Type or print) <u>Karen S. Harper</u>		
30b. SIGNATURE	30c. DATE	31b. UNITED STATES OF AMERICA BY	31c. DATE

**KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH**

**PART I
THE SCHEDULE**

SECTION B

SUPPLIES OR SERVICES AND PRICE/COSTS

KUWAIT SHORTWAVE BUILDING ADDITION

The Contractor shall provide all the supplies/services as described herein to design and construct a new building addition and associated facilities for a Government-furnished Short Wave (SW) transmitters and related equipment at an IBB transmitting site in Kuwait, including all the project management, engineering support, documentation, labor, materials, tools, equipment, transportation and shipping required in the Solicitation.

	<u>DESCRIPTION</u>	<u>QTY</u>	<u>UNIT</u>	<u>FIRM-FIXED PRICE</u>
B.1	Basic Contract:			
	SW Building with two transmitter bays, mechanical-electrical room, hallway and associated facilities, as specified in Section C and conceptualized in Attachment J.3	1	JOB	\$ _____
B.2	Optional Line Item:			
	SW Building with four bays, Mechanical-electrical mechanical-electrical room, hallway and associated facilities, as specified in Section C and conceptualized in Attachment J.4	1	JOB	\$ _____

NOTES:

1. The Government estimates the cost of project to be in the price range between \$750,000 and \$1,000,000.
2. The Government does not anticipate furnishing Government Property or Facilities for performance other than those items noted herein and in the Attachments.
3. Offerors are advised that the resultant contract will include a provision for Liquidated Damages (LD). Thus, if the selected Contractor fails to complete all work within the resultant contract schedule, LDs shall apply as stated in Section F.13 of this solicitation.
4. This solicitation does not commit the Government to pay any costs incurred in the submission of any proposal or bid, or in making necessary studies, analyses or designs for preparation thereof or to acquire or contract for any services.
5. The Government intends to evaluate proposals and may award a contract without discussion with Offerors except for clarifications as defined in FAR Subpart 15.306(a). Therefore, an Offeror's initial proposal should convey their best position in terms of price and technical qualifications. The Government reserves the right to conduct discussions if the Contracting Officer later determines them to be necessary.

(End of Section B)

**KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH**

**STATEMENT OF WORK AND TECHNICAL SPECIFICATIONS
FOR THE KUWAIT
SHORT WAVE (SW) EXPANSION PHASE II**

**KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH**

SECTION C

DESCRIPTION, SPECIFICATIONS, WORK STATEMENT

C.1. GENERAL INFORMATION AND REQUIREMENTS

C.1. INTRODUCTION

The Contractor shall design and construct a new building addition and related facilities for a Government Furnished/Government Installed (GF/GI) two Short Wave (SW) transmitter systems at the IBB's transmitting station in Kuwait. The building shall be designed to accommodate two Continental 419F-250kW transmitters and related equipment discussed in Section C.1.3 below.

C.1.2 SITE DESCRIPTION

The IBB's Kuwait Transmitting Station is located on a site of approximately 2,223 acres in Umm Al-Rimam on the road to Abdaly, which is about 50 kilometers by road Kuwait City center. The approximate coordinates of the site are 29 degrees, 30 minutes North Latitude and 47 degrees 40 minutes East Longitude. The site is square with 3 km sides. Currently there is a main operations compound near the center of the site, four shortwave antennas a short distance from the operations area, a medium wave facility with antenna system at the southeast corner of the site, and a medium wave antenna system at the southeast corner of the site. A contract to build a new medium wave facility with antenna system at the northeast corner of the site has also been awarded. See Attachment J.1, "Kuwait Station General Site Plan".

C.1.3 GOVERNMENT FURNISHED/GOVERNMENT INSTALLED EQUIPMENT

The Contractor shall design and construct a new addition to the existing SW building, including related facilities that accommodate the physical space and interface requirements required by the GF/GI equipment discussed in this Statement of Work (SOW).

C.1.3.1 Continental 419F-250kW transmitting system: The Government will furnish and install two Continental 419F-250kW transmitting systems that were previously operated at another IBB station. The Continental 419F transmitting system consists of: Power supply/solid state modulator racks; power transformers and related equipment; an RF cabinet; a disconnect switchgear; a/c power off switch, an air-handling unit, frame and plate indoor heat exchanger connected to an external air cooled heat exchanger; ionized water supply; and interconnecting cabling and RF transmission line. Attachment J.3, "Conceptual Building Plan – 2 Bays" and J.4 "Conceptual Building Plan – 4 Bays" show the planned location of the transmitter system components.

C.1.3.2 Antenna System: The Government will use other contractors to construct the antenna system to be used with the Continental 419F transmitters. The antenna system will consist of a high-low band antenna pair or a rotatable type.

C.1.3.3 Heating, Ventilating, and Air-Conditioning System (HVAC): The Government will use other contractor to design and install building and transmitter HVAC systems. The transmitter air-handling unit (AHU) weighs approximately 367kg (weight of ductwork not included). The Contractor's design of building interior spaces and utilities shall provide sufficient clear ceiling space since the Government, under a separate contract, will be installing HVAC units and ductwork, similar to existing, after the beneficial occupancy date.

C.1.3.4 GF/GI Equipment: The Government will use other contractor to install interior frame and plate heat exchangers, outdoor heat exchangers, chiller-condenser unit, chilled water pumps, transmitter and building AHUs and step-down transformers.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

C.1.3.5 11 kV Breakers, 4160 V Switchgears & Smoke Detection Systems: The Government will use other contractor to install breakers, switchgear and High Sensitivity Smoke Detector (HSSD) systems for the GF/GI transmitting systems.

C.1.3.6 The Contractor shall update the existing short circuit and coordination study to include the new loads. Relay and circuit breaker settings shall match to study results.

C.1.4 SUMMARY OF TASKS TO BE PERFORMED

The Contractor shall design, and/or integrate elements of civil, structural, architectural, electrical, mechanical, fire and life safety systems, and extend existing utilities as required in the RFP. The tasks and description summarized in this section are defined in greater detail in Section C.2 through C.5 below.

- a. Conduct site surveys, studies and investigations to obtain information needed to design and construct an addition to the existing SW transmitter building;
- b. Design and construct new building addition. The new building color, foundation, walls, flooring, hallway, transmitter bays, filter closet, mechanical-electrical equipment room and roof line on west side shall match with the existing SW Phase I building design, quality and materials.
- c. Provide and install overhead and underground PVC conduits, construct concrete mounting pads for heat exchangers, chiller-condenser unit and outdoor transformers. The new pads shall match the existing design and materials.
- d. Deliver the new transmitter building addition and other facilities to the Government for final acceptance;
- e. Produce and submit documentation required by this SOW in accordance with Attachment J.5, "Schedule of Deliverables".

C.2 SCOPE OF WORK

The Contractor shall perform site investigations and studies; design grounding, foundation, building structure, building electrical work; calculate power requirements for the whole new addition and provide new distribution panels (if needed); and supervise construction of a new building addition contract. The utilities to be provided include: power, lighting, fire protection, smoke detection, life safety; domestic, ionized and waste water systems; and lightning protection in and around the new building addition. The Government, at his option, may exercise Section B, Option B.1 to construct four (4) transmitter bays, mechanical-electrical room and hallway under the terms of this contract, refer to Attachment J.4, "Conceptual Building Plan – 4Bays".

C.2.1 APPLICABLE CODES AND STANDARDS

The design and construction of the proposed facility shall meet all applicable US and host/local Government codes and standards, including, but not limited to the codes and standards listed in Sections C.2.8.1, C.2.9.1 and C.2.11.1. In the event of conflict between codes and standards, the more rigorous requirement shall govern. The codes and standards proposed for use in the Offeror's proposal shall be the latest version available at the time of proposal submission. The codes and standards referenced in the Contractor's design shall be available for review at the site.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

C.2.2 SAFETY

- a. The Contractor shall consider safety of both the general public and Contractor/IBB station personnel to be its highest priority throughout the design, construction, and life cycle operation of the new transmitter building addition and related facilities.
- b. Before beginning any work, the Contractor shall familiarize itself with the transmitting stations operations and the risks of performing construction in a Radio Frequency (RF) environment, and take the necessary precautions to ensure the safety of both its workforce and any visitors to the work site. The Contractor shall address such precautions in the Safety Plan discussed immediately below.
- c. The Contractor shall prepare the Safety Plan that satisfies Attachment J.6, "Safety and Health", for submittal in accordance with Attachment J.5, "Schedule of Deliverables".

C.2.3 SERVICE LIFE

All material (including, but not limited to, building walls, structure and roof) furnished and installed by the Contractor shall be selected, and/or coated as necessary, to provide 20 years minimum service life.

C.2.4 DESIGN

C.2.4.1 General Design Requirements

- a. The building design shall be suitable for the desert climate, and shall be functional, durable, constructible and maintainable. Specific requirements for building configuration and heights, structural systems, power, and lighting, and selection of interior and exterior finishes are provided in the subsequent sections. The new building addition exterior shall match with the existing SW building exterior color, design and construction.
- b. The Contractor shall prepare a conceptual layout showing two and four bay building additions to be built in phases, or all 4-bays under Option B.1. Under Baseline contract, the foundation design shall be so designed as to allow addition of two additional transmitter bays in the future. The Contractor shall submit for IBB review and approval the concept plan, which shall be economically constructible in phases. The Contractor shall refer to the existing SW Transmitter Building Layout, provided as Attachment J.2 "SW Site As-Built Drawings", for citing and space planning of the new SW building addition.
- c. The Contractor shall include fire protection and life safety provisions in the design of the building to permit the prompt evacuation of the occupants, and to provide reasonable means of extinguishing or limiting the spread of fire, which might otherwise cause loss of life or property. These provisions shall include egress/exit facilities, emergency lighting and exit signage, and portable and fixed fire fighting systems (see Section C.2.10.5 below).

C.2.4.2 Functional Space Requirements

The Attachment J. 3, "Conceptual Building Plan" is based closely on the existing SW building built in Phase I, and therefore any variation to it must be approved by the Government. The building will normally be unattended, but for design purposes a staffing level of three (3) persons per shift shall be assumed. The layout shows both the Base Contract and Option B.1, i.e. (4) transmitter bays, mechanical/electrical room, and hallway. Table 1 below shows the minimum allocation of spaces required in the new building addition.

TABLE 1
Minimum Approximate Allocation of Space

Base SW Building Addition:	<u>Metric</u>	<u>English</u>
2-Transmitter Bays: 102 sm X 2 = 204 sm	204.00 sm	2196.00 sf
Mechanical-Electrical Room	34.15 sm	368.00 sf
Hallway	62.00 sm	667.00 sf
Vestibule	4.00 sm	43.00 sf

Option B.1:

4-Transmitter Bays: 102 sm X 4 = 408 sm	408.00 sm	4392.00 sf
Mechanical-Electrical Room	122.00 sm	1313.00 sf
Hallway	124.00 sm	1335.00 sf
Vestibule	4.00 sm	43.00 sf

- a. Transmitter Bay: The transmitter bay shall house the GF/GI transmitter system, and other associated equipment.
- b. Mechanical-Electrical Equipment Room: The mechanical-electrical room shall be similar to existing in quality and construction, with an exterior double and two single interior doors.
- c. West Vestibule: Modify the existing West Vestibule to a hallway. The Contractor shall remove double doors, exit light, emergency battery backup light and HID exterior wall mounted lighting fixture located at West end of the Hallway 105 and relocate to new Vestibule in the new building addition. Also, extend associated power and control wiring as needed.

C.2.4.3 GF/GI Equipment Interface Requirements: The Contractor's design shall accommodate the interface requirements for the GF/GI broadcast equipment as specified below and elsewhere in this SOW. The Contractor shall clearly address these requirements in its design submissions.

C.2.4.3.1 Transmitter Space Requirements: Transmitter bays shall be provided of the size indicated in Table 1. Each transmitter bay shall include, similar to existing in quality and construction, one interior door with 24" x 24" wired glass window into the hallway, one interior hollow metal fence door, and one set of metal exterior double door to permit movement of larger transmitter components, spare parts, supplies, etc., into and out of the bay. The transmitter bay room shall be column-free, and shall have a minimum clear height from finished floor to ceiling of 16 ft. The double doors providing access to the exterior of the building that allow access into interlocked high voltage vault shall be secured in a manner that will prevent entry into this vault from the exterior of the building. These same doors shall be equipped with an emergency exit bar to allow immediate access to the exterior of the building from within the vault. A 6-ft high cyclone galvanized fence to separate rear side of transmitter from modulator and medium voltage area shall also be provided.

- a. Structural: The roof structure of the Transmitter Building shall be designed to support the overhead-routed transmission line, an overhead GF/GI air handling unit (Weight=367kg), associated ductwork and chilled water lines in each bay. In addition, the building design shall include provisions for allowing the transmission lines to enter into the existing hallway ceiling with no functional impact to the building. The floor slab shall be designed to support the component loads of the GF/GI transmitter system. The Contractor shall assume that the heaviest transmitter components, the modulation

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

transformers, weigh 5,000 lbs. each (the planned transmitter layout is provided as Attachment J.1.1).

b. Electrical power: The Contractor shall supply power from the existing MDS and other panels (without exceeding their design capacity) as much as possible (refer to J.7 "Electrical One-line Diagram" and as-built drawings for details) and as described in Section C. 2.11 below; add new panels if needed.

1. The Contractor shall provide 6-inch conduit run between outdoor step-down transformer termination point and transmitter primary switch cabinet within the bay, and pull through Government Furnished (GF) 4160 V cables before stub-up. The stub-up location shall be determined in coordination with the Government during the Contractor's design phase.
2. The Contractor shall provide a second 6-inch conduit run from within the existing Switchgear Room to outdoor step-down transformers, and pull Government Furnished (GF) 11kV power cables through it before sub-up.
3. The Contractor shall provide and install other underground and overhead conduits. The Contractor shall refer to as-built SW Ph I drawings for sizes, material, number of runs, and stub-up locations required.
4. The Government will use other contractors to supply and install low voltage interconnecting wiring and cabling between the GF/GI transmitter system components and to GF/GI equipment, unless noted otherwise.
5. The approximate transmitter and building equipment power requirements are as follows:

<u>Transmitter/Component</u>	<u>Load</u>
Transmitter (TX)/Each:	250 kW (750kVA Transformer, 11kV Primary & 4160 Secondary)
TX AHU/Each:	20 A, 380 VAC, 3 phase, 50 Hz
TX Heat Exchanger/Each:	30 A, 380 VAC, 3 phase, 50 Hz
Building AHU:	1.6 kW, 415 VAC, 3 phase, 50 Hz
Bldg. Chiller-Condensing Unit:	42 kW, 415 VAC, 3 phase, 50 Hz
Bldg. AHU Electric Reheat:	6 kW
Chilled Water Pump/Each:	3 hp
Antenna Switching:	75 A, 415 VAC, 3 phase, 50 Hz
Obstruction Lighting:	10 A, 1kVA
HSSD/Each:	20 A, 0.02kVA, single phase
Building Lighting & Other Misc. Loads:	To be added by the Contractor

- c. Lighting: A switched power branch circuit and light fixtures shall be provided in each transmitter bay. The specific location of the switch and light fixtures shall be determined in coordination with the Government during the Contractor's design phase.
- d. Grounding: A minimum of ten (10) grounding connection stub-ups shall be provided in each transmitter bay. The copper ground straps shall be provided for connection to the transmitter system in accordance with Section C.2.11.11.6. below. The specific locations of the ground straps shall be determined in coordination with the Government during the Contractor's design phase.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

- e. Floor Drains: A waterproof floor trough with a drain shall be provided in each bay for the cooling water unit. The specific size and location of the floor trough and drain shall be determined in coordination with the Government during the Contractor's design phase.
- f. Exterior Equipment Pads: The Contractor shall provide exterior reinforced concrete pads for mounting the GF/GI equipment: heat exchangers, chiller-condenser unit and step-down transformers, which are a part of the GF/GI transmitter system. The pads shall be located external to the transmitter building and adjacent to its associated transmitter. The approximate size and location of the pads are provided in Attachment J.1.2, "Equipment Pad Layout".

The contractor shall also construct a concrete ramp leading to the rear double doors of each transmitter bay. The slope shall not exceed that to allow a Fork Lift to traverse from the road up and into the transmitter bay.

- g. Transmitter System Automation Empty Conduits: The Contractor shall provide two 2-inch conduit run from each transmitter bay to a new Filter Closet, refer to Attachment J.3, "Conceptual Building Plan" for location. Conduits shall terminate just inside the Filter Closet. Opposite ends of the conduits shall terminate at a height just above each transmitter local control location. The Contractor shall also install a fish lines.
- h. Spare Breakers: If needed, the Contractor shall add spare breakers in existing and new panel boards (if added by the Contractor). The quantity and ratings of the breakers shall be determined in coordination with the Government during the Contractor's design phase.
- i. Coaxial Transmission Line: Station technicians will install Government-Furnished 9" rigid coaxial transmission line from the output port on each of the Continental Model 419F transmitter to the existing Switchbay RF extensions in the hallway ceiling.
- j. Cable Tray: The Contractor shall provide and install 20 cm cable tray between Step Start assembly and LT transformer in the Transmitter Bay.

C.2.5 SITE INVESTIGATIONS

- a. The Contractor will conduct topographic surveys and geotechnical explorations for the areas of the site affected by work under this SOW. The Contractor shall furnish the results of these surveys and explorations to the Government 30 days after NTP, refer to Attachment J.5 for due date in the Schedule of Deliverables.
- b. Any topographic and geotechnical survey work shall be performed by licensed professionals surveyors, engineers, and documented in drawings and/or report format and submitted to the Government in accordance with J.5, "Schedule of Deliverables".

C.2.6 SITE WORK

- C.2.6.1 Permits: In accordance with FAR Clause 52.236-7 PERMITS AND RESPONSIBILITIES, the Contractor shall be responsible for obtaining all permits, licenses, clearances, etc. that are required for the design and construction of the new building and related facilities.
- C.2.6.2 Site Preparation: The Contractor shall perform all necessary site preparation including grading, site drainage, erosion control, cut and fill, and compaction, as part of the facilities construction work.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

- a. Grading and Site Drainage: Grading will be required for the SW building addition and outside access to transmitter bays. A curb and gutter system shall be used to dispose of surface and rainwater runoff.
 - b. Cut and Fill: The Contractor shall cut and fill, and compact and grade as required for the new building, and others areas effected by the work, as required to ensure adequate surface water drainage and to prevent ponding. The top elevation of the slab-on-grade for the building shall be 20-cm above the finished grade.
 - c. Contractor shall construct one concrete culvert on the north side of the access road to divert water from the roof necessary to deter erosion of the road.
- C.2.6.3 Trenching for Utilities: The Contractor shall provide trenching or other means to excavate for buried conduits for antenna, transformer and heat exchanger electrical power feeder and fiber optic cabling.
- C.2.6.4 Site Plan: As part of its design, the Contractor shall prepare and submit a site plan to show the proposed site work, including but not limited to, grading and drainage design, access paving, routing of utilities, trench details, duct banks to pull box for the new building addition.
- C.2.7 CONSTRUCTION MATERIALS
- C.2.7.1 General: The Contractor shall select, procure and install all materials based on construction and maintenance costs, fire safety, facility life, and energy conservation. All materials, regardless of origin or source, shall conform to the requirements of applicable ASTM specifications and be new and free of manufacturing and/or fabrication defects. Local material may be used if available, suitable and practicable. The use of asbestos, PCBs, and lead-based paints is strictly prohibited. Protective coatings shall be provided to all construction not otherwise inherently resistant to site conditions and which will be permanently exposed to the environment.
- C.2.7.2 Exterior Walls and Roof: The Contractor shall use a pre-engineered metal building that is durable, aesthetically pleasing, and has an integral surface that does not require recoating or continuous maintenance. Exterior walls shall include no windows and shall be thermally insulated to provide a minimum R-value of 19. The roof system shall utilize gutters and downspouts. The roof of the building shall be insulated to achieve a minimum R-value of 30. The pre-engineered building shall be carefully designed and constructed to minimize intrusion of dust and sand into the building. Pre-engineered building products such as Kirby, Butler, Armco or SteeloX, or equivalent, are acceptable.
- C.2.7.2.1 The Contractor shall leave steel siding in place prior to adding new Phase II building addition. Steps should be taken at this time to assure dust and dirt is not blown into the existing switchbay room.
- C.2.7.3 Interior Partitioning: Hollow partition construction consisting of metal stud and gypsum board or masonry block is acceptable for permanent construction. Wood framing shall not be used. All interior surfaces that do not have a factory finish shall receive one coat of primer and two coats of finish paint appropriate for the material to be painted.
- C.2.7.4 Floor: The Contractor shall install a concrete slab on grade for the building in accordance with Section C.2.9.3 below. All areas shall have epoxy coated flooring except for the hallway and vestibule, which shall have ceramic tile with vinyl cove base matching that in the existing hallway and vestibule.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

- C.2.7.4.1 Finished Floor Elevation and Material: The finished floor elevation of the new building expansion shall be leveled to the finished floor of the existing SW Transmitter Building. The new building addition floor material and finish shall match in quality, color and texture of the existing SW building. This includes hallways.
- C.2.7.5 Ceiling: No ceiling anywhere in the new addition is required. The building however, shall be designed to provide a minimum clear height of 16 ft. in the Transmitter area.
- C.2.7.6 Doors: All exterior doors shall be hollow metal hung in a steel frame, shall conform to NFPA for evacuation and fire safety purposes, have safety exit bars and shall have no windows. Exterior doors shall have weather-stripping and a metal saddle for sand protection. For all doors (interior and exterior), the door type, hardware, and keying (similar to existing in quality and construction) shall conform to acceptable industry standards. The exterior transmitter bay doors shall have no outside handles, and shall be integrated into the transmitter's interlock system.
- C.2.7.7 Roof Access Ladders: The Contractor shall design, supply and install a roof access ladder from the ground up to the roof of the new building addition, and between new and the existing SW transmitter building roof elevation changes. All roof ladders shall have a safety cage for fall protection. All access ladders shall meet or exceed the OSHA safety requirements for roof access.

C.2.8 STRUCTURAL SYSTEMS

The following shall be applicable to all work performed by the Contractor:

C.2.8.1 Applicable Publications

The facilities shall be designed and constructed to meet or exceed the criteria set forth in the following Codes, Standards and Publications. Additional design criteria and standards, where applicable, are referenced throughout this Specification.

- a. The American Concrete Institute (ACI) Standards including the Building Code Requirements for Reinforced Concrete (ACI 318) and its Commentary;
- b. The American Institute of Steel Construction (AISC) Publications including the Manual of Steel Construction;
- c. The American Society for Testing and Materials (ASTM) Publications;
- d. The American Welding Society (AWS) Standards;
- e. The International Building Code and Standards (IBC), by the International Conference of Building Officials;
- f. Specifications for Aluminum Structures, by the Aluminum Association, Inc.;
- g. The Society for Protective Coatings (SSPC) Publications;
- h. The American National Standards Institute (ANSI) Standards; and Military Specification MIL-A-8625E, Anodic Coatings for Aluminum and Aluminum Alloys.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

C.2.8.2 Design Loads

All loads, load combinations, and structural designs shall all be considered and carried out in accordance with the International Building Code 2000, amended and or supplemented with the following: Basic Wind Speed: 95 MPH (3-second gusts) or above, Exposure Category C.

- a. Building Roof Deck Loading: Uniform live load of 20 psf (pounds per square foot) with building code allowable reduction and no snow loading; and concentrated live load of 250 lbs (pounds) minimum.
- b. Building Roof Deck Drift: The maximum allowable drift at roof deck level shall not exceed $H/150$ for any load combination, where H is the building height (distance from roof deck to the slab-on-grade).
- c. Building Slab-on Grade Loading: Uniform live load of 150 psf; and concentrated live load of 3000 lbs. minimum.

C.2.8.3 Floor Slab Construction

The Contractor shall assume that the heaviest transmitter components, the modulation transformers, weigh 5,000 lbs. each. To support the GF/GI transmitting system, the new building shall be constructed with a reinforced concrete floor slab, a minimum of 9" thick, with reinforcement consisting of, at a minimum, ASTM A615 #5 deformed bars on 12" centers each way in orthogonal directions, top and bottom. The slab shall be constructed on a compacted sub-grade, gravel or crushed stone sub-base, and vapor barrier. Structural design calculations for the slab-on-grade and foundations shall be included as part of the design submissions required by Attachment J.5, "Schedule of Deliverables". Under-floor ducts or trenches for pipe, conduit and cable runs are acceptable if they meet the other performance requirements stated herein.

C.2.8.4 Column Bases

Each column of the pre-engineered building shall have a pinned base that only transfers shear forces, but no moment forces, to its foundation. Anchor bolts shall be clearly specified in the Contractor's design.

C.2.8.5 Protective Coatings

Protective coatings shall be provided to all construction not otherwise inherently resistant to site conditions as follows:

- a. Structural Steel Framing Members and Fasteners: Exposed structural steel shall be hot-dip galvanized as per the applicable ASTM specifications. Non-exposed structural steel framing for the building shall be factory primed with rust-resistant primer; the same primer shall be provided on site for touch-up after the building erection process is complete. All structural steel fasteners shall be stainless steel or hot-dip galvanized as per the applicable ASTM specification.
- b. Metal Wall and Roof Panels: Steel substrate hot-dipped zinc galvanized or hot-dipped aluminum-zinc galvanized coating per the applicable ASTM specification. Primer and topcoat appropriate for the environment shall be factory applied and cured in an oven at controlled temperatures.
- c. Structural Aluminum Framing Members and Fasteners: Anodized as per MIL-A-8625E, Type III, Class 2.

**KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH**

C.2.8.6 Dissimilar Metals

The Contractor shall avoid contact between dissimilar metals having a potential difference of 0.2 V or greater, by selection of compatible metals, separation of junction with galvanic isolating material, and/or by the application of protective finishes or plating of mating surfaces. Protective measures shall be provided at junctions where contact between dissimilar metal occurs in soils, or where corrosive conditions are encountered.

C.2.8.7 Concrete

The Contractor shall use sulfate resisting Portland Cement Type V, as defined by ASTM C 150, for all concrete. Use of Kuwait specified local concrete mix of K-350 is recommended.

C.2.8.7.1 Concrete Compressive Tests

The Contractor shall conduct concrete compressive tests (minimum 7 and 28 days) according to the requirements of ACI and submit all test reports to IBB for review.

C.2.8.8 Seismic Anchors: The Contractor shall design and install seismic anchors satisfying IBC 2000 for all equipment furnished under this contract and installed on concrete pads.

C.2.8.9 Government Inspections

The Contractor shall coordinate with the IBB Construction Manger/Field AR/CO so that the Government can timely complete the following inspections:

- a. Foundation excavation
- b. Rebar placement
- c. Concrete placement
- d. Compaction of backfill material
- e. Metal building fabrication
- f. Metal building erection
- g. Roof inspection
- h. 11 kV and 4160 V cable runs

The Contractor is expected to correct all identified deficiencies in a timely manner.

C.2.9 UTILITIES

The Contractor shall also design, furnish and install domestic water piping, deionized water piping, fire protection stand pipe system, waste piping, and drain for transmitter cooling system, all of which shall conform to the requirements stated herein.

C.2.9.1 Applicable Publications

The Contractor shall design and install all utilities under this contract to meet or exceed the criteria set forth in the following Codes, Standards and Publications. In the event of conflict between these documents, or between these documents and specific requirements noted elsewhere, the more stringent requirements shall govern. Reference to codes and standards shall be taken from the latest issue, at the date of Contract Award, of the following publications:

- a. American Society for Testing and Materials (ASTM);
- b. American National Standards Institute (ANSI);

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

- c. American Society of Mechanical Engineers (ASM);
 - d. Uniform Plumbing Code (UPC); and
 - e. Plumbing and Drainage Institute (PDI).
- C.2.9.2 Testing Drain Pipes: The Contractor shall be responsible for testing newly installed drain lines to confirm pipes are not restricted with construction debris.
- C.2.9.3 Plumbing System: The Contractor shall provide the following plumbing systems in accordance with the National Standard Plumbing Codes, the fixture type, size, construction and specifications matching with the existing installation:
 - a. Domestic cold water system, transmitter bay and equipment room drain and vent piping system, and waste piping with cleanouts shall be provided. Connect the waste piping to a nearest existing soil line. One exterior hose bib similar to existing design and specifications shall be provided for irrigation and other purposes.
 - b. Extend existing deionized make-up water line to supply make-up cooling water to the transmitter(s) coolant water storage tank(s). The deionized water piping shall be minimum ½" diameter green weldable style PVC pipe as locally available in Kuwait.
- C.2.10 FIRE PROTECTION AND LIFE SAFETY SYSTEMS

The Contractor shall use applicable National Fire Protection Association (NFPA) fire and life safety codes in the design of the new building addition.
- C.2.10.1 The Contractor shall provide and install new modules in the existing central alarm panel in order to accommodate new inputs to be added under Phase II expansion.
 - a. The Contractor shall design and install smoke detectors and smoke detection system, similar to existing installation, in transmitter bays, mechanical-electrical room and hallway. Other contractor will provide the High Sensitivity Smoke Detection (HSDD) system and shutdown control relays.
 - b. The Contractor shall extend 2-inch standpipe above the existing west hose cabinet to a new hose cabinet in the new building addition hallway in accordance with the applicable codes.
 - c. The Contractor shall remove and relocate existing fire alarm speaker/strobe and pull box mounted outside on the existing west wall to the new building addition west wall, and conduct performance test after the installation is complete.
 - d. The Contractor shall remove and relocate existing fire alarm pull station and fire alarm speaker/strobe in the existing west vestibule to new Vestibule, and conduct performance test after the installation is complete.
- C.2.11 ELECTRICAL SYSTEMS

Generally the electrical system for the new building addition and its equipment loads shall be completely separate and easily distinguishable from the existing SW electrical system on site.

 - A. The Contractor shall calculate the total power requirements for the new building addition, including transmitter systems, compare it with what is currently available in the existing SW building, and add in the cost proposal of any additional distribution panel(s) if needed.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

- B. The Contractor shall update the existing short circuit and coordination study to include the new loads. Relay and circuit breaker settings shall match to study results.
- C. Submit copies of the updated study, including findings, analyses and recommendations for IBB review.
- D. The Contractor shall review Attachment J.7: Concept Single Line Diagram and, add all new loads and new panels (if needed), and submit an up-to-date schematic diagram for IBB review.

C.2.11.1 Applicable Publications

The publications listed below of the issue in effect on the date of award of contract form a part of this specification to the extent referenced.

- a. The Standards of the American National Standards Institute (ANSI);
- b. National Fire Protection Association (NFPA) 70, National Electrical Code (NEC);
- c. The Standards of the National Electrical Manufacturers Association (NEMA);
- d. The Standards of the Underwriters Laboratories (UL);
- e. Military Standards: MIL-STD-188-124A: Grounding, Bonding and Shielding; and MIL-HDBK-419: Grounding, Bonding and Shielding for Electronic Equipment and Facilities, Volume 2;
- f. International Building Code (IBC);
- g. International Electrical Code (IEC); and
- h. Inter National Electrical Testing Association (NETA).
- i. Government of Kuwait Ministry of Electricity and Water Code

C.2.11.2 System Electrical Characteristics

The Contractor shall provide and run power cables from the existing Switchgear Room and distribution panels and, if needed, new panel(s) to deliver power to transmitter subsystems and building loads. The power supply shall satisfy manufacturer recommendations of all Contractor-provided equipment, and shall fall within the following limits:

- a. Steady state voltage, under all steady state load conditions: within $\pm 5\%$ of nominal; and Maximum transient voltage drop at the transmitter due to the startup inrush current when the transmitter is turned on: - 15% of nominal.

C.2.11.3 Medium Voltage Cable

Medium Voltage Cable (MV-90) shall be GF concentric lay, class B cable with polyethylene insulation complying with NEMA WC 7 or equivalent. Insulation thickness shall be of 133 % level and consist of shielding wires or copper tape. All splices and termination kits shall be those recommended by the cable manufacturer and conform to applicable industry standards.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

C.2.11.4 Low Voltage Electrical Distribution

The Contractor shall use existing electrical distribution system, as much as possible, for all low voltage building loads, including, lighting, receptacles, and equipment. Provide new distribution panels and adequate number of spare breakers, as needed, to complete the design.

C.2.11.5 Equipment and Materials

- a. All electrical materials and equipment needed to make the new building addition fully functional and operational shall be provided. All equipment and materials shall be new and free of manufacturing defects and shall be listed by a listing agency such as Underwriters' Laboratories whenever applicable. All items shall be installed according to the latest issue of the National Electrical Code. All items shall meet the applicable standards of the current versions of American National Standards Institute (ANSI), Underwriters' Laboratories (UL), and National Electrical Manufacturers' Association (NEMA) standards. Materials and equipment manufactured outside the U.S. to other standards may be supplied provided that they comply with requirements of other organizations judged equal to the applicable U.S. standards listed above.
- b. Panel boards, if required, shall have copper busses, neutral and grounding bars, and typed circuit directories. Circuit breakers shall be molded case, bolt-on type.

C.2.11.6 Over-current Protection

- a. The primary means of protecting conductors and equipment operating at less than 600 V against over-current due to overloads and fault conditions shall be circuit breakers employing solid-state trip units wherever practical. Cartridge fuses may be employed only when required to achieve selective time-current coordination and protection.
- b. A short-circuit analysis and protective device coordination study shall be prepared and submitted as part of the design to determine the short-circuit duties on each device and to determine the settings which shall provide the most selective time-current coordination possible. All over-current protective devices shall have short-circuit interrupting ratings of at least 125% of the maximum possible short-circuit duty as determined by the short-circuit analysis.
- c. All protective relays installed on medium-voltage circuits shall be tested to determine that the pickup current (or other appropriate quantity) is within manufacturer's prescribed limits; also, each relay shall be calibrated at two separate points on the time current characteristic curve at the settings prescribed by the coordination study.

C.2.11.7 Conduit and Wiring Installation:

- a. All wiring shall be installed in metal conduit behind finished walls and ceilings wherever practical; exposed conduit shall be run parallel or perpendicular to building lines. Electrical metallic tubing fittings shall be of the compression type. All conduits rising up through the floor or the earth shall be rigid steel with threaded fittings. No conduit system shall be installed horizontally within the concrete slabs-on-grade. For slab-on-grade construction, conduits shall be installed below the floor slab; rigid zinc-coated steel or IMC below grade shall be suitably covered by tape wrap or factory applied coating. All conductors shall be copper; all feeder and branch-circuit conductors shall be thermoplastic insulated with an insulation rating of 75° C. A separate green-insulated equipment grounding conductor shall be run in the same conduit with all feeders, all three-phase branch circuits, and all single-phase branch circuits rated above 20 A.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

- b. All exterior wiring shall be installed underground in PVC conduit or duct banks, except when crossing beneath roadways, foundations or other structures, and high traffic areas, where cables shall be installed in concrete-encased duct banks. A yellow, metal-foil containing, plastic warning tape shall be placed in the backfill approximately 30 cm below grade above each underground cable run. Control and power wiring shall not be run in the same conduit/duct.
- c. The Contractor shall run a 6-inch underground conduit from an existing panel if possible, if not then from a new panel within new Mechanical/Electrical Room to a manhole box at the north end of the overhead transmission line bridge for a power cable feed to a new curtain antenna array. After exiting the building the contractor may elect to run overhead on the bridge used for the 9 inch coax that goes over the inner compound fence and then underground from there to a new manhole. Or, Contractor may elect to run conduit entirely underground to the manhole. The contractor shall also run two each 2-inch PVC schedule 40 conduits from within the new Filter Closet to each transmitter bay and, a 2-inch conduit from within the Switchbay Room to run fiber optic cable to the new antenna array.
- d. All conduits shall include pull-wires for future pulling of wiring by others. The location of the pull box and of the stub-ups within the building shall be determined in coordination with the Government during the Contractor's design phase.

C.2.11.8 Convenience Receptacles

Single-phase convenience receptacles shall be furnished and installed within the building according to local practice at 3 m (10 ft.) intervals in all rooms, and on the building exterior (four receptacles minimum) for supplying power to 240 VAC portable equipment. At a minimum, ten (10) receptacles for supplying 120 VAC, single-phase equipment shall also be furnished and installed in the transmitter area for test equipment use. The location of the 120 VAC receptacles shall be determined in coordination with the Government during the Contractor's design phase.

- a. Receptacles of different voltages shall be of different type and labeled or color-coded as to voltage to prevent inadvertent plugging-in of equipment to receptacles of the wrong voltage.

C.2.11.9 Interior Lighting

- a. Electrical lighting shall be furnished and installed in the building interior to provide a general illumination level of 550 lux in main work areas and a sufficient amount to provide safe exit from the hallway. Fluorescent fixtures employing warm-white lamps shall be utilized wherever practical. The lighting controls and sensors shall be provided similar to existing in design, construction and performance.
- b. Emergency lighting shall be furnished and installed by fixtures powered by self-contained, rechargeable batteries to provide sufficient illumination for safe egress from all areas in the event of an emergency during a complete power failure.
- c. Exit lighting to mark primary exits shall be furnished and installed according to the current edition of the Uniform Building Code and NFPA 101.

C.2.11.10 Exterior Lighting

Exterior lighting shall be furnished and installed for all building entrances/exits. These areas shall be illuminated to a minimum level of 1.0 foot-candles. Photocell switches shall control all exterior lighting.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

C.2.11.11 Grounding

The Contractor shall design and construct a facility grounding subsystem in accordance with the National Electrical Code and the provisions specified below, which shall provide grounding for the following purposes:

- a. Power system neutral grounding and fault protection;
- b. Lightning protection;
- c. Audio system signal reference grounding;
- d. RF and audio subsystems reference ground; and
- e. Personnel electrical safety grounding.

C.2.11.11.1 Earth Electrode Subsystem

- a. An earth electrode subsystem shall be provided for the new building and any other new structures provided under this contract. All electrical equipment, raceways, and cabinets shall be grounded to this electrode subsystem.
- b. For the new building and any other new structure, the earth electrode subsystem shall consist of a closed buried ring of bare copper conductors, connected to ground rods as required to obtain an overall grounding resistance of 5 Ohm or less as determined by test. Method of test shall be the fall of potential method. The ground ring shall be placed 0.6 m outside the drip line of the building or structure. In locations where rods cannot be driven due to shallow rock, a plate electrode shall be installed in place of a rod. The plate shall be buried as deep as practical above the subsurface rock.
- c. Individual building/structure grounding rings shall be interconnected to one another such that they provide one continuous electrode system. No additional connection is required where lightning protection counterpoises have been provided over buried cable runs, and where they are arranged to provide this interconnection.
- d. The earth electrode subsystem for any small isolated structures shall consist of only a single driven grounding rod, supplemented as required to provide 10 Ohm or less of grounding resistance.
- e. All underground metallic structures, such as tanks, water lines, sewer lines, and armored cable, shall be bonded to the earth electrode subsystem with bare copper cable with a minimum size of 60 mm² (#1/0 AWG). Adequate corrosion preventive measures shall be taken.
- f. In designing and constructing the earth electrode system, the Contractor shall avoid contact between dissimilar metals having a potential difference of 0.2 V or greater, by selection of compatible metals, separation of junction with galvanic isolating material, and/or by the application of protective finishes or plating of mating surfaces. Protective measures shall be provided at junctions where contact between dissimilar metal occurs.

- C.2.11.11.2 Ground Wire and Cable: Wire for ground grids, counterpoise systems, and connections shall be bare stranded copper conductors conforming to UL standard 467, military standard MIL-STD-188-124A, and MIL-HDBK-419. In general, the size of ground conductors for equipment grounds shall be in accordance with the latest issue of the National Electrical Code, and shall not be smaller than 13 mm² (#6 AWG). Buried ground ring conductors

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

surrounding buildings and other structures shall be 70 mm²(#2/0 AWG), minimum. Wires shall be soft drawn copper with Class B stranding.

C.2.11.11.3 Ground Rods: All ground rods shall be copperclad steel and shall be a minimum of 20 mm in diameter and 3 m in length.

C.2.11.11.4 Ground Plates: All ground plates shall be fabricated from solid copper plate of suitable area and thickness and shall be installed in locations where ground rods cannot be driven due to shallow rock.

C.2.11.12.5 Connectors and Connections: All ground connections shall be exothermic weld ("cadweld" or equivalent), except for connections to ground rods in grounding wells where bolted clamp-type connections shall be used to allow for ground system testing. All clamps, connectors, bolts, washers, nuts and other hardware used with the grounding system shall be of copper or bronze.

C.2.11.11.6 RF Grounding System

- A. The Contractor shall install a buried equipotential ground plane composed of a grid of 1.6 mm x 100 mm or larger copper straps on 50 cm centers beneath the floor and extending at least 30 cm beyond the footprint of each transmitter RF cabinet. Those ground plane straps which end convenient to the transmitter building- grounding ring may be terminated at and welded or brazed to it. Otherwise, they shall be terminated at and welded or brazed to their own particular grounding ring composed of a 70 mm² (#2/0 AWG) stranded copper conductor. Each of these particular grounding planes shall be connected to the transmitter building grounding ring by at least one 1.6 mm x 100 mm or larger copper strap with welded or brazed connections. In addition, each of these particular-grounding rings shall have a set of grounding rods or plate equivalents installed with spacing no more than every 2 m around its periphery.
- B. From the grounding screen located beneath R.F. cabinet of each transmitter, 1.6 mm x 100 mm wide copper straps terminating on flush floor-mounted copper grounding terminal plates, drilled and tapped to accommodate grounding stud bolts, shall be furnished, installed, and connected at each corner of the transmitter's RF cabinet. All other transmitter cabinets and apparatus shall be individually connected as required to the nearest part of the grounding system screen using copper strap 0.8 mm x 100 mm or larger. Connections between strap and cabinets shall be bolted.
- C. Copper strap "pigtailed" shall be provided about the periphery of the extended control room and filter closet, close to the wall, for the grounding of shields, apparatus, etc. Each pigtail shall be 0.8 mm x 50 mm or larger, connected to the corresponding ground plane(s) by the shortest route possible, and shall have an exposed length of at least 0.3 m above the floor. Adjacent pigtails shall be separated by 1.2 m intervals within the control room and by 0.6 m intervals within the filter closet, where a minimum of two straps shall be provided.
- D. The Contractor shall provide ten (10) copper ground stub-ups in the transmitter hall and a number of copper ground bars outside the building for connection to the GF/GI transmitter system by the Government to be determined during the design phase. Each ground strap shall be 1.6 mm x 100 mm wide copper strap, connected to the ground plane by the shortest route possible, and shall have an exposed length of at least 0.3 m above the floor. The locations of the ground straps shall be coordinated with the Government during the Contractor's design phase.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

C.2.11.11.7 Building/Foundation Structural Steel: All principal metallic framing, structural members (such as building columns), roof trusses, and metal roof and wall panels shall be electrically bonded to make them electrically continuous and shall be grounded to the earth electrode system. Reinforcing steel in floor slabs shall be bonded by silver solder or together to provide a direct path to the building-grounding ring. With respect to foundations and slabs, such grounding shall be made at frequent intervals around their perimeters.

C.2.11.11.8 Lightning Protection: The building shall be protected against lightning according to NFPA 780, the National Lightning Protection Code. All incoming power and communication lines shall be suitably, protected from lightning by arresters and/or shielding. A 1/0 AWG bare copper conductor ("guard wire") shall be laid directly over all runs of buried cable to protect them against direct lightning strokes. Each guard wire shall be bonded to the earth electrode system at each end. Remove lightning conductor, which presently runs on the existing West wall to a nearest ground arrester prior to building new building addition.

C.2.12 COMMUNICATION SYSTEMS

C.2.12.1 Fiber Optic Cabling: The Contractor shall provide two 2-inch conduits and run fiber optic cable(s) through them to provide for audio, communication, RF sample for modulation monitoring and automation functions between each transmitter bay and the new Filter Closet, terminating within the existing Control Room. The length of cable run and number of drops will be determined during the design development phase.

C.2.12.1.1 Materials

- a. The fiber optic cabling shall be rated for multimode service and consist of a minimum of twelve (12) 62.5/125 micron fibers. The cable shall be typical or equal to cable manufactured by Phoenix Digital, part number FOC-EXP-12-062
- b. The Government will provide and install the Ethernet-to-fiber conversion equipment at both ends of the cabling.
- c. Installation: All exterior fiber optic cabling shall be installed underground as much as possible in dedicated electrical grade PVC conduit (it shall not share conduit with electrical cabling), except when crossing beneath roadways, foundations and other structures, and high traffic areas, where cables shall be installed in PVC conduit in concrete-encased duct banks. Pull-boxes shall be provided every 200 meters.

C.2.12.2 Twisted Pair Cabling: To provide for backup communications between the new building addition and the adjacent existing SW building, the Contractor shall install four (4) pairs of twisted pair cabling.

- a. Materials: The twisted pair cabling shall be #16 AWG stranded copper wire.

C.2.12.3 Telephone: The Contractor shall provide the new building with two (2) recessed telephone jacks and associated cabling. Cabling shall be CAT-6. Location of the jacks and routing of the cabling shall be determined in coordination with the Government during the Contractor's design phase. The Government will furnish telephone handsets.

C.3 STATION OPERATION

The new building addition operation will be performed principally from the existing Control Room through the use of the external controls. The station operation shall be by remote manual operation as well as automated operation from the station Control Room.

**KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH**

C.4 QUALITY ASSURANCE

The Contractor shall establish a Quality Control program in accordance with the requirements stated herein, to include the inspections and tests necessary to ensure delivery of a fully functional new SW building addition facility. The Contractor shall verify by inspection and test that this control is established and effective. The Contractor shall ensure that quality assurance and control provisions are considered early in the planning and design process so the capability to make measurements and perform tests is addressed in order to ensure conformity with design criteria and performance requirements.

C.4.1 QUALITY PROGRAM MANAGEMENT CONTROL

C.4.1.1 Organization

Effective management for quality shall be clearly prescribed by the Contractor. Personnel performing quality functions shall have sufficient experience, responsibility, authority and the organizational freedom to identify and evaluate quality problems and initiate, recommend or provide solutions. The Government will regularly review the status and adequacy of the quality program. The Government will also perform periodic inspections of the work in progress on the site. The Contractor shall cooperate with the Government personnel in the requirement to conduct these inspections in a timely and safe manner.

C.4.1.2 Quality Control Plan

The Contractor shall submit its final plan for controlling quality in accordance with Attachment J.5, "Schedule of Deliverables". The plan shall incorporate all applicable elements outlined in Attachment J.8, "Contents of a Typical QC Plan" and this Section. The Contractor shall update the Plan as necessary or as directed by the AR/CO throughout the course of the contract.

C.4.1.3 Acceptance Of Plan

No work shall commence on-site prior to Government approval of the Quality Control Plan. Award of contract shall not constitute approval of Quality Control provisions in the Offeror's proposal. The Contractor shall carry out the terms of its Quality Control Plan on site. The Government reserves the right to require the Contractor to make changes in its Quality Control Plan and operations as necessary to obtain the quality specified. After acceptance of the Quality Control Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. If any changes proposed by the Contractor, they shall be approved by the Contracting Officer prior to implementation.

C.4.2 QUALITY CONTROL DOCUMENTATION

C.4.2.1 Design

All designs, specifications, and drawings for work described in Section C herein shall be reviewed by a Professional Engineer licensed for practice in the United States of America, who shall certify compliance of the design to the requirements of this contract. On-site changes to drawings and designs shall not be made without the knowledge (and approval if it affects RFP compliance) of the AR/CO. Changes shall be documented by "redline" additions to drawings and specifications. All changes shall be noted in the Contractor's construction manager's log. Calculations shall be retained and filed with each engineering change. Submit Auto CAD of as-built drawings.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

C.4.2.2 Materials

Manufacturers' certificates of compliance on all materials used shall be maintained at the on-site construction office. Variations from the Government or the Contractor's specifications shall be brought in writing to the attention of the Field AR/CO. All non-conforming materials shall be immediately tagged/marked and removed from the project site. The cost of any removal of materials shall be at the expense of the Contractor.

The Contractor shall submit the following certificates to IBB for review and approval:

1. Certificate of rebars, steel and structural bolts.
2. Certificate of concrete design.

C.4.3 REPORTS

C.4.3.1 Quality Control Reports

The Contractor shall submit a daily Quality Control Report to the Field AR/CO. The report shall contain a record of all inspections, all on-site activities and tests for all work accomplished subsequent to the previous report and shall include the following information:

- a. The progress of manufacturing/fabrication/construction activities;
- b. Results of tests, inspections and follow up tests or inspections, including identifying deficiencies observed and corrective actions required. The Contractor's Quality Control representative shall review, approve or disapprove, and certify whether all test results conform or do not conform to contract requirements. Test results, including all computations shall be attached to the report form. All test reports shall be stamped "APPROVED-CONFORMS" or "DISAPPROVED-NON-CONFORMS" in red letters at least 25 mm (1 inch tall), as determined by the Contractor Quality Control representative's review. A report of actions to be taken by the Contractor to eliminate any non-conforming work shall be provided with each daily report containing disapproved test results.
- c. Results of inspection and testing of materials and equipment upon arrival at the job site and prior to incorporation into the work.
- d. Record weather conditions; describe events affecting the project, etc.

C.4.3.2 Nonconforming Material And Waivers: The Contractor shall establish and maintain an effective system for controlling nonconforming material, including procedures for its identification, segregation, and disposition. When the disposition is "Use As Is," the AR/CO or Field AR/CO shall process a waiver for approval.

C.5 FINAL INSPECTIONS, TESTS AND ACCEPTANCE

- a. The Contractor shall prepare and submit Final Acceptance Plan for approval with Attachment J.5, "Schedule of Deliverables". The Plan shall list and describe the tests and inspections to be performed by the Contractor, and witnessed by the Government, to substantiate that all construction and installed systems are complete and ready for beneficial use by the Government.
- b. Contractor shall provide written notice to the Government of the date the work will be fully completed and ready for final inspections and tests in accordance with Section E.1.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

- c. The Government will conduct final inspections and provide the Contractor with a "punch-list" of items to be corrected, repaired or completed. The Contractor shall expeditiously complete or otherwise reconcile to the Government's satisfaction all items in the punch-list prior to the Government's issuance of Final acceptance.
- d. Final acceptance by the Government shall be in writing by the Contracting Officer in accordance with Section E.2

C.6 TECHNICAL DOCUMENTATION

The Contractor shall provide logistics support documentation as specified below.

C.6.1 DESIGN DOCUMENTS

- a. Construction documents, including shop drawings and samples, shall be reviewed by an architectural engineering (A/E) firm, registered and licensed to practice in a jurisdiction of the US, and retained by the Contractor. A U.S. Professional Engineer shall stamp all facility design drawings. Documents shall consist of Civil, Architectural, Structural, Mechanical, and Electrical equipment installation drawings, specifications, calculations and submittals for the entire new building addition. Drawings shall be prepared in accordance with Attachment J.9, "IBB CAD Standards".

Civil: Pavement Design Calculations and Storm water run-off calculations.

Electrical: Load Analysis of each Switchboard, Panel board, and Transformer; Short Circuit Analysis and Protection Coordination; Illumination Level Calculations, Interior and Exterior; Voltage Drop Calculations; Transient Voltage Drop Calculations, due to Transmitter Turn-on;

Structural: Building Structural Design Calculations; Building Foundation Design and Slab-on-Grade Calculations; Building/Steel Framing Erection Plan; and Design Calculations for any other Miscellaneous Structures.

- b. Preliminary (50%), 100% and Final sets of all design documents listed above shall be submitted to the Government in order to establish that documents meet conceptual design, functional requirements and performance specifications. Documentation shall be submitted in sufficient detail to demonstrate that the facilities design will meet the full requirements of these specifications. The 100% submission shall incorporate the Government's comments on the 50% submission. The Final submission shall incorporate the Government's comments on the 100% submission. The submissions shall include the number of copies required by Attachment J.5, "Schedule of Deliverables."
- c. Construction work shall not commence before Final design drawings have been submitted to the Government for that particular element of the project. Notwithstanding the above requirement, The Government recognizes the benefits of a "fast track" approach to the design/build process, and to that end will work closely with the Contractor in so far as possible. For example, the Contractor is encouraged to submit the shop drawings for the pre-engineered metal building to the A/E and Government for review as soon as possible after award in order to "fast track" construction of the building.
- d. Design documents shall be submitted, at each of the design phases indicated above, in accordance with Attachment J.5, "Schedule of Deliverables". The Final submission shall include two (2) sets of CD-ROMs in AutoCAD 2007 format.

KUWAIT SHORT WAVE (SW) PHASE II EXPANSION PROJECT
RFP BBG-1073-08-IQ-00005-KSH

C.6.2 AS-BUILT DRAWINGS

- a. The Contractor shall submit a complete set of final as-built drawings documenting the post-construction, conditions to include the following: civil, architectural, structural, mechanical, and electrical. Submissions shall be in accordance with Attachment J.5, "Schedule of Deliverables".
- b. Submittal of final as-built documentation shall consist of the final design package, revised to show the changes made during actual construction in accordance with Attachment J.5, "Schedule of Deliverables". Legible pen and ink changes are permitted.
- c. CADD-Format As-Built Drawings - In addition to the hardcopy versions of the as-built drawings, the Contractor shall prepare and submit copies of all final As-Built drawings in AutoCAD 2007 format on CD-ROM, providing two complete sets of files with index. These AutoCAD format drawings shall contain all of the information contained on the hardcopy final As-Built. Any pen and ink changes to the final As-Built drawings shall also be entered into the AutoCAD design files. If a file compression program is used, a copy of the decompression program shall be included with each copy of the deliverable.

C.6.3 OPERATING AND MAINTENANCE TECHNICAL MANUALS

The Contractor shall furnish, in English, operating and maintenance technical manuals for all equipment and systems for which documentation of operating and maintenance procedures are appropriate. The manuals shall consist of manufacturer's standard operation and maintenance documentation.

C.6.4 SPARE PARTS LIST

The Contractor shall prepare and submit a recommended spare parts list in accordance with the Attachment J.5, "Schedule of Deliverables". The list shall include the spares, repair parts, and special tools (if any) needed to support on-site operation of the equipment and systems installed by contractor. The list shall include a source of supply, estimated cost, and frequency of replacement (if applicable) for each item.

(End of Section C)