

CITY OF HOUSTON  
SCOPE OF WORK  
FOR  
RADIO TOWER COMMUNICATION SERVICES  
FOR  
GENERAL SERVICES DEPARTMENT  
BID I00230

It is the intent of the City of Houston to solicit the lowest and best responsible bid or price under competitive conditions. All materials and/or equipment shall be new unless stated otherwise.

Prospective bidders are advised that this bid is not to be considered restricted to any referenced manufacturer and all bidders are specifically directed to informal bid terms of the "General Conditions of Bidding".

The following are the minimum acceptable specifications:

**1.0 SCOPE OF WORK:**

- 1.1 Work under this contract shall include the furnishing of all labor, tools, materials, equipment, and insurance necessary required for the removal and disposal of all existing coaxial cables, underground conduit, and installation of four (4) new runs of coaxial cable and four (4) new antennas. Length of new cable tray and new coaxial cable is to be determined by contractor. The tower is a 50' monopole tower.

**1.1 Coaxial Cables for Antennas**

- 1.1.1 Contractor will remove and dispose of all antennas and all old mounting hardware as directed by Houston Fire Department Communications Management personnel.
- 1.1.2 Contractor will provide the following Decibel Products antennas. DB437-C (450 – 470MHz) with all necessary hardware to be installed at a height of 40 ft, DB-420 (450 – 470MHz) with all necessary hardware to be installed at the top of the tower, DB-292(150 – 174MHz) with all necessary hardware to be installed at a height of 50 ft., and a DB-806 (806 – 866MHz) with all necessary hardware to be installed at a height of 20 ft. All antennas will be mounted on a 12" standoff with the exception of the DB-420 on the downtown side of the tower toward One Shell Plaza. Contractor will determine the correct azimuth for all antennas.
- 1.1.3 New coaxial cable, connectors and fittings shall connect all antennas on radio communications tower. Each antenna shall have separate cable.
- 1.1.4 All antenna mounting hardware shall be fabricated entirely of hot-dipped galvanized material. Plated or painted hardware of any kind shall not be accepted. The new antenna cables will extend from antenna on the tower to ten (10) feet inside the radio communications room. All coaxial cables shall be secured properly to a new waveguide lattice to be furnished and installed by contractor. The waveguide lattice shall also be fabricated entirely of hot-dip galvanized.
- 1.1.5 All antenna cable shall be Andrew #LDF5-50A. This is a neoprene jacketed, semi-rigid, thin walled copper tube. It has an overall exterior diameter of 1.1 inches, and a MINIMUM BENDING

- 1.1.6 RADIUS OF TEN (10) INCHES. If this bending radius is not observed and cable is bent excessively, entire cable will be replaced by contractor. Installation personnel will be made aware of the construction of such cable so proper safety precautions can be maintained.
- 1.1.7 Connection between the LDF5-50A coaxial cable and antennas shall be made by jumper from Andrew #LDF4-50A coaxial cable with the exception of the antenna containing a factory jumper. This is a semi-rigid, low-density foam insulated cable. Length of jumper will not exceed three (3) feet. All cables will be equipped with proper matching connectors, as no connector adapters will be accepted.
- 1.1.8 All cable connectors when mated together, in order to prevent water intrusion and/or condensation inside cable, follow these steps.
  - 1. All connector mating surfaces will be generously packed with silicone grease.
  - 2. Connectors shall be pushed together and tightened properly.
  - 3. Entire connector joint will be wrapped with rubberized tape then covered with vinyl electrical tape.
  - 4. All exposed tape will be sealed with Scotchcoat coating.
- 1.1.9 All #LDF5-50A cable ends inside the radio communication building will be equipped with the Andrew L5NF connectors. All coaxial cables will be tagged with antenna type inside radio communications building.
- 1.1.10 Coaxial Cables on the antenna tower shall be supported at least every four (4) feet by Andrew #42396-5 cable clamp and secured to the waveguide lattice using Andrew #12395-1 Wraplock stainless steel banding or equivalent. If tower is a monopole type, contractor will fabricate necessary hardware, using only hot-dipped galvanized material, to secure coaxial cables to tower.
- 1.1.11 Each coaxial cable will be separately grounded to tower using the highest and lowest points possible for each cable. A ground buss will be attached to the waveguide lattice for use, as the lowest grounding point and the buss will be grounded to the tower. The use of Andrew #40993A-5 grounding kit will be acceptable. The same grounding kit will also be used inside the radio communication room as a third grounding point when all coaxial cables have penetrated the building. These grounding cables will be connected to the ground buss using compression style ring lugs. All grounding will follow Motorola R-56 grounding standards
- 1.1.12 All #LDF5-50A cable will be secured to the wall or cable tray using suitable clamps and/or fasteners to prevent damage to the cable after installation.

## **1.2 Cable Tray and Ice Bridge for Coaxial Cables**

- 1.2.1 Contractor will furnish and install an uninterrupted cable tray or ice bridge from the antenna tower to the radio communications room. If cable tray is used, Cope Ladder model 7D58 or equivalent cable tray will be used.
- 1.2.2 The contractor will furnish and install all mounting hardware necessary for the cable tray to maintain the 320 lbs. weight distribution and winds of 100 mph. The mounting hardware will be comprised of the same material as the cable tray and all screws will
- 1.2.3 be coated in hot dip galvanize. A neoprene washer will be placed between the mounting hardware and the screw head to prevent bi-metal corrosion. All sections of the cable tray will be grounded according to Motorola R-56 grounding standards.

- 1.2.4 Contractor will furnish and install one (1) Valmont Microflect wall entry system. This entry system will be model B1191 consisting of eight (8) 5" openings. The entry system will be sealed against the wall in a manner to prevent water intrusion and match the construction of the outside wall.
- 1.2.5 The wall entry system will have four (4) access boots for the LDF5-50A cable and four (4) boots for unused ports.
- 1.2.6 Upon entry into the building with the LDF5-50A cables, each cable will have a 12" drip loop to help prevent water intrusion into the communication room.

### **1.3 RF Verification of Coaxial Cables**

- 1.3.1 Contractor will provide verification of RF capability to Houston Fire Department Communication Management Division Manager of the entire frequency range for each antenna and coaxial cable on the tower whether or not installed by contractor. If any antenna is the cause of failure, the contractor will replace only the antenna placed by contractor, otherwise the Houston Fire Department Communication Management will provide the antenna for the contractor to replace.

### **2.0 MATERIALS:**

- 2.1 To be determined by contractor.

### **3.0 QUALITY ASSURANCE:**

- 3.1 Should any material be found defective, not meeting specifications, or that which has not been approved in writing by the owner shall, upon discovery (including any time within the period of the guarantee), be replaced with the specified equipment or material at no additional cost to the City.

### **4.0 WARRANTY:**

- 4.1 The Contractor shall guarantee all of the work that is performed under this contract, including all materials, workmanship, for a minimum of one (1) year from the date of full acceptance of the work.

### **5.0 DISCREPANCIES:**

- 5.1 Square yardage in the specifications is approximate and should be adhered to as closely as possible but all carpeting shall be sized to fit properly.
- 5.2 The exact measurements are the responsibility of the Contractor.
- 5.3 If there are discrepancies in the specifications, the Contractor shall ask for a clarification from the City prior to bid opening.
- 5.4 If no clarification is requested, the City's judgement shall rule.

## **6.0 GENERAL INFORMATION:**

- 6.1 Contact person is James Roberson/832-859-4602.
- 6.2 All work to be performed during normal business hours.

## **7.0 WORKMANSHIP:**

- 7.1 All work shall be performed and completed in a thorough, workmanlike manner and in accordance with the latest proven practices of the trade by thoroughly skilled and experienced workmen.

## **8.0 PERMITS:**

- 8.1 Permits (if required) is the responsibility of the contactor.

## **9.0 SITE VISIT:**

- 9.1 All prospective bidders are encouraged to arrange and attend a site visit to clarify the actual scope of work to be done. Failure of a bidder to arrange and attend a site visit shall not constitute grounds for later claim against the City.
- 9.2 Site visit is scheduled for March 11, 2009 at 2:00 PM at Fire Station #44, 675 Maxey, Houston, TX 77013.
- 9.3 Any revisions to be incorporated into this solicitation document arising from discussions before, during and subsequent to the site visit conference will be confirmed in writing by Letter(s) of Clarification prior to the bid due date. Verbal responses will not otherwise alter the specifications, terms and conditions as stated herein.

## **10.0 TERMINATION OF AGREEMENT:**

- 10.1 This Contract may be terminated by the City Purchasing Agent upon fifteen (15) days notice in writing, if the materials and/or services furnished do not conform to the standard set forth herein; or if the deliveries and servicing of this Contract do not conform to the requirements detailed herein.

## **11.0 CONTRACT COMPLETION:**

- 11.1 The Contractor shall complete this contract within thirty (30) calendar days of starting date of work. All work is to be performed during normal business hours.

## **12.0 CLEAN-UP:**

- 12.1 Unless specifications state otherwise at the completion of all work, Contractor shall remove from the area all trash, rubbish, and debris caused by its operations, leaving the job site clean. Contractor shall vacuum carpet and polish base.

### **13.0 PRODUCT LITERATURE/SPECIFICATION SHEETS:**

- 13.1 To evaluate bids, the user department and the City purchasing staff may require product literature/specification sheets. When required, the bidders(s) should submit the requested product literature/specification sheets within five (5) calendar days from date of request. **FAILURE ON BIDDER'S PART TO FURNISH THE REQUESTED TECHNICAL DATA IN THE TIME LIMIT GIVEN ABOVE MAY BE CAUSE FOR REJECTION OF THE BID.**