

**TECHNICAL SPECIFICATIONS
EMERGENCY OUTDOOR VOICE & SIREN
WARNING SYSTEM FOR LAUDERDALE COUNTY , MS.**

SCOPE:

The purpose of these specifications is to outline the minimum acceptable specifications for an Electronic Voice and Warning System. Each bidder will provide a quote for an omni-directional, non-rotating, electronic, voice-warning system, as described in the specifications listed below. The vendors bid shall include: speaker arrays, speaker cable, warning system controllers, warning system's radio controls, antennas and antenna cables, encoder(s), pole mounting brackets, lightning arrestors, batteries and installation of all equipment, in accordance to the installation specifications provided within this package.

The model being proposed must have been in operations in the continental United States for a minimum of one (5) years. No product model that has less than a five-year history will be accepted. New series or new models that are improved versions of previous series or models will be accepted, providing the previous models can be shown to have been used in similar applications. All remote warning systems, their controls, and encoders shall be current standard and advertised models. All Mississippi contractor and bid laws, apply. It is up to each vendor to know all the State and local requirements for bidding on this project. Failure to comply with all applicable laws is not reason to justify a re-bid but rather reason to find vendor non-compliant.

This project will provide the agency with a complete outdoor warning system for their area chosen. It shall encompass the following:

- Outdoor warning sirens per the specifications in this request for bid.
- Complete installation of the system
- Complete optimization of the system
- Warranty of (1) year after installation on electronic components

The county desires a complete turnkey solution. Although every effort has been made to specify all items needed to make a complete solution. It is also understood that all vendors shall supply all material and equipment to make their offering complete.

1.0 GENERAL PUBLIC WARNING SYSTEM SPECIFICATIONS:

1.1 The Public Warning System (herein shall be known as "The System") will utilize electronic, high power voice and warning tones. The System will consist of non-rotating, omni-directional speaker system that is capable of providing warning tones and voice communications throughout 360 degrees. The System shall be a two-way radio-controlled system that will provide positive feedback for silently testing each warning system.

1.2 Each vendor must perform an acoustic study of the sites indicated after award. The study must indicate the average ambient noise for the areas. Each System's coverage must be estimated in accordance to FEMA's Guideline for Outdoor Warning System CPG 1-17, using the sound

attenuation formula of 10dB loss per distance doubled. Using the attenuation formula of 10dB loss per distance doubled, the design coverage shall not extend beyond a 70 dBC perimeter.

1.3 Each bidder shall submit, along with their proposal, a list of equipment by model or brand name that is being bid.

1.4 All system components furnished for this project shall be new and/or refurbished units would satisfy this bid. Refurbished units must be to like new in that the following shall be completed:

- * New Batteries for operation
- * New Electronics within the electronics cabinet
- * New Amplifiers for each cell
- * New Radio Receiver/Transmitter for two-Way Operation
- * New Polyphaser for lightning protection
- * New Charger for each warning siren
- * New Motherboard for each unit
- * New pressure Switch pad for cabinet operation
- * New Electronic controller board

Only bids for electronic voice and warning system will be accepted. Any bid that includes an alternate for warning systems not capable of delivering both warning tones and voice communications will be deemed non-compliant and will be disqualified. The fact that a manufacturer chooses not to produce equipment to meet these specifications, providing the above criteria are met, will not be sufficient cause to adjudge these specifications as restrictive. Any exceptions to these specifications must be clearly stated point-by-point on a separate attached form. Failure to provide this information will disqualify the bidder.

2.0 WARRANTY:

2.1 The system electronics and all components located within the controller box shall be warranted for the first 365 days with full and complete coverage including all service calls parts, labor for repair, bucket trucks etc. The warning siren head atop the pole shall be warranted for 6 months. The County's shall have no additional cost for any repair during this period. This requirement does not mean to include damage due to lightning, or any other act of natural disaster, etc.

3.0 TECHNICAL SUPPORT:

3.1 The bidder must be an authorized sales and service center for the products being bid. The bidder must have licensed technicians and have a response time of not more than 24 hours on a critical malfunction and 36 hours on a partial malfunction.

4.0 SHIPPING:

4.1 Vendor shall pay freight.

TECHNICAL SPECIFICATIONS

5.0 SPEAKER ARRAY:

5.1 The speaker array shall consist of multiple omni-directional speaker cells. Each omni-directional speaker cell shall be comprised on only one (1) 400-watt speaker driver. The speaker array must be permanently fixed for horizontal sound dispersion throughout the speaker array's 360 degrees of coverage. Without exception, the speaker array MUST be a modular design. Without exception, the use of fixed directional speakers that are designed to permit any of the array's speakers or horns to be tilted up or down, in a vertical position, or move left or right in a horizontal fashion that use welds, bolts, adhesives or other means to hold the speaker array in a horizontal plane will not be accepted. The use of multiple stacked flared speaker horns, or stacked speaker arrays that require more than one (1) speaker driver per speaker cell will not be accepted. The speaker array must be able to deliver the manufacturer's advertised decibel level without more than a 1 dB loss throughout the speaker array's 360° sound projection.

5.2 The electrical path between the speaker system's power amplifiers and speaker drivers will be hardwired. Each 400-watt speaker driver will be connected to a 400-watt power amplifier. Only one speaker driver per power amplifier will be accepted. Each power amplifier must be capable of producing 400 watts minimum output rating. Each 400-watt speaker driver will be connected to one 400-watt power amplifier. In the event of a power amplifier failure, the loss of a single power amplifier will not affect more than one speaker driver and will not reduce the sound level output by more than 3 dBC. A dedicated pair of wires shall wire each speaker driver to its own power amplifier. These wiring pairs shall be twisted, 14awg, coded red and black and each wire shall be numbered. The use of common grounds is prohibited. A minimum of 50' of speaker and control cable must be provided, for each warning system. The use of common grounds is prohibited. A minimum of 50' of speaker and control cable must be provided, for each warning system.

5.3 The speaker array will be pre-wired at the warning system manufacturer's facility prior to shipping.

5.4 The speaker array shall be wind tunnel tested and capable of withstanding speeds up to 120 mph.

5.5 The speaker array shall be manufactured in a manner that will endure a minimum of 30 years of ultraviolet rays without the need for painting or other service requirement.

6.0 CONTROL CABINET:

6.1 The warning system case for the speaker systems shall be a multi-compartment assembly consisting of separate cabinets seam-welded together. The warning system case assembly shall be furnished in a natural finish aluminum material. The use of fiberglass or other non-metallic material

will not be accepted. To minimize future maintenance, the speaker array and the voice/warning system's electronic cabinet shall be manufactured from materials that have not been need painted

6.2 The warning system case assembly shall be similar to a NEMA 4 type case assembly providing a raised rolled lip around the entrance of each compartment, removable hinged doors with gaskets for each compartment that is secured by a retaining mechanism and a provision for a hasp type lock.

6.3 All system electronics will be modular and installed on the hinged panel swing out, for service. For ease of troubleshooting, all modules may be serviced or inspected by opening the service panel without disconnecting any modules from operation.

6.4 All wiring and conduit entrance to the control cabinet assembly will be via the bottom of the cabinet. All wiring connections between the compartments of the control cabinet shall have sealed fitting to prevent fumes or gases from the battery compartment entering the electronics compartment. No conduit connection between the battery compartment and the warning system's control cabinet is allowed unless the conduit is "Factory Sealed."

6.5 The battery compartment(s) shall be vented. Vents for the battery compartment(s) shall be screened.

6.6 A lightning arrestor must be provided for each warning system. Specifications of the arrestor are:

- Maximum current: 60,000 Amps
- Maximum energy: 2,000 Joules per line
- Maximum number of surges: Unlimited
- Response time one milliamp test 5 Nanoseconds
- Reference Model, Delta Lightning Arrestor Model LA 302.

7.0 BATTERY CHARGER:

7.1 The battery charger will consist of two separately functioning 5-amp chargers working parallel to provide a maximum of 10-amps output. Under normal working conditions, to minimize the re-charge time, the battery charging system MUST provide a minimum output of 10-amps. Should one of the 5-amp chargers fail, the separately functioning 5-amp charger will be capable of charging all of the siren's batteries. Without exception, a single 5-amp or a single 10-amp battery charger will NOT be accepted.

7.2 The battery charger(s) for the remote warning system must be temperature compensated and voltage regulated, of a modular design and performs as follows:

- Input: 120 VAC fused at 7 amps.
- Output: 27-31 VDC, at 10 amps.

7.3 The battery charger shall incorporate line surge suppression facilities.

8.0 BATTERY SUPPLY:

8.1 To minimize future maintenance expense, each voice/warning system will require no more than four (4) 115amp/hr batteries to meet the operational guidelines of these specifications. Bidders must provide a copy of the warning system's technical manual which describes the number of batteries required, to provide a minimum of 30 minutes of run time, in the absence of electrical

power. Failure to provide the proper information and/or failure to bid the proper number of batteries will deem the bid as “non-compliant” and the bidder will be disqualified. All batteries shall be supplied with your bid,

9.0 MICROPROCESSOR CONTROLLER:

9.1 The microprocessor-based controller shall perform the following:

- -Process remote and local station activation inputs
- -Control event timing (timing 0-10 minutes)
- -Initiate tone generator
- -Perform system diagnostics
- -Process local and remote voice broadcast

9.2 The microprocessor controller shall have the following local controls:

Warning tone activation to include: WAIL, ATTACK (Fast wail), ALERT (Steady), HI/LOW, AIR HORN, WHOOP and a 5 SECOND TEST -Silent test tone activation and one Digital Voice Message

10.0 TONE GENERATOR:

10.1 The tone generator shall be an integral module within the microprocessor-based controller capable of generating the following warning signals:

<u>TONE</u>	<u>FREQUENCY</u>	<u>SWEEP RATE</u>
WAIL	410-675 Hz	4 sec/ 1 sec
ATTACK	410-490 Hz	1 sec/ 1 sec
ALERT	465 Hz	Steady
HI/LOW	465 / 650 Hz	.8 sec/ .8 sec
WHOOP	300-675 Hz	3 sec
AIR HORN	465 / 650	Modulated/ 1.6 sec

10.2 The tone generator will be capable of generating an inaudible tone of at least 20 kHz for the purpose of testing the speaker system and its respective speaker drivers without disturbing the public.

11.0 SYSTEM DIAGNOSTIC MONITORING FUNCTIONS:

11.1 The speaker system will produce an inaudible tone for the purpose of testing the speaker system without disturbing the public. The inaudible test shall be capable of being activated by local or radio command.

11.2 The radio activated silent test will cause an exercise of the warning system components and a system diagnostic routine, permitting the verification of the following conditions:

- -AC Power at operating levels
- -DC Power at operation levels
- -Partial speaker driver/amplifier operation
- -Full speaker driver/amplifier operation

Additional diagnostic status must be made available via radio frequency and shall include

- -Signal-to-noise
- -Activation Counter

11.3 The inaudible test must be capable of diagnosing each speaker driver and power amplifier. The silent test function must be capable of detecting the failure of a single speaker or power amplifier. Each warning system will report the results of the silent test back to the central control station.

11.4 The diagnostic MUST include a means to measure and report the siren's receive radio frequency signal. This value is important to ensure that each siren's radio receiver is performing properly.

12.0 SPEAKER SIGNAL PERFORMANCE:

12.1 Speaker signal performance shall be based upon utilizing the Alert warning tone. The frequency of the Alert tone shall not to exceed 500 Hz.

13.0 VOICE PERFORMANCE:

13.1 The public warning system requires that all speaker systems be capable of broadcasting live public address and prerecorded voice messages. When broadcasting public address messages or delivering a prerecorded voice messages the warning system shall increase its power output by 25% when in the voice mode.

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15.0 DECODER:

15.1 The decoder shall be an integral system within the microprocessor controller.

15.2 The decoder shall reject any activation word sequence that does not meet the signaling criteria described for the 10-digit activation word and code format. Upon reception of an invalid sequence, the decoder will immediately reset. The minimum criteria for activation code rejection are:

- -Incorrect area code
- -Incorrect address code
- -Incorrect group code
- -Dialing rate invalid
- -Word length invalid

16.0 RADIO CONTROLS

16.1 The warning systems will be controlled via radio frequency. The radio control shall be capable of performing silent diagnostic testing on each warning system. The warning system shall report the status of the test and each activation back, via radio frequency, to the central control base station encoder.

16.2 The radio receiver for the warning system shall be incorporated as a module, within the cabinet. The warning system shall be equipped with a 25 watt state of the art transceiver. For the purposes of this bid you will accommodate either a VHF or UHF option at 12.5 khz with the capability of a PL or a DPL tone if required.

17.0 CONTROL STATION

17.1 The county will provide a repeater station for the activation of the system. The vendor shall provide an encoder and control radio with all accessories including installation at the dispatch facility

17.2 The Control Station shall be a 45-50 watt new unit and shall include:

- Radio
- Omni Directional Antenna
- ½" Transmission Line up to 100'
- Connectors & Jumpers
- Lightning protection
- Power Supply W/ Battery Back-up

18.0 Encoder (1) specifications

- Full CRT Based Encoding Computer w/ radio interface capability
- Un-limited Call Key activation series
- Computer Based
- 21" Monitor Supplied
- UPS for back/up
- Interface to the National Weather Service via a network connection for auto activation if desired
- Ability to email up to 10 addresses at no additional charge
- Have the ability for Polygon activation
- Have ability to si-test the system
- Ability to set up scheduled events such as testing without operator intervention

18.1 Encoder 2 Specifications

- Full Function Encoder to interface with Control Station
- Ability to create series of events within the call key
- Must have a minimum of 4 call keys

17.0 INSTALLATION:

17.1 The warning system sirens shall be mounted on a 55' Class II wood utility pole. The bidder will be responsible for providing the required pole, setting the pole, mounting all warning

17.1 (a) Rock Clause : Include any rock clause proposed in your detail response along with a max amount per site if rock is encountered above normal soil conditions.

17.2 All wiring must be in rigid steel conduit.

18.0 Proposal

18.1 The proposal shall be professional in appearance and in complete detail.

19.0 VENDOR QUALIFICATIONS

19.1 The prime contractor and any sub-contractors off the prime shall meet the following criteria:

- Meet the State of Mississippi Contractor Provisions and Licenses
- General Liability Insurance of \$1,000,000.00 or more
- Workman's Compensation (Statutory)
- Vehicle Liability insurance

Bid Page

Warning Siren Bid

6 EACH 2400 WATT WARNING SIRENS INCLUDING:

- 6 WARNING TONES
- 8 PRE-RECORDED MESSAGES
- CONTROL CABINET AND ALL ACCESSORIES
- ANTENNA SYSTEM

PRICE EACH FOR NEW MODEL \$ _____ EXTENDED \$ _____

PRICE EACH FOR REFURBISHED: \$ _____ EXTENDED \$ _____

Encoder bid: (W/ CONTROL STATION, ANTENNA ETC.)

- 1 EACH FULL FEATURED COMPUTER BASED ENCODER WITH INTERFACE TO NATIONAL WEATHER SERVICE FOR POLYGON ACTIVATION IF DESIRED.

PRICE: \$ _____

- 1 EACH BASIC ENCODER WITH 4 CALL KEYS AND MULTIPLE SERIES OF EVENTS

PRICE EACH \$ _____

INSTALLATION:

WARNING SIREN INSTALLATION PER MANUFACTURER SPECIFICATIONS:

EACH SIREN: \$ _____ (6EA EXTENDED) \$ _____

ENCODER INSTALLATION EACH: (INCLUDES) CONTROL STATION, ANTENNA, TX/RX LINE ETC.

EACH: \$ _____

DELIVERY:

What is your stated delivery timeline if awarded this bid:

BID CONTRACTOR COMPANY NAME: _____

BY: _____ **TITLE:** _____

DATE: _____

COMPANY ADDRESS: _____

PHONE: _____ **EMAIL:** _____

STATE OF MISSISSIPPI CONTRACTOR LICENSE NUMBER: _____

Signed and offered by signature: _____