CITY OF FRANKLIN, TENNESSEE
PROCUREMENT AGREEMENT

(City of Franklin Contract No. 2015-0123)

THIS PROCUREMENT AGREEMENT ("AGREEMENT") is by and between the City of Franklin, Tennessee ("CITY"), and Communications Group, Inc., d/b/a CommTech of Nashville, Tennessee ("VENDOR"), who mutually agree as follows:

1. CITY issued (a) on April 16, 2015 Purchasing Office Solicitation No. 2015-025, a procurement solicitation for bids for supply and delivery of a minimum of three (3) new and unused Federal Signal brand outdoor warning sirens and related equipment, and the same number of new and unused steel poles, and (b) on April 28, 2015 Addendum No. 1 to Purchasing Office Solicitation No. 2015-025 (collectively, "SOLICITATION").

2. In response to CITY's SOLICITATION, VENDOR submitted a bid dated May 4, 2015 ("SUBMITTAL"), a copy of which is attached hereto as Attachment No. 1 and hereby incorporated by reference as if fully set forth herein.

3. VENDOR has now also submitted contact information for a minimum of three references, a copy of which is attached hereto as Attachment No. 2 and hereby incorporated by reference as if fully set forth herein.

4. VENDOR has now also submitted CITY's Standard Procurement Terms and Conditions, with VENDOR's contact information inserted, a copy of which is attached hereto as Attachment No. 3 and hereby incorporated by reference as if fully set forth herein.

5. CITY awarded on June 9, 2015 and now desires to retain VENDOR for supply and delivery of exactly three (3) new and unused Federal Signal brand outdoor warning sirens and related equipment, and the same number of new and unused steel poles, pursuant to SOLICITATION and SUBMITTAL.

6. In the event of a conflict between the following documents, the order of precedence shall be as follows: (a) this AGREEMENT; (b) SOLICITATION; and (c) SUBMITTAL.

EXECUTED THIS _____ DAY OF _____ 20__.

For VENDOR: W. MARK ENDICOTT

_____
(signature of VENDOR's authorized representative)

TITLE: PRESIDENT
COMMUNICATIONS GROUP, INC.

For CITY:

_____
(signature of CITY's authorized representative)

TITLE: Mayor

Approved as to Form:

_____
Attorney for City of Franklin

CITY OF FRANKLIN, TENNESSEE
PROCUREMENT AGREEMENT

(City of Franklin Contract No. 2015-0123)

Attachment No. 1

SUBMITTAL

Revised* Bid Submittal Form

a form required of Bidders and Proposers on purchases of supplies, materials, equipment and services for the

City of Franklin, Tennessee

Purchasing Office Solicitation No.: 2015-025

Vendor's name, street address, and mailing address:	Communications Group, Inc. dba CommTech 441 Donelson Pike, Suite 420 P.O. Box 148242 Nashville, TN 37214
Vendor's contact person's name (printed), title, telephone number and e-mail address:	Steven M. Rich, Sec/VP 615-889-4756 steve@commtechradio.com

Item No.:	Description:		FEDERAL SIGNAL CORP. Bid make and model:	Total quoted bid price per unit, supplied and delivered:
1	mechanical outdoor warning siren and related equipment		2001-130-DC	$ 20,009.00
2	50' painted steel pole		TK-POGALB1-PAINT	$ 5,925.00
3.1	electronic outdoor warning siren and related equipment	106 dB(C) @ 100'	1004B	$ 17,716.00
3.2		112 dB(C) @ 100'	2008B	$ 20,387.00
3.3		115 dB(C) @ 100'	3012B	$ 23,224.00
3.4		118 dB(C) @ 100'	4016B	$ 25,967.00
3.5		120 dB(C) @ 100'	5020B	$ 28,824.00
3.6		121 dB(C) @ 100'	6024B	$ 31,547.00
3.7		124 dB(C) @ 100'	8032B	$ 36,395.00
4	40' unpainted steel pole		TK-PO-GALBPOL2	$ 5,875.00

Duration of warranties as included in the bid pricing:		
	for all sound producing components of the siren (not less than five (5) years):	5 years.
	for 50' painted steel pole:	1 years.
	for 40' unpainted steel pole:	1 years.
	for other non-sound producing components of the siren:	1 years.

NOTE: SEE ATTACHED WARRANTY STATEMENT.

INSTALLATION AVAILABLE: POLE, SIREN, AND SET-UP $7,500.00 EACH.

Revised* Bid Submittal Form

a form required of Bidders and Proposers on purchases of supplies, materials, equipment and services for the

City of Franklin, Tennessee

Purchasing Office Solicitation No.: 2015-025

Vendor's name:	Communications Group, Inc. dba CommTech
Does the bidder take any exceptions to the City's procurement solicitation?	☐ Yes, see enclosed. ☒ No, bidder takes no exceptions.
Are exceptions, if any, to the City's procurement solicitation listed separately, described, compared to the City's intention as expressed and implied by the City's solicitation documents and submitted?	☐ Yes, see enclosed. ☒ No, bidder takes no exceptions.
Are the City's preferred delivery terms (FOB destination, freight prepaid and added) acceptable to bidder?	☒ Yes. ☐ No, bidder requests the following delivery terms: _____.
Are the City's preferred payment terms (net 30 days from date of delivery or date of invoice, whichever is later) acceptable to bidder?	☒ Yes. ☐ No, bidder requests the following payment terms: _____.
Estimated time of delivery:	90 To 120 days after receipt of order.
Last date (no sooner than July 31, 2015) that bid and associated pricing is valid and may be accepted by the City:	July 31, 2015
Last date (no sooner than October 31, 2015) that bid price on a per unit basis is valid for potential future orders:	October 31, 2015
Method of payment – The City prefers to pay its vendors electronically, either by direct deposit (i.e., "ACH" or "Electronic Funds Transfer"), or by Visa credit card, rather than by conventional check. Which payment method would the bidder prefer?	☒ ACH or Electronic Funds Transfer. ☐ Visa credit card.

Revised* Bid Submittal Form

a form required of Bidders and Proposers on purchases of supplies, materials, equipment and services for the

City of Franklin, Tennessee

Purchasing Office Solicitation No.: 2015-025

Vendor's name:	Communications Group, Inc, dba CommTech
Are the following components included with this Bid Submittal Form in the bid submittal? • Detailed vendor-supplied description of bid product(s) or item(s); • Detailed vendor-supplied description of the warranty(ies) included in the pricing; • City of Franklin specifications for this procurement, marked by the bidder as to compliance therewith as per the instructions therein; • Detailed vendor-supplied identification, listing and description of any exceptions to the written specifications as per the instructions therefor; • Vendor-supplied contact information for minimum of three references; • City of Franklin Standard Procurement Terms and Conditions, with the vendor's contact information inserted; • Vendor proposed terms and conditions, if any, that are not inconsistent with the City's Standard Procurement Terms and Conditions; • City of Franklin Affidavit of Non-Collusion, executed in full; and • A complete digital copy of submitted bid documents per the Instructions for Bidders.	☒ Yes, see enclosed. ☐ No, bidder chooses not to include all of these components (NOTE: doing so may cause the City to deem the bid non-responsive).
Receipt acknowledged of any and all issued addenda to this solicitation:	☒ Addendum No. 1 received. ☐ Addenda Nos. _____ received. ☐ No addenda received.
Signature of bidder's authorized representative: I have received and read, and do understand and consent, to all instructions, terms and conditions, including those imposed by reference, which apply to this procurement solicitation and compliance with which is required as a condition precedent to consideration of the bid submitted herewith.	Steven M. Rich (signature)
Title of bidder's authorized representative:	VP/Sec
Date of signature:	05-04-2015

City of Franklin Revised* Specifications

Purchasing Office Solicitation No.: 2015-025

1. Solicitation identified: These specifications apply to the following procurement:

   a minimum of three (3) new and unused Federal Signal brand outdoor warning sirens and related equipment, and the same number of new and unused steel poles

   Purchasing Office Solicitation No.: 2015-025

2. Notice to Bidders publication date: **April 16, 2015**

3. Solicitation release date: **April 16, 2015**

4. Deadline for optional submittal in writing of questions seeking to revise or clarify any aspect of this procurement solicitation: **April 28, 2015, 2:00 p.m. Central Time**

5. Bids submittal deadline and scheduled opening: **May 5, 2015, 2:00 p.m. Central Time**

6. Tentative date of release of City's tabulation of bids received and notice of intent to award: **May 22, 2015**

7. Tentative date of award: Meeting of Board of Mayor and Aldermen at which is tentatively scheduled to be awarded the selection of the lowest and best responsive and responsible bid: **June 9, 2015**

8. Objective: To secure, on behalf of the City of Brentwood, Tennessee, the City of Franklin, Tennessee, Williamson County, Tennessee and Williamson County (Tennessee) Schools, by means of a competitive procurement process, the selection of the lowest and best responsive and responsible bid from a vendor to furnish all materials and means necessary to supply and deliver a minimum of three (3) new and unused Federal Signal brand outdoor warning sirens and related equipment, and the same number of new and unused steel poles, as specified below. See the accompanying Instructions for Bidders for additional information and instructions.

9. Exceptions:

   a. In order to avoid the need to take an exception to a specification, potential bidders may request revisions to the specifications before the deadline for optional submittal in writing of questions seeking to revise or clarify any aspect of the specifications. See the accompanying Instructions for Bidders for contact information.

   b. Any deviation or variance from the City's specifications shall be considered to be an exception.

c. Any exceptions to the City's specifications shall be identified by the bidder on the City's specifications document as well as listed and described in detail, along with any other exceptions to this procurement solicitation, in a separate written document to be prepared and submitted by the bidder, referencing any subsection number. Such listing shall include a description of exactly how such exceptions deviate from the City's expectations as expressed and implied by the procurement solicitation, and shall indicate why such exceptions should be judged by the City to meet or exceed those expectations. Any and all exceptions to this procurement solicitation which the City, in its sole discretion, deems not to meet or exceed the City's intention as expressed and implied by the procurement solicitation may be considered by the City as a factor in evaluating the bid.

10. General terms and conditions:

a. Bid price: The bid price shall include all equipment, labor, materials, permit(s), freight and required insurance to supply and deliver the specified products.

b. Delivery terms: As a matter of practice, the City of Franklin expects vendor to ship any and all deliverables FOB destination, freight prepaid and added. The City's preferred delivery terms, as described in the preceding sentence, are offered to the bidder or proposer as a condition of award. If the City's preferred delivery terms are unacceptable to the bidder or proposer, then the bidder or proposer shall indicate on the Submittal Form its preferred delivery terms. Delivery terms may be a factor in the City's selection criteria. Delivery terms are non-negotiable after award is made.

c. Payment terms: As a matter of practice, the City of Franklin pays for goods and/or services only after receipt and acceptance by the City of such goods and/or services, and only after receipt of an accurate, proper, complete and itemized invoice for such goods and/or services, net 30 calendar days from date of delivery and/or completion/installation/rendering or date of invoice, whichever is later. The City's preferred payment terms, as described in the preceding sentence, are offered to the bidder or proposer as a condition of award. If the City's preferred payment terms are unacceptable to the bidder or proposer, then the bidder or proposer shall indicate on the Submittal Form its preferred payment terms. Payment terms may be a factor in the City's selection criteria. Payment terms are non-negotiable after award is made.

d. Applicable laws and regulations: All applicable federal and state laws, city ordinances, orders, rules and regulations of all authorities having jurisdiction over the specified products shall apply to the quoted purchase price, and they will be deemed to be included in these specifications the same as though they are written out in full herein.

e. Standard Procurement Terms and Conditions: By submitting its bid, the vendor certifies that it has read and accepts all terms, conditions and requirements of this solicitation, including the terms and conditions identified and listed in the City of Franklin Standard Procurement Terms and Conditions attached hereto and hereby incorporated by reference.

f. Refusal to honor submittal: If and after an award is made by the City, if the vendor refuses to execute an agreement or contract or in any other way honor the terms and

conditions of its submittal, the City shall be entitled to seek compensation for its damages, which may include the cost of conducting a new solicitation.

g. Confidential and/or proprietary information; trade secrets. All contents of all submittals are subject to public disclosure and shall not contain any confidential and/or proprietary information and/or trade secrets. Further, by submitting its bid, the vendor indemnifies and holds the City of Franklin harmless against any loss or damage, including reasonable attorney fees, it may incur as a result of the City's reliance upon the vendor's representation that materials supplied by the vendor do not contain trade secrets or proprietary information which is not subject to public disclosure.

11. Detailed specifications: Please note:

- Bidders are required to submit with their bid a detailed description of all bid products and/or items.
- Bidders are required to mark with a "C" the blank line next to any specification below to which their bid COMPLIES.
- Bidders are required to mark with an "E" the blank line next to any specification below to which their bid takes EXCEPTION.
- Any exceptions to the City's specifications shall be identified by the bidder on the City's specifications document as well as listed and described in detail, along with any other exceptions to this procurement solicitation, in a separate written document to be prepared and submitted by the bidder, referencing any subsection number. Such listing shall include a description of exactly how such exceptions deviate from the City's expectations as expressed and implied by the procurement solicitation, and shall indicate why such exceptions should be judged by the City to meet or exceed those expectations.
- Bidders are required to submit with their bid these Specifications for this procurement, marked by the bidder as to compliance herewith as per the instructions above.

11.1. **Multiple agencies; quantities; quoted unit pricing:**

11.1.1. C — Relative to the preparation and issuance of this procurement solicitation and any award made as a result of this procurement solicitation, the City of Franklin is acting on behalf of the City of Brentwood, Tennessee, the City of Franklin, Tennessee, Williamson County, Tennessee and Williamson County (Tennessee) Schools.

11.1.2. C — Following any award, each of the aforementioned agencies would decide separately and independently as to whether to place an order pursuant to the award and, if an order is placed, each of the agencies would place the order directly with, and make payment directly to, the successful bidder (that is, the vendor who is recommended be awarded the purchase).

11.1.3. C — Prior to and as a condition of placing any order, each of the aforementioned agencies may request that the successful bidder honor that agency's standard procurement terms and conditions. Such terms and conditions may be declined by the successful bidder and may be negotiated by the parties to the potential order. The standard procurement terms and conditions contained and referenced herein apply only to the City of Franklin.

11.1.4. C — Subject to the above provisions and to the results of the bidding process, the aforementioned agencies may purchase up to the following quantities of the specified equipment and supplies:

Agency	Type	Quantity
City of Brentwood, Tennessee	Electronic	1
City of Franklin, Tennessee	Mechanical	3
Williamson County, Tennessee or Williamson County (Tennessee) Schools	Mechanical	1

11.1.5. C — Unit pricing as quoted by bidders shall apply regardless of quantity ordered. The aforementioned agencies other than the City of Franklin make no guarantee that any particular quantity will in fact be ordered pursuant to this procurement solicitation.

11.1.6. C — For bid evaluation and award purposes only, the City will assume the purchase of a quantity of four (4) mechanical sirens as specified and four (4) 50-foot painted steel poles as specified, and a quantity of zero (0) electronic sirens as specified and zero (0) 40-foot unpainted steel poles as specified.

11.2.		**General:**
11.2.1.	C	City intends for the specified items to be used by local government emergency services to alert a portion of its outdoor population of pending or imminent tornados when possible. Items as bid shall be designed and manufactured according to industry standards for this intended use.
11.2.2.	C	The sirens must be Omni-directional and include the siren projector, controllers, two-way activation and status-monitoring radio control, antennas, antenna cables, and all mounting hardware necessary to install a complete siren on a galvanized steel pole painted flat black.
11.2.3.	C	The sirens proposed must be 100% compatible with the existing Federal Siren SS2000™ controller and FSCDWARE™ software. No parallel or simultaneous or equivalent systems will be accepted.
11.2.4.	C	The City requires that all sirens are capable of operating on both AC and DC power. The AC operation with battery backup must allow these sirens to operate from a 220/240 VAC power source without the use of the batteries. During a power failure, an automatic switchover to battery operation must occur to maintain the siren's normal operation.
11.2.5.	C	All equipment and vendors must comply with all applicable government regulatory specifications, particularly FEMA and OSHA.
11.2.6.	C	The manufacturer shall be ISO 9001 Certified.
11.2.7.	C	The siren control units shall be UL Listed.
11.2.8.	C	All components, wiring and mounting hardware must be supplied to assure that a fully operational siren will be furnished. The equipment must include all mounting hardware to install a complete siren on a pole.
11.2.9.	C	Items are to be purchased new and unused by the City.
11.2.10.	C	Purchased items shall be current model year only.
11.2.11.	C	For any listed or unlisted features for which no specification is listed, items are to meet or exceed manufacturer's standard specifications.

11.3.		**Mechanical Siren:**
11.3.1.	C	Federal 2001-130.
11.3.2.	C	The siren shall have an Underwriters Laboratory (UL) listing for both AC and DC.
11.3.3.	C	Voltage: 48VDC.
11.3.4.	C	Operating Current: 100 amps (Nominal).
11.3.5.	C	Decibel Output: 130dBc at 100 feet.
11.3.6.	C	Beam Width: 60º.
11.3.7.	C	Effective Range @ 70dBc: 6,200.00 feet.
11.3.8.	C	Rotation Speed: 2 to 6 RPM (adj.).
11.3.9.	C	Continuous Signal Time: (DCFC) 15 minutes minimum at full output (After AC power failure).
11.3.10.	C	Standby Time: (DCFC) 20+ days with 5 minutes full signal reserve.
11.3.11.	C	Operating Temperature Minimum: -22.00 °F.
11.3.12.	C	Operating Temperature Maximum: 140.00 °F.
11.3.13.	C	Length: 41.000 inches.
11.3.14.	C	Width: 37.000 inches.
11.3.15.	C	Height: 55.000 inches.
11.4.		**DCFCTBD Controller and Cabinet:**
11.4.1.	C	Voltage: 120VAC.
11.4.2.	C	Operating Current: 4 amps.
11.4.3.	C	Standby Current: 0.2 amps.
11.4.4.	C	Operating Temperature Minimum: -22.00 °F.
11.4.5.	C	Operating Temperature Maximum: 140.00 °F.
11.4.6.	C	Height: 48.000 inches.
11.4.7.	C	Width: 24.000 inches.
11.4.8.	C	Length: 16.000 inches.
11.5.		**TRBP:**
11.5.1.	C	Voltage: 240 single phase (Also operates on 208 or 220/240VDC, specify).
11.5.2.	C	Operating Current: 30 amps (50 amp service recommended).
11.5.3.	C	Operating Temperature Minimum: -22.00 °F.
11.5.4.	C	Operating Temperature Maximum: 140.00 °F.

11.5.5.	C	Height: 24.000 inches.
11.5.6.	C	Width: 24.000 inches.
11.5.7.	C	Length: 10.000 inches.
11.6.		**Radio Controller:**
11.6.1.	C	The radio controller must be user programmable for Radio Frequency, Timing, and Tone Signals and must be compatible with the City's existing radio frequency.
11.6.2.	C	The two-way activation and Status Monitoring Report Back System must be a digital packet type system that is capable of being activated by Two-tone, DTMF and FSK.
11.6.3.	C	The system should include all sensors required to monitor required components.
11.6.4.	C	The system should report back on FSK and should automatically report failed conditions on loss of AC Power, Low Battery, or intrusion.
11.6.5.	C	These RTUs should come equipped with over-the-air programmability via a secure digital technology.
11.6.6.	C	Each RTU must be able to operate as a repeater communicating with other RTUs in the system.
11.7.		**Remote Stations for Mechanical Siren:**
11.7.1.	C	Each remote siren site's Remote Terminal Unit (RTU) shall contain a Two-way Controller that will receive and decode information sent from the central station and activate the necessary warning signals.
11.7.2.	C	The FSK code format shall be used for this purpose. The RTU shall be programmable for signal length, signal timing, and zone configuration and it shall be capable of communicating with other remote sites functioning as a repeater for the purpose of transmitting activation and report back codes to and from central control point(s).
11.7.3.	C	The RTUs shall automatically report back any loss of AC power, low battery condition or cabinet intrusion and must be capable of performing diagnostics on the remote sites using information provided by remote sensors.
11.7.4.		Sensor inputs provided shall be:
11.7.4.1.	C	AC power;
11.7.4.2.	C	Low battery;
11.7.4.3.	C	Rotator motor current;
11.7.4.4.	C	Main motor current; and

11.7.4.5.	C	Intrusion.
11.7.5.	C	An optional SINAD board shall be quoted to allow for the ability of the City to measure the ratio of signal to noise and distortion. Each time the SINAD function is run from a control point the RTU should obtain a new reading and report its reading to the Central Controller.
11.7.6.	C	All above information shall be transmitted back to the central control station through a VHF narrowband capable transceiver programmed to the City's designated radio frequency.
11.8.		**Pole for Mechanical Siren:**
11.8.1.		General:
11.8.1.1.	C	The steel structure shall consist of a 50-foot pole with a direct embedded shaft foundation and provisions for a top mounted siren assembly and all appurtenances directly to the pole structure.
11.8.1.2.	C	The purchaser, prior to manufacturing and installation, must approve the final design. A copy of the design calculations and drawings are to be approved by a qualified engineer and officially marked with their Professional Engineer's stamp of approval.
11.8.2.		Structural Design:
11.8.2.1.	C	The Siren Pole Structure, consisting of the pole and foundation, shall be designed for the combined effective projected area (EPA) and weight of all attached fixtures. Designs shall incorporate a minimum fixture EPA and weight value of the intended siren assembly.
11.8.2.2.	C	The pole shall be analyzed in its final deflected position to account for secondary moments caused by eccentric dead loads. The calculations shall include a pole and, if utilized, a base plate and anchor bolt analysis. The pole calculations shall be analyzed at the pole base, 5-foot pole intervals, and at each slip joint splice. At each of these locations, the following information shall be provided:
11.8.2.2.1.	C	The pole shafts diameter, thickness, section modulus, moment of inertia, and cross sectional area.
11.8.2.2.2.	C	The centroid, weight, projected area, drag coefficient, velocity pressure, and wind force of each trapezoidal pole segment.
11.8.2.2.3.	C	The structures axial force, shear force, primary moment, total moment, axial stress, bending stress, allowable axial stress, allowable bending stress, and combined stress ratio (CSR) at each elevation.
11.8.2.2.4.	C	The pole's angular and linear deflection at each elevation.

11.8.2.2.5. C — Calculations shall include an inherent summary page of applicable information pertaining to the design of pole foundation. The summary page shall include, at a minimum, the total base moment, axial force, shear force, pole shaft diameters and embedment depth information for common soil conditions.

11.8.2.2.6. C — Each individual calculation page must include the product type duly noted in the footer section. Further, each page must include the name of the manufacturer.

11.8.3. C — Wind Speed & Design Criteria: Wind velocities of 110 Mph with a 1.3 applicable gust factor must be utilized for design purposes. The structural design criteria may incorporate the full yield strength of materials to determine the pole shaft stresses and appropriate maximum allowable loading condition.

11.8.4. Pole Shaft:

11.8.4.1. C — Steel Specifications: Each section of the pole shaft shall be of single ply material, and be made from a single sheet of steel with no circumferential welded splices. The pole shafts cross-section must be round or cross section. Shafts shall not be less than 11GA (.1196-inch) thickness for either the top or bottom section. The pole shaft sections shall be high-strength steel meeting the requirements of ASTM A595 GR. A (55 Ksi Yield) for 3/16-inch (.1875-inch) thickness.

11.8.4.2. C — Galvanizing: Pole shaft sections shall be hot dip galvanized in accordance with the requirements of ASTM A123 specifications. Each shaft assembly must be completely coated, inside and out, in a single dip. Double dipping will not be permitted in compliance to USGA (United States Galvanizing Association) recommended practices and procedures to prevent acid entrapment. All miscellaneous connecting hardware shall be galvanized in accordance with ASTM A153 specifications.

11.8.4.3. C — Embedment Coating: The embedded section of shaft shall be top coated with a Madison Chemical, Corrocote II Classic (i.e., coal tar or mastic) material that will provide additional corrosion protection with the galvanized shaft. The coating shall be applied on the exterior of the shaft. The coating will be applied for a distance equal to the embedment depth plus 6 inches.

11.8.5. C — Welding: Welding shall be in accordance with AWS (American Welding Society) Structural Welding Code's most recent edition. Welders certified in accordance with the AWS Code shall perform all welding. Welds shall be free of cracks and under-cutting, and will be 100% visually inspected with questionable areas inspected by the magnetic particle non-destructive process.

11.8.6. C — Pole Top Mounting Plate: Each pole assembly shall incorporate a pole top plate that shall accommodate exactly the mounting plate of the siren model to be installed. The top plate shall telescope (socket weld joint) the top of the pole top shaft and be welded both inside and out. The plate shall have holes drilled in a pattern that matches the mounting plate of the respective siren.

11.8.7. Miscellaneous Specifications:

11.8.7.1. C — Grounding: Provisions shall be supplied for ground wires to be attached directly to the steel pole using a minimum ½-inch machine bolt.

11.8.7.2. C — Hand-holes: Hand holes with covers shall be provided with-in easy reach of each cable entry and exit point.

11.8.8. Direct Burial Pole Embedment:

11.8.8.1. C — For direct burial poles, the pole shaft shall be designed for direct embedment into the earth. The pole shaft embedment depth shall at a minimum be 10 feet.

11.8.8.2. C — A bearing mechanism shall be provided that will prevent the structure from further settling after installation.

11.8.8.3. C — Installation specifications shall include the minimum requirements for the installation hole diameter and depth, the foundation, and the backfill requirements to meet the design specifications in common soil conditions.

11.8.9. C — Pole Color: The pole is to be painted basic black.

11.9.		**Electronic Siren:**
11.9.1.	C	The electrical siren must be Omni-directional and include the electronic siren controller, the digital controller, the Modulator II electronic siren and two-way activation and status-monitoring radio control, antennas, antenna cables, and all mounting hardware necessary to install a complete siren on a 40-foot galvanized pole.
11.9.2.	C	The siren proposed must be 100% compatible with the existing Federal Siren SS2000™ controller and FSCDWARE™ software. No parallel or simultaneous or equivalent systems will be accepted.
11.9.3.	C	The City requires that all sirens are capable of operating on both AC and DC power. The AC operation with battery backup must allow these sirens to operate from a 220/240 VAC power source without the use of the batteries. During a power failure, an automatic switchover to battery operation must occur to maintain the siren's normal operation.
11.9.4.	C	All equipment and vendors must comply with all applicable government regulatory specifications, particularly FEMA and OSHA.
11.9.5.	C	The manufacturer shall be ISO 9001 Certified.
11.9.6.	C	The siren control units shall be UL Listed.
11.9.7.	C	All components, wiring and mounting hardware must be supplied to assure that a fully operational siren will be furnished. The equipment must include all mounting hardware to install a complete siren on a pole.
11.9.8.	C	Items are to be purchased new and unused.
11.9.9.	C	Purchased items shall be current model year only.
11.9.10.	C	For any listed or unlisted features for which no specification is listed, items are to meet or exceed manufacturer's standard specifications.
11.10.	C	**Modulator II Electronic Siren:**
11.10.1.	C	The siren shall have an Underwriters Laboratory (UL) listing for both AC and DC.
11.10.2.	C	Color: Off-White
11.10.3.	C	Paint Type: TGIC-polyester powder coat
11.10.4.	C	Modulator Horn Type: Hyperbolic flare
11.10.5.	C	Frequency Response: 200-2000Hz
11.10.6.	C	Horizontal Coverage: 360°+/- 1 dB(C)

11.10.7.	C	Diameter: 35”
11.10.8.	C	Pricing for 106 dB(C) @ 100’
11.10.9.	C	Pricing for 112 dB(C) @ 100’
11.10.10.	C	Pricing for 115 dB(C) @ 100’
11.10.11.	C	Pricing for 118 dB(C) @ 100’
11.10.12.	C	Pricing for 120 dB(C) @ 100’
11.10.13.	C	Pricing for 121 dB(C) @ 100’
11.10.14.	C	Pricing for 124 dB(C) @ 100’
11.11.		**UltraVoice Electronic Siren Controller:**
11.11.1.	C	Input Voltage: 120 or 240 VAC +/- 10% 50-60 Hz Single-phase
11.11.2.	C	Input Current: 7A, Max.
11.11.3.	C	Battery Input Voltage: 21.50-30 VDC. 24 Volts (nom.)
11.11.4.	C	Operating Voltage: 24 VDC
11.11.5.	C	Standby Time: Greater than 7 days
11.11.6.	C	Continuous Signaling Time: 30 minutes (min.)
11.11.7.		Control Module
11.11.7.1.	C	Microphone Input Impedance: 10 K Ohms
11.11.7.2.	C	Audio Distortion: 1% THD max, <10% voice mode-below clipping
11.11.7.3.	C	Maximum Load: 600 Ohms
11.11.7.4.	C	Audio Out: .25 to 2.0 Volts P-P 600 Ohms
11.11.7.5.	C	Audio In: .10 to 2.0 Volts P-P 600 Ohms
11.11.7.6.	C	Contact Closure: (min.) 500ms<1.0 K Ohms
11.11.7.7.	C	Relay Output: 30 Vdc, 15A
11.11.7.8.	C	Signal Duration: 3 minute standard
11.11.8.		Signaling Format
11.11.8.1.	C	AFSK: 1200 baud, MSK (Minimum Shift Key) modem type Usable decode sensitivity: 12 dB(C) SINAD (min)
11.11.8.2.	C	DTMF: 3-12 standard digits
11.11.9.		Two-Tone Sequential
11.11.9.1.	C	Frequency Range: 282 Hz-3000 Hz (non-CTCSS) 400 Hz-3000 Hz (CTCSS)
11.11.9.2.	C	Tone Timing: .5 sec-25 sec min., 8 sec max

11.11.9.3.	C	Intertone Gap: 400 ms (maximum)		
11.11.9.4.	C	Tone Accuracy: +/- 1.5%		
11.11.9.5.	C	Tone Spacing: 5% preferred, 3% minimum		
11.11.10.		Single Tone		
11.11.10.1.	C	Frequency Range: 282 Hz- 3000 Hz		
11.11.10.2.	C	Tone Timing: 0.5 sec. – 8 sec maximum		
11.11.10.3.	C	Tone Accuracy: +/- 1.5%		
11.11.10.4.	C	Tone Spacing: 5.0% preferred, 3% minimum		
11.11.10.5.	C	Remote Activation Inputs: Eight		
11.11.10.6.	C	Sensor Inputs: Four		
11.11.11.		Signal Activation Information		
		Signal	**A/B Tone Frequency Range**	**Sweep Range**
11.11.11.1.	C	Wail	400/480-850/1020	13sec
11.11.11.2.	C	Pulsed Wail	400/480-850/1020	1.5sec/13sec
11.11.11.3.	C	Steady	850/1020	N.A.
11.11.11.4.	C	Pulsed Steady	850/1020	1.5sec
11.11.11.5.	C	Alternate Steady	850/1020	1.5sec
11.11.12.		UVTR: AC Primary Operation		
11.11.12.1.	C	Operating Voltage: 210-264 VAC single phase		
11.11.12.2.	C	Dimensions: 27.0 in x 11.5 in x 13.6 in		
11.11.12.3.	C	Weight: 230lbs (103.5 kg)		
11.11.13.		Amplifier Module		
11.11.13.1.	C	Frequency Response (300 to 3Hz): +/- 3dB(C) (ref. 1kHz)		
11.11.13.2.	C	Output Voltage (to speakers drivers): 70 Vrms (nominal)		
11.11.13.3.	C	Input Impedance (per amplifier): 100 K Ohms		
11.11.14.		Environmental		
11.11.14.1.	C	Operating Temperature: -30°C to 65°C		
11.11.15.		Dimensions		
11.11.15.1.	C	Control Cabinet: 19in x 23.5in x 11.2in		
11.11.15.2.	C	Battery Cabinet: 28in x 18in x 15.2in		
11.11.16.		Weight		
11.11.16.1.	C	Net Weight UVT(D) (no amps): 170lbs (77.13 kg)		

11.11.16.2.	C	Net Weight UV400: 4.12 lbs. each (1.9 kg)
11.12.		**DCFCTBD DC Two-Way Digital Controller:**
11.12.1.		Electrical
11.12.1.1.	C	AC Supply Voltage: 120VAC @ 4.0 Amps
11.12.1.2.	C	Current Draw: +/- 10%, 50/60 Hz, maximum standby current
11.12.1.3.	C	Power Supply: 6A @ 13.3VDC
11.12.1.4.	C	Battery Backup: 48VDC
11.12.1.5.	C	Current Draw: < .2 Amps in standby
11.12.2.		Serial Ports
11.12.2.1.	C	Serial Port Protocol: RS232C 1200, N, 8, 1
11.12.3.		Transceiver
11.12.3.1.	C	Programmable Frequency: Power Out and Private Line options.
11.12.4.		Signaling Format
11.12.4.1.	C	AFSK: 1200 baud, MSK (Minimum Shift Key) modem type Useable decode sensitivity: 12dB SINAD (min.)
11.12.4.2.	C	DTMF: 3-12 standard DTMF characters
11.12.5.		Two-Tone Sequential
11.12.5.1.	C	Frequency Range: 282 Hz – 3000 Hz (non-CTCSS) 400Hz – 3000 Hz (CTCSS)
11.12.5.2.	C	Tone Timing: .5 sec - .25 sec min., 8 sec max
11.12.5.3.	C	Intertone Gap: 400ms (maximum)
11.12.5.4.	C	Tone Accuracy: +/- 1.5%
11.12.5.5.	C	Tone Spacing: 5.0% preferred, 3% min.
11.12.6.		Single Tone
11.12.6.1.	C	Frequency Range: 282 Hz – 3000 Hz
11.12.6.2.	C	Tone Timing: 0.5 sec – 8 sec maximum
11.12.6.3.	C	Tone Accuracy: +/- 1.5%
11.12.6.4.	C	Tone Spacing: 5.0% preferred, 3% min.
11.12.6.5.	C	EAS: Supports standard EAS codes and wildcards
11.12.6.6.	C	POCSAG: Supports binary AFSK 512 Baud numeric messages
11.12.7.		Relay Outputs
11.12.7.1.	C	4 relay outputs: SPST

11.12.7.2.	C	Contact rating: (4 relays standard) 5A @ 28VDC – 5A @ 240VAC
11.12.8.		Audio Output
11.12.8.1.	C	Output Voltage: >2V Peak to Peak
11.12.8.2.	C	Maximum Load: 8 Ohms
11.12.8.3.	C	Total Harmonic Distortion: <10% @ 1kHz Sinewave
11.12.9.		Environmental
11.12.9.1.	C	Operating Temperature: -30°C to 65°C
11.12.10.		Controller Dimensions (with battery cabinet)
11.12.10.1.	C	H x W x D: 62.5" x 23.5" x 16.94" NEMA 4X Rated
11.12.11.		Battery Cabinet Dimensions
11.12.11.1.	C	H x W x D: 18" x 28" x 15.19" Vented NEMA 4X Rated
11.12.12.		Shipping Weight
11.12.12.1.	C	Approx. Shipping Weight: 300lbs (136.36 kg)
11.12.12.2.	C	Actual Weight: 234lbs (106.3 kg)
11.12.13.		2001TR: AC Primary Operation
11.12.13.1.	C	Operating Voltage: 208/220/240 VAC single phase
11.12.13.2.	C	Current Requirements: 30 Amps (approx.)
11.12.13.3.	C	Dimensions: 23" x 11" x 10" (584mm x 279mm x 254mm)
11.12.13.4.	C	Product Weight: 150 lbs. (68.2 kg)
11.13.		**Remote Stations for Electronic Siren:**
11.13.1.	C	Each remote siren site's Remote Terminal Unit (RTU) shall contain a Two-way Controller that will receive and decode information sent from the central station and activate the necessary warning signals.
11.13.2.	C	The FSK code format shall be used for this purpose. The RTU shall be programmable for signal length, signal timing, and zone configuration and it shall be capable of communicating with other remote sites functioning as a repeater for the purpose of transmitting activation and report back codes to and from central control point(s).
11.13.3.	C	The RTUs shall automatically report back any loss of AC power, low battery condition or cabinet intrusion and must be capable of performing diagnostics on the remote sites using information provided by remote sensors.
11.13.4.		Sensor inputs provided shall be:
11.13.4.1.	C	AC power;

11.13.4.2.	C	Low battery;
11.13.4.3.	C	Rotator motor current;
11.13.4.4.	C	Main motor current; and
11.13.4.5.	C	Intrusion.
11.13.5.	C	An optional SINAD board shall be quoted to allow for the ability of the City to measure the ratio of signal to noise and distortion. Each time the SINAD function is run from a control point the RTU should obtain a new reading and report its reading to the Central Controller.
11.13.6.	C	All above information shall be transmitted back to the central control station through a VHF narrowband capable transceiver programmed to the City's designated radio frequency.
11.14.		**Pole for Electronic Siren:**
11.14.1.		General:
11.14.1.1.1.	C	The steel structure shall consist of a 40-foot pole with a direct embedded shaft foundation and provisions for a top mounted siren assembly and all appurtenances directly to the pole structure.
11.14.1.1.2.	C	The purchaser, prior to manufacturing and installation, must approve the final design. A copy of the design calculations and drawings are to be approved by a qualified engineer and officially marked with their Professional Engineer's stamp of approval.
11.14.2.		Structural Design:
11.14.2.1.	C	The Siren Pole Structure, consisting of the pole and foundation, shall be designed for the combined effective projected area (EPA) and weight of all attached fixtures. Designs shall incorporate a minimum fixture EPA and weight value of the intended siren assembly.
11.14.2.2.	C	The pole shall be analyzed in its final deflected position to account for secondary moments caused by eccentric dead loads. The calculations shall include a pole and, if utilized, a base plate and anchor bolt analysis. The pole calculations shall be analyzed at the pole base, 5-foot pole intervals, and at each slip joint splice. At each of these locations, the following information shall be provided:
11.14.2.3.	C	The pole shafts diameter, thickness, section modulus, moment of inertia, and cross sectional area.
11.14.2.4.	C	The centroid, weight, projected area, drag coefficient, velocity pressure, and wind force of each trapezoidal pole segment.

11.14.2.5.	C	The structures axial force, shear force, primary moment, total moment, axial stress, bending stress, allowable axial stress, allowable bending stress, and combined stress ratio (CSR) at each elevation.
11.14.2.6.	C	The pole's angular and linear deflection at each elevation.
11.14.2.7.	C	Calculations shall include an inherent summary page of applicable information pertaining to the design of pole foundation. The summary page shall include, at a minimum, the total base moment, axial force, shear force, pole shaft diameters and embedment depth information for common soil conditions.
11.14.2.8.	C	Each individual calculation page must include the product type duly noted in the footer section. Further, each page must include the name of the manufacturer.
11.14.2.9.	C	Wind Speed & Design Criteria: Wind velocities of 110 Mph with a 1.3 applicable gust factor must be utilized for design purposes. The structural design criteria may incorporate the full yield strength of materials to determine the pole shaft stresses and appropriate maximum allowable loading condition.
11.14.3.	C	Pole Shaft:
11.14.3.1.	C	Steel Specifications: Each section of the pole shaft shall be of single ply material, and be made from a single sheet of steel with no circumferential welded splices. The pole shafts cross-section must be round or cross section. Shafts shall not be less than 11GA (.1196-inch) thickness for either the top or bottom section. The pole shaft sections shall be high-strength steel meeting the requirements of ASTM A595 GR. A (55 Ksi Yield) for 3/16-inch (.1875-inch) thickness.
11.14.3.2.	C	Galvanizing: Pole shaft sections shall be hot dip galvanized in accordance with the requirements of ASTM A123 specifications. Each shaft assembly must be completely coated, inside and out, in a single dip. Double dipping will not be permitted in compliance to USGA (United States Galvanizing Association) recommended practices and procedures to prevent acid entrapment. All miscellaneous connecting hardware shall be galvanized in accordance with ASTM A153 specifications.
11.14.3.3.	C	Embedment Coating: The embedded section of shaft shall be top coated with a Madison Chemical, Corrocote II Classic (i.e., coal tar or mastic) material that will provide additional corrosion protection with the galvanized shaft. The coating shall be applied on the exterior of the shaft. The coating will be applied for a distance equal to the embedment depth plus 6 inches.

11.14.4.	C	Welding: Welding shall be in accordance with AWS (American Welding Society) Structural Welding Code's most recent edition. Welders certified in accordance with the AWS Code shall perform all welding. Welds shall be free of cracks and under-cutting, and will be 100% visually inspected with questionable areas inspected by the magnetic particle non-destructive process.
11.14.5.	C	Pole Top Mounting Plate: Each pole assembly shall incorporate a pole top plate that shall accommodate exactly the mounting plate of the siren model to be installed. The top plate shall telescope (socket weld joint) the top of the pole top shaft and be welded both inside and out. The plate shall have holes drilled in a pattern that matches the mounting plate of the respective siren.
11.14.6.		Miscellaneous Specifications:
11.14.6.1.	C	Grounding: Provisions shall be supplied for ground wires to be attached directly to the steel pole using a minimum ½-inch machine bolt.
11.14.6.2.	C	Hand-holes: Hand holes with covers shall be provided with-in easy reach of each cable entry and exit point.
11.14.7.	C	Direct Burial Pole Embedment:
11.14.7.1.	C	For direct burial poles, the pole shaft shall be designed for direct embedment into the earth. The pole shaft embedment depth shall at a minimum be 10 feet.
11.14.7.2.	C	A bearing mechanism shall be provided that will prevent the structure from further settling after installation.
11.14.7.3.	C	Installation specifications shall include the minimum requirements for the installation hole diameter and depth, the foundation, and the backfill requirements to meet the design specifications in common soil conditions.
11.14.8.	C	Pole Color: The pole is to be unpainted.

11.15. **Delivery, Documentation and Training:**

11.15.1. C — Vendor shall indicate on the Bid Submittal Form the estimated time of delivery, measured in number of calendar days after receipt of order.

11.15.2. C — Vendor shall submit, along with their bid, the following documentation:

11.15.3. C — An itemized list of equipment by brand name and model number.

11.15.4. C — Specification sheets of all recommended equipment.

11.15.5. C — Vendor specifically acknowledges and accepts City's standard delivery terms as expressed under "General terms and conditions" above.

11.15.6. C — Vendor shall include delivery and unloading or offloading and deposit of the deliverables at a location within Williamson County, TN as specified by each entity at the time of order.

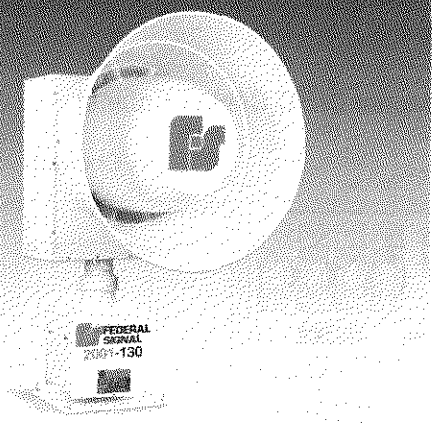
11.15.7. C — Vendor shall provide any labor and equipment necessary to unload or offload the deliverable in a manner (a) consistent with best practices for shipping and receiving, (b) that does not involve undue risk to the safety of anyone at the delivery site or the condition of the deliverable, (c) that does not involve City personnel, and (d) without the need for a loading dock.

11.15.8. C — Delivery shall be made between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday except holidays observed by the City.

11.15.9. C — Documentation, including both operator and service manuals, and warranties shall be provided upon delivery of unit.

11.16.		**Warranties:**
11.16.1.	C	The manufacturer's warranty for all sound-producing components of the siren must be for a minimum of five (5) years.
11.16.2.	C	The manufacturer's warranty for the pole shall be provided.
11.16.3.	C	The manufacturer's warranty for the radio controller shall be provided
11.16.4.	C	The manufacturer's warranty for the remote station shall be provided.
11.16.5.	C	Bidder shall supply a summary description of the warranties along with the Bid Submittal Form.
11.16.6.	C	At delivery, the vendor shall supply a copy of all manufacturer warranties.
11.17.		**Vendor Requirements:**
11.17.1.	C	The Vendor must have sold an equivalent siren system in the Middle Tennessee area within the last five (5) years.
11.17.2.	C	The Vendor must have a factory authorized service facility the service territory of which includes Williamson County, Tennessee.
11.17.3.	C	The Vendor must provide the name of the technical contact person, with phone number, for that service facility. The technical contact must be employed full-time by the Vendor.
11.17.4.	C	The Vendor must have expertise in ALL aspects of the siren system, including computer command and control, mechanical systems, PA voice, FSK tone signaling, system electronics, radio control and installation.

FEDERAL SIGNAL CORPORATION



Battery Powered Electromechanical Siren

Models 2001-130

DESIGNED FOR OUTDOOR WARNING

- Patented stator/horn design allows highly efficient, high-output operation from minimal battery source
- Sound output can cover four square miles
- Full battery operation or battery backup
- Produces 130dBc @ 100'
- Three-tone – Wail, Fast Wail and Steady
- Maintenance-free sealed bearing motors
- UL Listed Siren Controllers

The Federal Signal Model 2001-130 is a unique innovation in the high power outdoor warning siren market. The patented design represents a new generation of rotating, uni-directional electromechanical sirens.

The 2001-130 can be operated with a 120VAC battery-backup control cabinet or a 240VAC/VDC control cabinet.

This siren can be controlled remotely via wire or radio with the Model FC controller. The Model 2001-130 produces three distinctly different tones - Wail, Fast Wail and Steady. The high decibel output provides for maximum coverage from a single siren site.

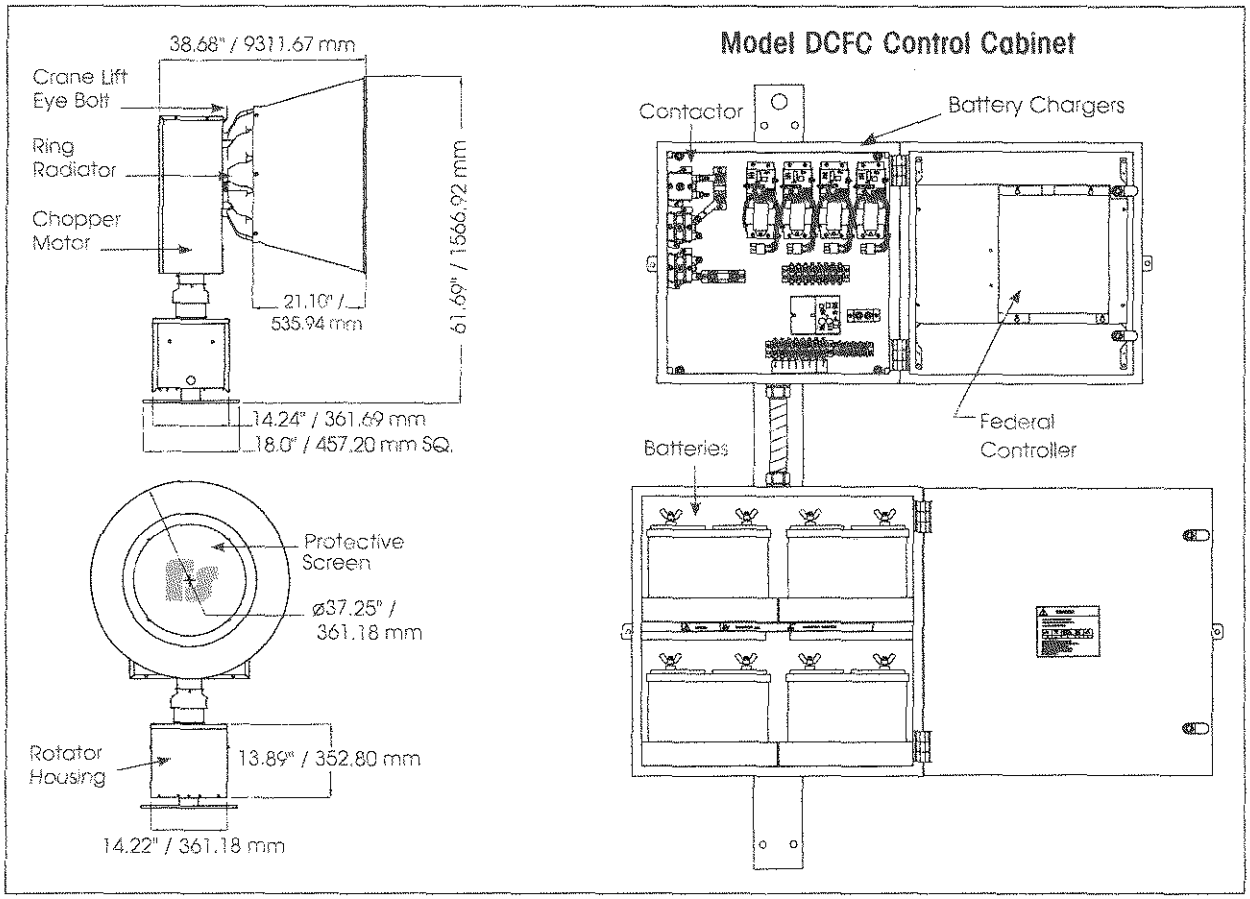
Federal Signal's Model 2001-130 produces 130dBc at 100 feet.Its ring radiator projects a 60° beam of sound which rotates at two RPM and is adjustable to six RPM. The design allows for small size without compromising sound output, and minimizes wind loading.

The Model 2001-130 is ideally suited for wide area coverage with high decibel output and attention getting signals. The Model 2001-130 also overcomes high ambient noise areas, such as those found in industrial plants, steel mills, chemical plants and refineries.

Model	Voltage	Decibels @ 100'	Operating Current	Standby Current
2001-130	48VDC	130dBc	100 amps (Nominal)	N/A
DCFCB	120VAC	N/A	4 amps	0.2 amps
2001AC	240VAC[1]	N/A	30 amps[2]	N/A

[1] Also operates on 208 or 220/240VDC (please specify)
[2] 50 amp service recommended

ELECTROMECHANICAL SIREN (2001-130)



SPECIFICATIONS

Rotation Speed:	(2001-130) 2-6 RPM (adj.)
Continuous Signal Time*:	(2001DC) 15 minutes minimum @ full output
Standby Time:	(2001DC) 20+ days with 5 minutes full signal reserve
Effective Range at 70dBc:	6200 ft.

TONE	FREQUENCY	SWEEP
Steady:	750 Hz	N/A
Wail:	470-705 Hz	10.0 sec.
Fast Wail:	600-705 Hz	3.5 sec.

* After AC power failure

HOW TO ORDER

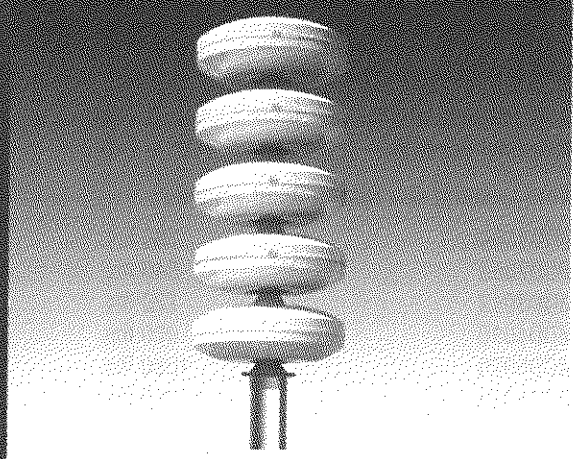
Contact our Federal Signal Sales Engineers to design a system that meets your specific requirements.

Considerations for system configuration:

- Specify model
- Specify controller

Model Number	Operating Temperature	Net Weight	Shipping Weight	Dimensions L	W	H
2001-130	-22°F – 140°F -30°C – 60°C	395 lbs. 180 kg	450 lbs. 205 kg	41" 104.14 cm	37" 93.98 cm	55" 139.7 cm
DCFCB	-22°F – 140°F -30°C – 60°C	141 lbs. 64 kg	234 lbs. 106 kg	16" 40.64 cm	24" 60.96 cm	48" 121.92 cm
2001AC	-22°F – 140°F -30°C – 60°C	159 lbs. 72 kg	182 lbs. 83 kg	10" 25.4 cm	24" 60.96 cm	24" 60.96 cm

FEDERAL SIGNAL CORPORATION



Modulator® Speaker Array

Model MOD Series

DESIGNED FOR ALERT/ WARNING AND PUBLIC ADDRESS OVER A WIDE AREA

- 360° sound coverage with no variation in the horizontal plane
- Multiple tones and public address
- Excellent frequency response
- Produces 106dBc to 121dBc @ 100'
- Each module has four 100 watt drivers
- Operates with UV controller
- UL and cUL Listed

Federal Signal's Modulator® Speaker Array Series consists of a family of six electronic sirens. These innovative omni-directional sirens are capable of producing high-intensity warning signals over a wide area. This efficient design enables these sirens to produce a high sound level, while making only moderate demands on the power source.

Each Modulator Speaker Array is made up of aluminum modules that utilize four 100 watt drivers. Speaker arrays require a siren control unit/battery cabinet (purchased separately).

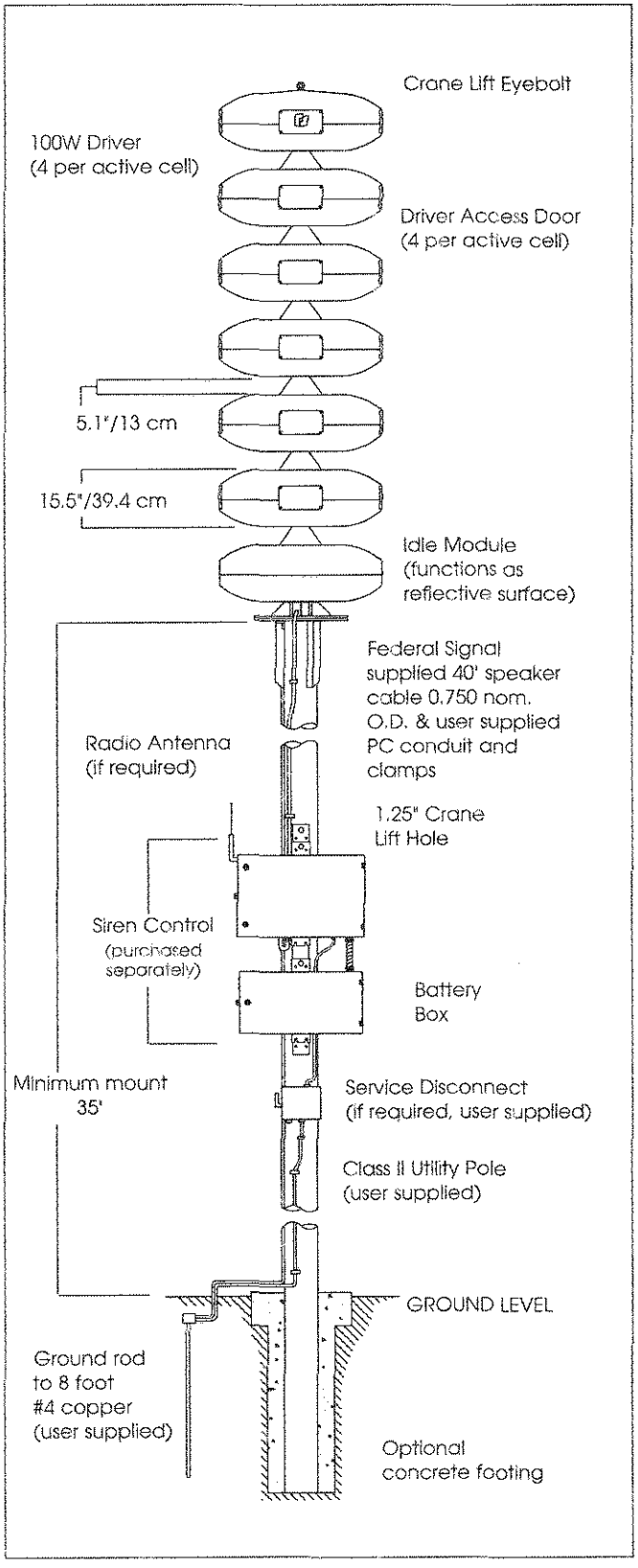
The Modulator Speaker Array provides a flat frequency response from 200 to 2000Hz for excellent voice reproduction or warning signals such as: Wail (attack), Pulsed Steady, Steady (alert), Alternating Steady, Alternating Wail, and Pulsed Wail – which are produced by the modulator siren control unit.

Federal Signal's Modulator Speaker Array is intended for outdoor applications. Industrial sites such as refineries, chemical plants, power plants, or tank farms are typical applications for these omni-directional electronic arrays.

Model	Active Modules	Watts	Decibels @ 100'*	Effective Range @ 70dBc
MOD1004	1	400	106dBc	1,200'
MOD2008	2	800	112dBc	1,800'
MOD3012	3	1200	115dBc	2,200'
MOD4016	4	1600	118dBc	2,800'
MOD5020	5	2000	120dBc	3,100'
MOD6024	6	2400	121dBc	3,400'

* MOD 6048 available, produces 125dBc @ 100'. Contact factory for specification assistance.

MODULATOR® SPEAKER ARRAY (MOD)



SPECIFICATIONS

Frequency Response:	200-2000Hz ± 1dB
Horizontal Coverage:	360° ± 1dB

Wind Loading @ 110mph wind velocity[1]:

MOD1004	360 lbs.
MOD2008	540 lbs.
MOD3012	720 lbs.
MOD4016	900 lbs.
MOD5020	1080 lbs.
MOD6024	1260 lbs.

[1] Wind loading is the calculated force of wind at 110mph (shoreline), exposure D (flat, unobstructed coastal areas) on frontal area 4.64 ft. per American National Standards Institute A58.1 "Minimum design loads for buildings and other structures."

Model	Height (in./cm)	Net Wt. (lbs./kg)	Shipping Wt. (lbs./kg)
MOD1004	43.17"/109.65	181.0/82.0	350.0/158.8
MOD2008	63.7"/161.8	296.0/134.3	400.0/181.4
MOD3012	84.3"/214.1	411.0/186.4	600.0/272.2
MOD4016	105.0"/266.7	526.0/238.6	750.0/340.2
MOD5020	125.5"/318.8	641.0/290.8	1000.0/453.6
MOD6024	146.0"/370.8	760.0/344.7	1270.0/576.0

HOW TO ORDER

Contact our Federal Signal Sales Engineers to design a system that meets your specific requirements.

Considerations for system configuration:

- Specify speaker array model number – each speaker array model must be ordered with a specific corresponding UV and Amplifier.

SPEAKER	CONTROLLER*
MOD1004	UV + 1 UV400
MOD2008	UV + 2 UV400
MOD3012	UV + 3 UV400
MOD4016	UV + 4 UV400
MOD5020	UV + 5 UV400
MOD6024	UV + 6 UV400

- Specify optional CABEX 10' cable extension[2]

[2] 40 feet of cable is supplied with siren. Extension cable in 10 foot increments is also available. Mounting the UV controller further than 100 feet is not recommended (further mounting may decrease power output).

* Controllers available in Radio, IP, and Landline.

REPLACEMENT PARTS

Description	***Model***
Driver, 100 watt	8570063A

FEDERAL SIGNAL CORPORATION
Federal Warning Systems

DIRECT EMBEDMENT STEEL POLE SPECIFICATIONS FOR SIRENS

1. **General:**
   1.1. The steel structure shall consist of a pole with a direct embedded shaft foundation and provisions for a top mounted siren assembly and all appurtenances directly to the pole structure.
   1.2. The purchaser, prior to manufacturing and installation, must approve the final design. A copy of the design calculations and drawings are to be approved by a qualified engineer and officially marked with their Professional Engineer's stamp of approval.

2. **Structural Design:**
   2.1. The Siren Pole Structure, consisting of the pole and foundation, shall be designed for the combined effective projected area (EPA) and weight of all attached fixtures. Designs shall incorporate a minimum fixture EPA and weight value of the intended siren assembly.
   2.2. The pole shall be analyzed in its final deflected position to account for secondary moments caused by eccentric dead loads. The calculations shall include a pole and, if utilized, a base plate and anchor bolt analysis. The pole calculations shall be analyzed at the pole base, 5' pole intervals, and at each slip joint splice. At each of these locations, the following information shall be provided:
      2.2.1. The pole shafts diameter, thickness, section modulus, moment of inertia, and cross sectional area.
      2.2.2. The centroid, weight, projected area, drag coefficient, velocity pressure, and wind force of each trapezoidal pole segment.
      2.2.3. The structures axial force, shear force, primary moment, total moment, axial stress, bending stress, allowable axial stress, allowable bending stress, and combined stress ratio (CSR) at each elevation.
      2.2.4. The pole's angular and linear deflection at each elevation.
   2.3. Calculations shall include an inherent summary page of applicable information pertaining to the design of pole foundation. The summary page shall include, at a minimum, the total base moment, axial force, shear force, pole shaft diameters and embedment depth information for common soil conditions.
   2.4. Each individual calculation page must include the product type duly noted in the footer section. Further, each page must include the name of the manufacturer. Failure to comply will result in automatic submittal rejection.

3. **Wind Speed & Design Criteria:**
   3.1. Wind velocities of 110 Mph with a 1.3 applicable gust factor must be utilized for design purposes. The structural design criteria may incorporate the full yield strength of materials to determine the pole shaft stresses and appropriate maximum allowable loading condition.

				SIGNAL DIVISION Federal Signal Corporation 2645 FEDERAL SIGNAL DRIVE - UNIVERSITY PARK, IL 604660		
A1	REL. TO ECO# 06-4128	10/19/06	DJN			
A	REL TO PROD. ECO#06-4020	02/21/06	DJN	DRAWN BY: DJN	CHKD. BY: SC	SHEET
REV	CHANGE	DATE	BY	DATE: 02/16/06	DATE: 02/16/06	1 OF 3
NAME **SPEC, STEEL POLE DIRECT EMBEDMENT**				DRAWING NUMBER **85001170A**		

DIRECT EMBEDMENT STEEL POLE SPECIFICATIONS FOR SIRENS

4. **Pole Shaft:**
   - 4.1. **Steel Specifications:** Each section of the pole shaft shall be of single ply material, and be made from a single sheet of steel with no circumferential welded splices. The pole shafts cross-section must be round or cross section. Shafts shall not be less than 11GA (.1196") thickness for either the top or bottom section. The pole shaft sections shall be high-strength steel meeting the requirements of ASTM A595 GR. A (55 Ksi Yield) for 3/16" (.1875") thickness
   - 4.2. **Sectional Poles:** If utilized, each slip joint shall be assembled in the field by telescoping the upper female section over the lower male section by a minimum lap of 1.5 times the inside diameter of the respective upper "female" section. The female-telescoped area must be welded both inside and out to insure 100% weld penetration in an area equal to the minimum slip distance plus 9".
   - 4.3. **Internal Cable Guides:** Pole shaft assemblies that exceed 50' in total height will be provided with an internal cable guide and strain relief assembly mechanism approximately half way up the total length of the structure. The cable guide must consist, at a minimum, of an offset bar, steel pipe sleeve with internal PVC sheathing to reduce wear, and a hand hole opposite the offset bar for access. The installation contractor will be responsible for providing respective kellums grip connectors required to relieve strain.
   - 4.4. **Galvanizing:** Pole shaft sections shall be hot dip galvanized in accordance with the requirements of ASTM A123 specifications. Each shaft assembly must be completely coated, inside and out, in a single dip. Double dipping will not be permitted in compliance to USGA (United States Galvanizing Association) recommended practices and procedures to prevent acid entrapment. All miscellaneous connecting hardware shall be galvanized in accordance with ASTM A153 specifications.
   - 4.5. **Embedment Coating:** The embedded section of shaft shall be top coated with a Madision Chemical, Corrocote II Classic (i.e. coal tar or mastic) material that will provide additional corrosion protection with the galvanized shaft. The coating shall be applied on the exterior of the shaft. The coating will be applied for a distance equal to the embedment depth plus 6".

5. **Welding:**
   - 5.1. Welding shall be in accordance with AWS (American Welding Society) Structural Welding Code's most recent edition. Welders certified in accordance with the AWS Code shall perform all welding. Welds shall be free of cracks and under-cutting, and will be 100% visually inspected with questionable areas inspected by the magnetic particle non-destructive process.

				SIGNAL DIVISION Federal Signal Corporation 2645 FEDERAL SIGNAL DRIVE - UNIVERSITY PARK, IL 604660		
A1	REL. TO ECO# 06-4128	10/19/06	DJN			
A	REL TO PROD. ECO#06-4020	02/21/06	DJN	DRAWN BY: DJN	CHKD. BY: SC	SHEET
REV	CHANGE	DATE	BY	DATE: 02/16/06	DATE: 02/16/06	2 OF 3
NAME **SPEC, STEEL POLE DIRECT EMBEDMENT**				DRAWING NUMBER **85001170A**		

FEDERAL SIGNAL CORPORATION
Federal Warning Systems

DIRECT EMBEDMENT STEEL POLE SPECIFICATIONS FOR SIRENS

6. **Pole Top Mounting Plate:**
   6.1. Each pole assembly shall incorporate a pole top plate that shall accommodate exactly the mounting plate of the siren model to be installed. The top plate shall telescope (socket weld joint) the top of the pole top shaft and be welded both inside and out. The plate shall have holes drilled in a pattern that matches the mounting plate of the respective siren.

7. **Miscellaneous Specifications:**
   7.1. **Grounding:** Provisions shall be supplied for ground wires to be attached directly to the steel pole using a minimum ½" machine bolt. For grounding, a minimum #2AWG bare copper conductor shall connected with compression connectors or CAD welding to two 10' x 5/8" Copper Clad ground rods installed in undisturbed soil approximately 3' and 23' from the pole, unless prohibited by installation site circumstances.
   7.2. **Hand-holes:** Hand holes with covers shall be provided with-in easy reach of each cable entry and exit point.
   7.3. **Pole Openings:** All openings in the pole for conduit, mounting nuts, hand-holes or for other reasons must be sealed with galvanized plugs or bolts during installation. The installation contractor is responsible for providing the appropriate materials to complete this requirement.
   7.4. **Hardware:** All exterior hardware used for installation of siren equipment, wiring and other components shall be stainless steel, aluminum, galvanized, or zinc alloy.
   7.5. **Anti-Oxidant:** Anti-oxidant shall be applied during installation to the following surfaces: all contact between dissimilar materials; all ground wire connections; all equipment mounting hardware intended to provide a ground path, all conduit joints.
   7.6. **Conduits:** All exposed conduit shall be metallic liquid tight, rigid aluminum or galvanized pipe.
   7.7. **Electrical:** All wiring shall meet the requirements of the siren equipment manufacturer and the National, State, Local Electrical Codes. In all cases, the higher standard shall prevail as the minimum requirement.

8. **Direct Burial Pole Embedment:**
   8.1. For direct burial poles, the pole shaft shall be designed for direct embedment into the earth. The pole shaft embedment depth shall at a minimum be 10'.
   8.2. A bearing mechanism shall be provided that will prevent the structure from further settling after installation.
   8.3. Installation specifications shall include the minimum requirements for the installation hole diameter and depth, the foundation, and the backfill requirements to meet the design specifications in common soil conditions.

				SIGNAL DIVISION Federal Signal Corporation 2645 FEDERAL SIGNAL DRIVE - UNIVERSITY PARK, IL 604660		
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REV	CHANGE	DATE	BY	DATE: 02/16/06	DATE: 02/16/06	3 OF 3
NAME **SPEC, STEEL POLE DIRECT EMBEDMENT**				DRAWING NUMBER **85001170A**		

FEDERAL SIGNAL CORPORATION
Federal Warning Systems

DIRECT EMBEDMENT STEEL POLE SPECIFICATIONS FOR SIRENS

				SIGNAL DIVISION Federal Signal Corporation 2645 FEDERAL SIGNAL DRIVE - UNIVERSITY PARK, IL 60460		
A1	REL. TO ECO# 06-4128	10/19/06	DJN			
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REV	CHANGE	DATE	BY	DATE: 02/16/06	DATE: 02/16/06	4 OF 3
NAME **SPEC, STEEL POLE DIRECT EMBEDMENT**				DRAWING NUMBER **85001170A**		

Limited Warranty

The Signal Division, **Federal Signal Corporation,** warrants each new product to be free from defects in material and workmanship, under normal use and service, for a period of two years (one year for the INFORMER) on parts replacement and one year on labor from the date of delivery to the first user-purchaser. Federal Warning Systems warrants every 2001SRN to be free from defects in material, per our standard warranty, under normal use and service for a period of FIVE years on parts replacement.

During this warranty period, the obligation of Federal is limited to repairing or replacing, as Federal may elect, any part or parts of such product which after examination by Federal discloses to be defective in material and/or workmanship.

This warranty does not cover travel expenses, the cost of specialized equipment for gaining access to the product, or labor charges for removal and re-installation of the product. Batteries are not covered under warranty.

This warranty does not extend to any unit which has been subjected to abuse, misuse, improper installation or which has been inadequately maintained, nor to units which have problems relating to service or modification at any facility other than Federal factory or authorized warranty service centers.

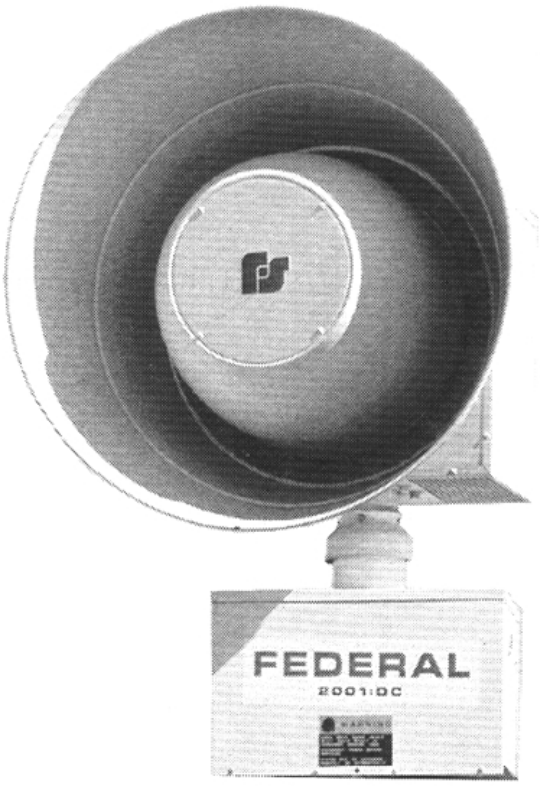
THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL FEDERAL BE LIABLE FOR ANY LOSS OF PROFITS OR ANY INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY SUCH DEFECT IN MATERIAL OR WORKMANSHIP.

FEDERAL SIGNAL CORPORATION
Federal Warning Systems
2645 Federal Signal Drive, University Park, IL 60466
Phone: (800) 548-7229 Fax: (708) 534-4865
Website: http://www.federalwarningsystems.com

Price $15.00

SIGNAL
DIVISION
Federal Signal Corporation

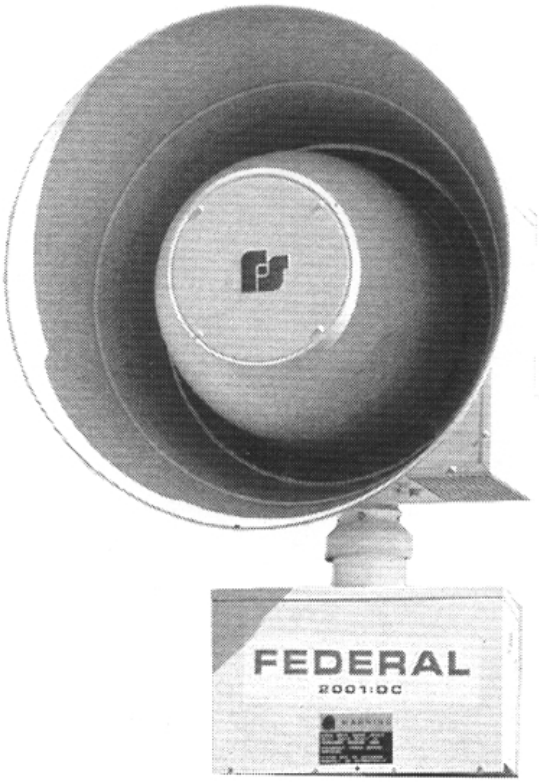
2001 SIREN



INSTALLATION AND OPERATING INSTRUCTIONS

SIGNAL
DIVISION
Federal Signal Corporation

2001 SIREN



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INSTALLATION AND OPERATING INSTRUCTIONS

SAFETY NOTICES

People's lives depend on your safe installation, service, and operation of our products. It is important to read, understand and follow all instructions shipped with this product. In addition, listed below are some other important safety instructions and precautions you should follow:

INSTALLATION & SERVICE

- Electrocution or severe personal injury can occur when performing various installation and service functions such as making electrical connections, drilling holes, or lifting equipment. Therefore installation should be performed by experienced electricians in accordance with national, state and any other electrical codes having jurisdiction. All work should be performed under the direction of the installation or service crew safety foreman.

- The sound output of sirens is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings and restrict access to areas near the sirens. Whenever possible, disconnect the siren batteries before working near the speaker array.

- After installation or service, test the siren system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.

- If future service personnel do not have these warnings and all other instructions shipped with the equipment to refer to, the siren system may not provide the intended audible warning and service personnel may be exposed to death, permanent hearing loss, or other bodily injury. File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to new recruits and trainees. Also, give a copy to anyone who is going to service or repair the sirens. For additional copies, call the Federal Signal Community Warning Systems Group at 800-548-7229 or write to them at 2645 Federal Signal Drive, University Park, Il. 60466.

OPERATION

- Failure to understand the capabilities and limitations of your siren system could result in permanent hearing loss, other serious injuries or death to persons too close to the sirens when you activate them or to those you need to warn. Carefully read and thoroughly understand all safety notices on both sides of this sheet and all operations-related- items in all instruction manuals shipped with the equipment. Thoroughly discuss all contingency plans with those responsible for warning people in your community, company, or jurisdiction.

SAFETY NOTICES

People's lives depend on your selection of suitable equipment and installation sites and your safe installation, service, and operation of our products. Follow Federal Emergency Management Agency (FEMA) recommendations. Obtain copies of the latest revision of FEMA'S "Outdoor Warning Guide (CPG 1-17) and "Civil Preparedness, Principals of Warning (CPG 1-14) by calling FEMA at (202) 646-3484 or writing to them at 500 C St., South West, Washington, D.C. 20472. It is also important to read, understand and follow all instructions shipped with this product. In addition, listed below are some other important safety instructions and precautions you should follow:

PLANNING

- If suitable warning equipment is not selected, the installation site for the siren is not selected properly or the siren is not installed properly, it may not produce the intended optimum audible warning. Follow Federal Emergency Management Agency (FEMA) recommendations.

- If the sirens are not activated in a timely manner when an emergency condition exists, they cannot provide the intended audible warning. It is imperative that knowledgeable people, who are provided with the necessary information, are available at all times to authorize the activation of the sirens.

- When sirens are used out of doors, people indoors may not be able to hear the warning signals. Separate warning devices or procedures may be needed to effectively warn people indoors.

- The sound output of sirens is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings, and restrict access to areas near sirens.

- Activating the sirens may not result in people taking the desired actions if those to be warned are not properly trained about the meaning of siren sounds. Siren users should follow FEMA recommendations and instruct those to be warned of correct actions to be taken.

- A siren that doesn't work won't provide any warning. After installation, servicing, or repair, test the siren system to confirm that it is operating properly. Test the system regularly to con firm that it will be operational in an emergency.

- If future service and operating personnel do not have these instructions to refer to, the siren system may not provide the intended audible warning and service personnel may be exposed to death, permanent hearing loss, or other bodily injury. File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to new recruits and trainees. Also give a copy to anyone who is going to service or repair the siren.

LIMITED WARRANTY

The Signal Division, Federal Signal Corporation (Federal), warrants each new product to be free from defects in material and workmanship, under normal use and service, for a period of five years on parts replacement and five years on labor from the date of delivery to the first user-purchaser.

During this warranty period, the obligation of Federal is limited to repairing or replacing, as Federal may elect, any part or parts of such product which after examination by Federal discloses to be defective in material and/or workmanship.

Federal will provide warranty for any unit which is delivered, transported prepaid, to the Federal factory or designated authorized warranty service center for examination and such examination reveals a defect in material and/or workmanship.

This warranty does not cover travel expenses, the cost of specialized equipment for gaining access to the product, or labor charges for removal and re-installation of the product. Batteries are not covered under warranty.

This warranty does not extend to any unit which has been subjected to abuse, misuse, improper installation or which has been inadequately maintained, nor to units which have problems relating to service or modification at any facility other than the Federal factory or authorized warranty service centers.

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL FEDERAL BE LIABLE FOR ANY LOSS OF PROFITS OR ANY INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY SUCH DEFECT IN MATERIAL OR WORKMANSHIP.

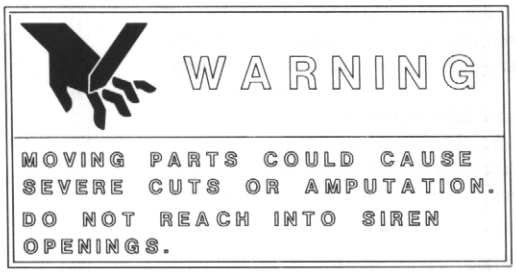
FEDERAL SIGNAL CORPORATION

WARNING

Read and understand the information contained in this manual, before attempting to install or service the siren.

Pay careful attention to the following notices located on the equipment.

NOTICES - EXTERNALLY PLACED.



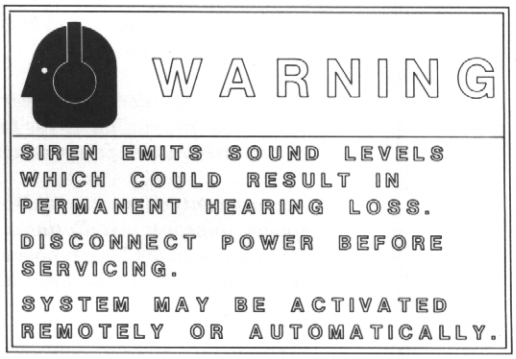


TABLE OF CONTENTS

SECTION I
CHARACTERISTICS

Figure 1-1. Model 2001 Siren

1-1. SCOPE OF THIS MANUAL.

This service manual describes the characteristics, specifications, installation, controls/theory of operation, and service and maintenance of the Federal 2001 siren.

1-2. GENERAL.

Federal's 2001 siren (figure 1-1) is an electromechanical, battery operated, rotating siren that is capable of producing high intensity warning signals over a large area. A highly efficient design enables the siren to produce a high sound level, while making moderate demands on the power source.

1-3. SIREN DESCRIPTION.

The 2001 siren is a single tone siren capable of producing a 127 dB sound level at 100 feet for a minimum of 15 minutes, when using the 2001*DC Control Unit/Battery Box with fully charged, standard, deep-cycle, marine batteries. Continuous operation is available with option 2001*AC. This option supplies DC current directly to the siren from a 220/240VAC line.

Two motors are used to create the siren signals. One motor rotates the siren assembly. The second motor, which produces the sound energy, is attached to a stator with a rotor mounted on the motor shaft concentric to the stator. The rotor and stator each contain one row of ports. As the motor rotates the rotor, air is drawn into the rotor and passes through the rotor and stator ports in pulses. These pulses are produced when the rotor alternately opens and closes the stator ports. The pulses of air produce sound at a frequency (pitch) that is dependent upon the rotational speed of the motor and the number of ports in the rotor-stator combination.

1-4. SIGNAL DESCRIPTION.

The 2001 siren is capable of producing a steady signal and a wailing signal. The steady signal is frequently used as a Civil Defense "Alert" signal. The wailing signal is often used as a Civil Defense "Attack" signal. Any of the signals are capable of being used for any desired application. These signals are shown graphically in figure 1-2.

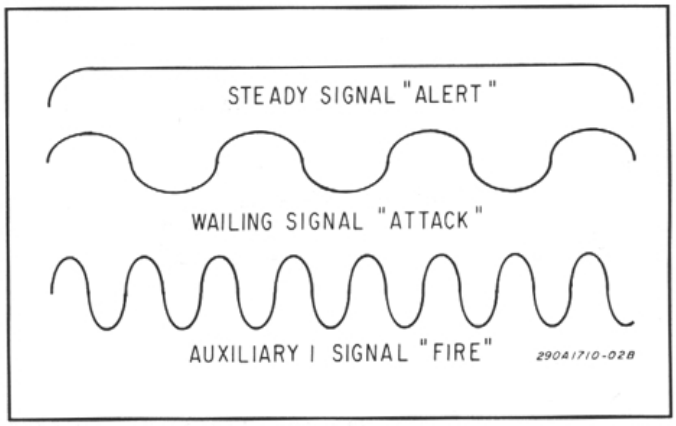


Figure 1-2. Signal Characteristics.

SECTION II

SPECIFICATIONS

Power Requirements*

Siren Motor	48V (DC or full wave rectified AC) 100 amps. (nom.)
Rotator Motor	48V (DC or full wave rectified AC) 5.5 amps. (nom.)

Wiring

Siren Motor	2 AWG
Rotator Motor	12 AWG

Motor Type

Siren	Series Wound DC 6 Hp
Rotator	Permanent Magnet DC 1/3 Hp

Signal Information

Signal	Frequency Range	Sweep Rate
STEADY	705Hz	N.A.
WAIL	470 - 705Hz	10 sec.

Signal Duration	3 min. (programmable)
Sound Output (SPL)	127dBc (on axis) at 100' (30.5m.)
Rotation	2-8 RPM (Adjustable)
Dimensions (HWD)	55" x 37" x 41" 1397mm x 940mm x 1041mm
Shipping Weight	410 pounds (186.4kg.)
Operating Temperature	-30°C to +60°C**

* Power requirements refers to the power supplied by the batteries or optional AC operation with battery back-up.

** The siren can operate throughout this temperature range provided the battery temperature is maintained at -18°C or higher.

SECTION III
INSTALLATION

DANGER

Electrocution or severe personal injury can occur when making electrical connections, drilling holes, or lifting equipment. Therefore, installation should be performed by experienced electricians in accordance with national and local electrical codes

3-1. SIREN LOCATION.

The information in this section provides guidelines to aid the user in the selection of an installation site that makes the best possible use of the siren.

WARNING

The output level of a 2001 siren is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan placement of siren and post warnings.

If the siren is being installed as part of a Civil Defense Warning system, ALWAYS follow Federal Emergency Management Agency (FEMA) recommendations.

Careful consideration of the factors affecting the propagation of sound from the siren and the response of the human ear to the sound will optimize the ability of the siren to effectively warn the community.

The reduction of signal intensity, as the distance from the siren increases and the minimum desired signal level at the fringe of the area to be covered are important considerations when choosing a siren installation site. As the distance from the siren increases, sound level losses accumulate. These losses are a result of weather conditions, the terrain, obstructions in the sound path, the pitch of the sound and the height of the siren.

Optimum sound propagation conditions exist when there are no obstructions in the sound path, the terrain is flat, and the air is calm. Under these conditions, each time the distance from the siren is doubled, the sound level decreases by approximately 10dB. For example, the sound level at 100 feet (30.5m) from a 2001 siren is 127dB. At 200 feet (61m), the level drops to 117dB; at 400 feet (122m) the sound level drops to 107dB; etc. This is referred to as the "loss per distance doubled".

A loss per distance doubled of 10dB is usually experienced because buildings and other obstructions are frequently present in the sound path. In addition, the atmosphere is rarely calm, and the terrain may not be flat. As a result, a typical loss per distance doubled in residential areas may be 10dB, and as high as 12dB in areas having tall buildings or other factors detrimental to sound propagation.

Experience indicates an individual with normal hearing will probably hear a warning signal whose intensity is at least as high as the ambient noise level.

Experience has also shown that the ambient noise level in industrial districts is typically 90dB. Therefore, for a person to hear a warning signal in an industrial area, the sound level intensity of that signal must also be approximately 90dB. In this situation, any point receiving a signal having less than 90dB intensity is considered to be outside the effective range of the siren.

In business districts an ambient noise level of 80dB is common, and in residential areas, 68dB of ambient noise is typical. Assuming a 10dB loss per distance doubled and a 68dB minimum sound level, the effective range of the 2001 siren is approximately 5800 feet.

Wind speed and direction often affect the propagation of sound from the siren. Consequently, the direction of the prevailing wind may also be a factor to consider when selecting the installation site(s) of a small, one or two-siren system. For example, if the prevailing wind is from the west, it may be desirable to install the siren toward the western edge of the area to be covered.

Other factors to consider before selecting the installation site include the availability of electrical power, the ease of installation and maintenance, the height of surrounding obstructions, and security against vandalism.

3-2. SIREN INSTALLATION.

A. *General.*

Most siren installations are one of two types: Pole Mount or Flat Surface Mount. These two configurations make it possible to install a siren in almost any situation. If the installations in this paragraph are not suitable, modification of one of the configurations may be practical.

A siren is typically installed 50 ft. above the ground. If the installation is located less than 50 ft. above the ground, the sound intensity at close range may increase, but at the same time the effective range of the siren may be reduced. Conversely, if the siren is located more than 50 ft. above ground, the effective

range of the siren may increase, but the sound may skip over areas closer to the siren. These variables may make it desirable to test the sound coverage of the siren at various heights and locations whenever possible.

B. *Pole Mounting.*

A typical siren pole-mounted installation is shown in figure 3-1. The siren is mounted on a Class 2 utility pole 50 ft. above the ground. It is attached to the pole by means of legs, as shown in figure 3-2.

Using the 3 ft. long angle iron legs, the siren is mounted on the Class 2 utility pole as follows:

1. Uncrate the siren and remove the nuts that hold the siren on the shipping base. Lift the siren approximately 3-1/2 ft. with a crane or hoist.

2. Install the four legs on the siren mounting plate, as shown in figure 3-2. Use two 1/2" bolts, nuts and lockwashers (provided) for each leg. Do not tighten the bolts completely.

WARNING

The eyebolt does NOT have sufficient strength to support the combined weight of the siren and a utility pole. Therefore, do NOT attempt to erect the pole and siren together using the eyebolt as a lifting point.

3. Erect the utility pole in accordance with accepted practices. Be sure the pole extends about 48 ft. above the ground (refer to WARNING above).

4. Raise the siren to the necessary height, and lower it over the pole.

5. Adjust the legs and insert shims, if necessary, between the siren legs and pole. Bolt the siren to the pole using two 5/8" lag bolts, at least four inches long for each leg. Tighten all bolts.

C. *Flat Surface Mount.*

This installation configuration is practical when the installation site is on a flat roofed building. The siren can be anchored directly to the roof, on a platform as shown in figure 3-3, or on a weight distribution mat like the one shown in figure 3-4.

This mat is required when the siren mounting surface is unable to support over 176 pounds per square foot (859kg per square meter). The mat shown in figure 3-4 distributes the siren weight to approximately 25 pounds per square foot (122kg per square meter). When installing the siren on a flat roof, be sure that it clears the parapets or other obstructions by at least ten feet.

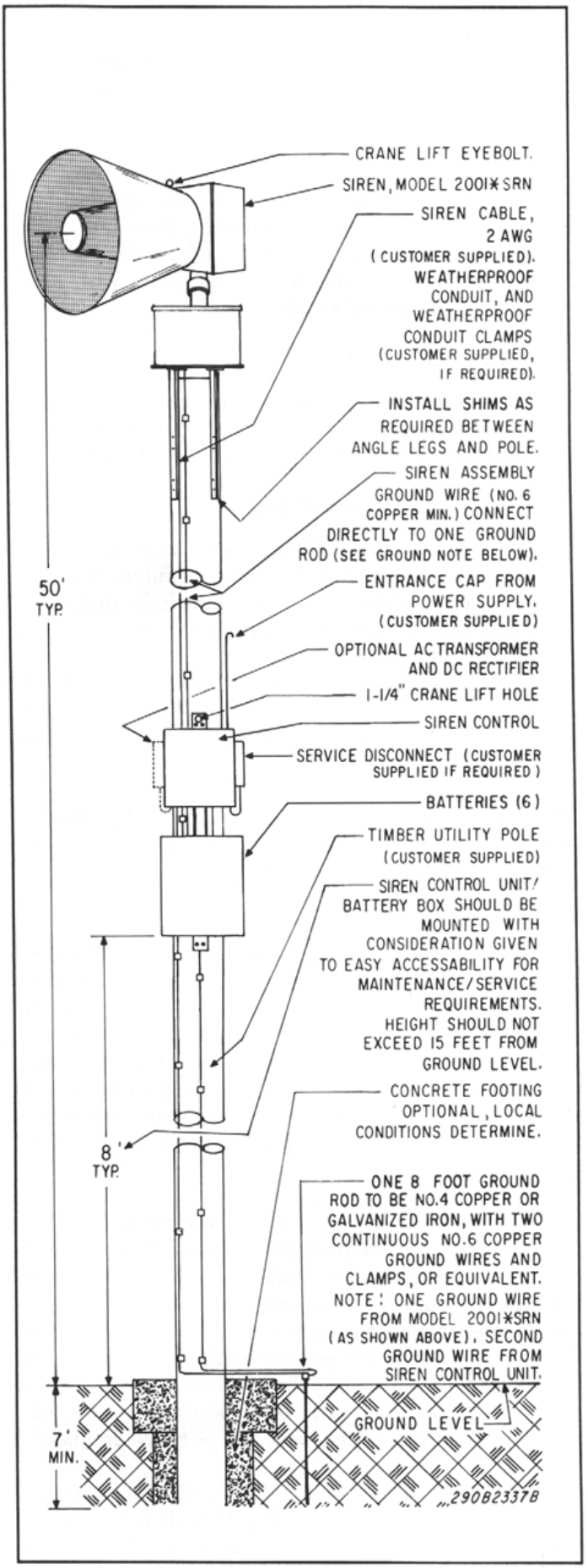


Figure 3-1. Typical Pole-mounted Installation.

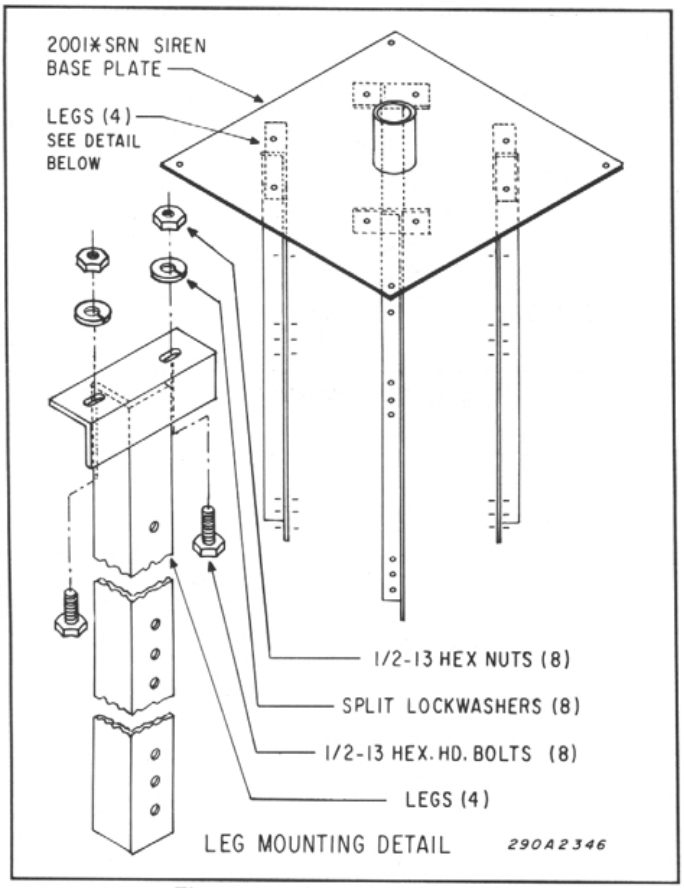


Figure 3-2. Siren Leg Assembly.

To install a 2001 siren on a flat roof or other flat surface, proceed as follows:

1. If desired, construct a platform for mounting the siren, which must be capable of supporting at least 395 lbs. (179kg.) as well as withstanding a siren wind load of 100 mph. The platform must also be capable of distributing its own weight plus the siren to a value that is safe for the mounting surface. Platform design and construction details are left to the installer. Locate the platform at the siren installation site. Using suitable hardware (not supplied), anchor the platform to the mounting surface .

CAUTION

The eyebolt and hoisting bracket do not have sufficient strength to support the combined weight of the siren and a platform. Therefore, do NOT lift the siren and platform together using the eyebolt as a lifting point.

2. Hoist the siren to the installation site using the eyebolt as a lifting point (refer to CAUTION above).

3. Anchor the siren to the mounting surface with 1/2" lag bolts or nuts and bolts, as appropriate through the mounting holes (one in each corner) in the siren base plate (see figure 3-3, detail A). If the siren is mounted directly on a roof, (without a platform or weight distribution mat) be sure to install waterproof joints at the points where the mounting bolts pass through the roof so that water does not enter the building.

3-3. PRE-OPERATION CHECKOUT.

After the siren has been completely installed, perform the following checks before putting the siren into service.

WARNING

The output sound level of a siren is capable of causing severe hearing discomfort or permanent hearing damage. Therefore, ALWAYS wear hearing protection when performing tests or maintenance on the siren.

A. Make sure that all air intakes and sound outlets are not obstructed.

B. Make sure all connections in the Control Unit/Battery Box are correct and properly tightened.

C. Push the wail button on the control panel. Check for proper rotation and sound of siren.

D. After the installation is complete and it has been established that the siren is operating properly, Federal recommends that all control devices be padlocked to discourage tampering and vandalism.

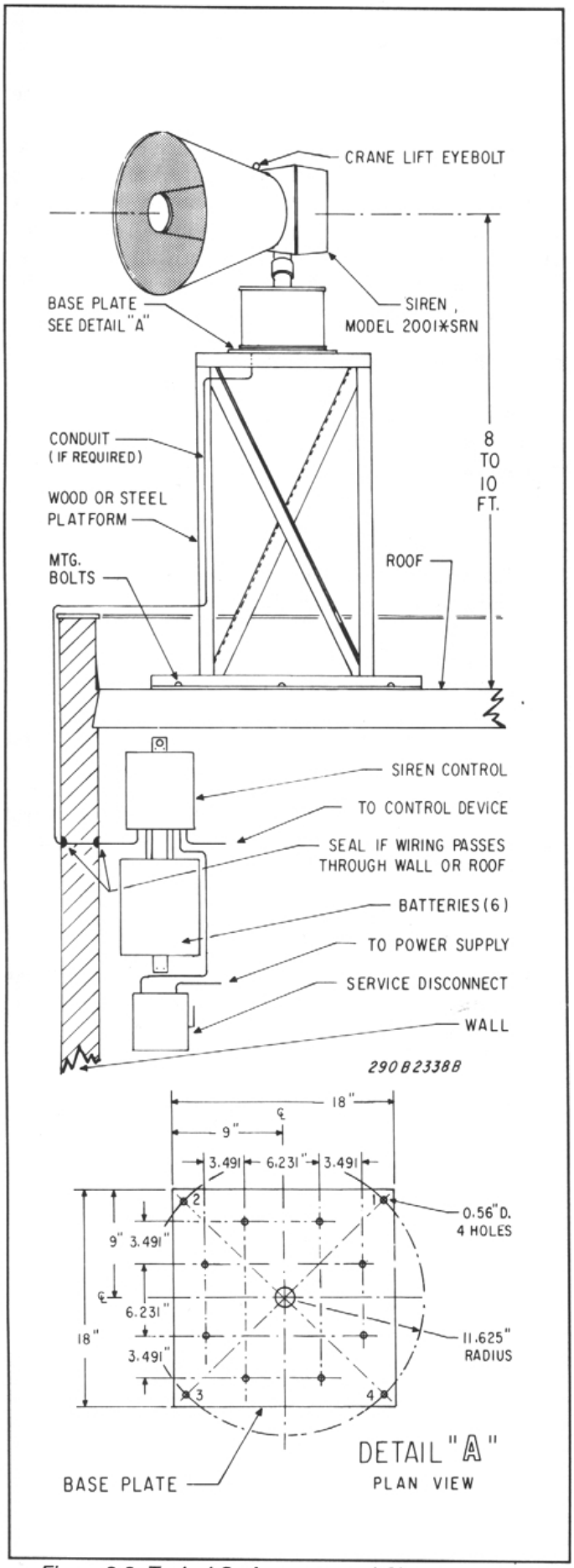


Figure 3-3. Typical Surface-mounted Siren Installation.

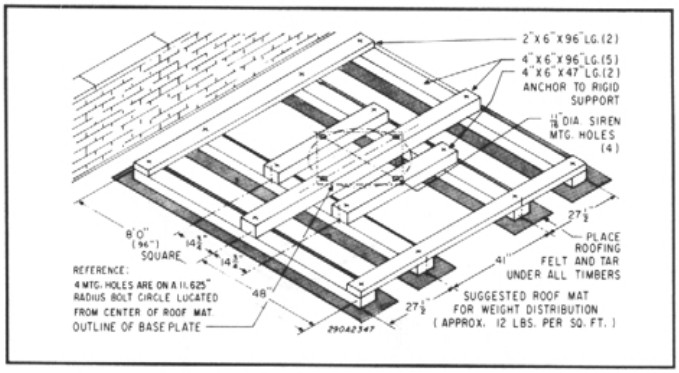


Figure 3-4. Weight Distribution Mat Construction.

SECTION IV
SERVICE

4-1. GENERAL.

DANGER

Service should be performed by qualified personnel familiar with the siren, associated controls, and power sources being used. The siren has moving parts, high operating currents, explosive gases, and corrosive materials that could cause severe personal injury, electrocution, or death. Before servicing or maintaining, ensure that remote activation can not occur and disconnect power to the siren and its controls.

Experience has shown that all Federal sirens are highly reliable devices. However, if a siren failure does occur, Federal will provide technical assistance with problems that cannot be handled satisfactorily and promptly locally. If assistance is desired, contact:

FWS Service Department
Signal Division
Federal Signal Corporation
2645 Federal Signal Drive
University Park, Illinois 60466
(708) 534-4777

WARNING

The output level of a 2001 siren is capable of causing permanent hearing damage. Therefore, ALWAYS wear hearing protection when performing tests or maintenance on the siren.

To prevent the siren from sounding or rotating, always turn off the power to the siren at the disconnect switch and remove the 48VDC, 4AWG red wire in the Battery Box before inspecting or maintaining the siren.

4-2. ADJUSTMENTS.

Siren Rotation Speed and Rotator Belt Replacement.

Unless otherwise specified by the customer, all sirens are shipped with the horn rotation speed set to 2 RPM. However, the rotating mechanism can also be set to rotate the siren horn at speeds of approximately 4 and 8 RPM.

To change the rotation speed of the horn, proceed as follows:

A. Turn off the power to the siren at the disconnect switch. Disconnect the 48VDC, 4 AWG red wire in the 2001*AC or 2001*DC Control Unit/Battery Box if used.

B. Remove the large panel opposite the conduit fitting on the rotator housing.

C. See figure 4-1. Pull the top part of the rotator belt toward you using the right thumb while rotating the motor pulley clockwise with the left hand. Use caution to avoid pinching your thumb between the belt and the rotator pulley. If necessary, repeat this step until the belt can be removed or is in the desired pulley grooves.

4-3. INSPECTION.

Test the 2001 siren for proper operation at least once a month. A daily test at noon, curfew, or other selected time is preferred. This not only enhances the usefulness of the siren, but instills public confidence in the reliability of the warning system.

In order to minimize the possibility of siren failure, annual inspection and maintenance is desirable. Battery replacement should be performed approximately every five years. This schedule is only a suggested guideline. It may be necessary to vary the schedule if the siren is used frequently or if it is used in an extreme climate.

A. Turn off the power to the siren at the disconnect switch. Disconnect the 48VDC, 4AWG red wire in the 2001*AC or 2001*DC if used.

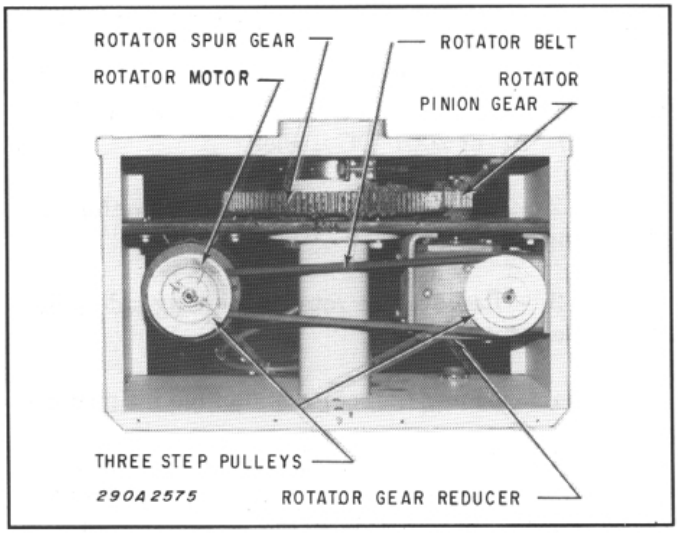


Figure 4-1. Rotator Assembly Interior View.

B. Inspect the siren installation to be sure that it is vertically oriented. Take corrective action if a pole mounted installation is more than 5° from vertical or if a roof or flat surface mount is more than 10° from vertical. This will prevent lubrication losses and excessive motor bearing wear.

C. Inspect all siren screens.

D. Inspect all electrical and mechanical connections. Make sure that all fasteners are properly tightened.

E. Inspect all painted surfaces and repaint as necessary.

F. Both the rotator motor and siren motor have sealed and prelubricated bearings. Therefore, neither of these motors require any additional lubrication.

4-4. CORRECTIVE MAINTENANCE.

This section includes illustrations that may be helpful if the siren or rotator needs repair.

WARNING

To prevent siren from sounding or rotating, always turn off power at the disconnect switch and disconnect the 48VDC, 4AWG red wire in the 2001*AC or 2001*DC if used before performing any maintenance on the siren.

A. *Rotator Belt Changing and Tightening.*

NOTE

To remove the rotator belt, follow the instructions in paragraph 4-2. To replace the belt, follow the instructions in reverse order.

To tighten the rotator belt, proceed as follows:

1. Turn off the power to the siren at the disconnect switch. Remove the 48VDC, 4AWG red wire in the 2001*AC or 2001*DC if used.

2. Remove both large panels from the rotator housing.

3. Remove the rotator housing side panel next to the rotator motor.

4. Loosen the rotator motor mounting bolts.

5. Slide the motor away from the gear reducer, tightening the belt. Tighten the belt so that the belt depresses approximately 1/2" when pressure is applied to the belt with one finger. In order to develop proper belt tension, it will probably be necessary to use a pry bar to slide the motor away from the gear reducer. If a pry bar is used, use caution to avoid damage to the motor and the rotator parts.

6. Tighten the motor mounting bolts.

7. Replace the rotator housing side panel.

8. Replace both large panels.

B. *Drive Band Adjustment.*

1. When the drive band requires adjustment, tightening is almost always necessary. To determine if a drive band adjustment is required:

(a). Turn off power to the siren at the disconnect switch. Remove the 48VDC, 4AWG red wire in the 2001*DC or 2001* AC if used.

(b). Attach a spring scale having a capacity of at least 50 pounds (22kg.) to the horn of the siren as shown in figure 4-2.

(c). Pull on the scale until the horn begins to rotate. Continue to rotate the horn by pulling on the scale while reading the scale. The scale should indicate between 20 and 25 pounds (9 and 11kg.). It may require more than 40 pounds of force to start the horn moving. However, after the horn is moving, the scale indication should decrease to some force within the specified range. If the scale does not indicate between 20 and 25 pounds (9 and 11kg.), the drive band requires adjustment.

2. To adjust the drive band:

(a). Perform steps (a)., (b)., and (c). in paragraph 4-4.B.1. (above) to determine if a drive band adjustment is necessary.

(b). Ensure that power to the siren is disconnected.

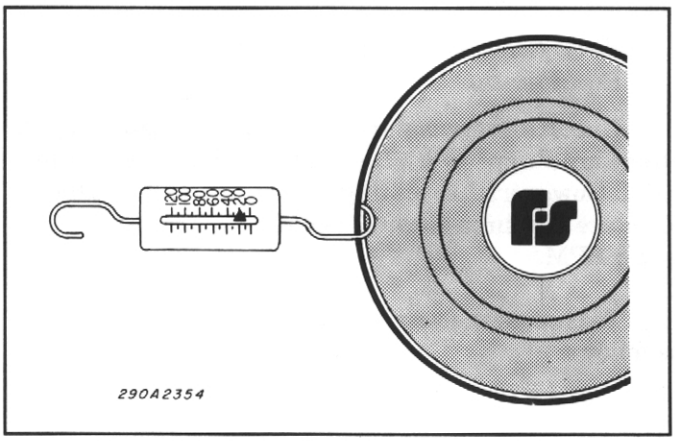


Figure 4-2. Spring Scale Attachment to Siren.

(c). Remove the large panel opposite the conduit fitting on the rotator housing.

(d). If necessary, manually rotate the gear reducer pulley until the cross bolt with the spring is accessible (see figure 4-3).

(e). Tighten the cross bolt with the spring one or two turns. DO NOT tighten or loosen the cross bolt without the spring. Attach the scale to the horn and pull on the scale to rotate the horn. If the scale does not indicate between 20 and 25 pounds (9 and 11kg.), repeat this step until the scale indicates the proper force.

CAUTION

If the cross bolt with the spring is tightened so that more than 40 pounds (18kg.) of pull is necessary to maintain manual horn rotation, high winds may cause damage to the rotator drive mechanism.

(f). Replace the large panel on the rotator housing.

C. *Collector Ring Brush Replacement.*

1. Open cover by removing screws and lockwashers. (See figure 4-4).

2. Remove the wing nut on the top of the collector housing assembly.

3. Note wiring on top cover before removing the wires.

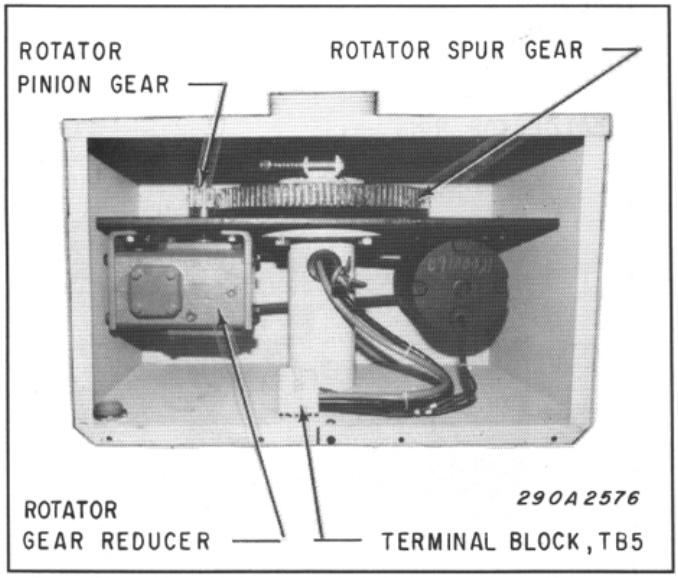


Figure 4-3. Drive Band Adjustment.

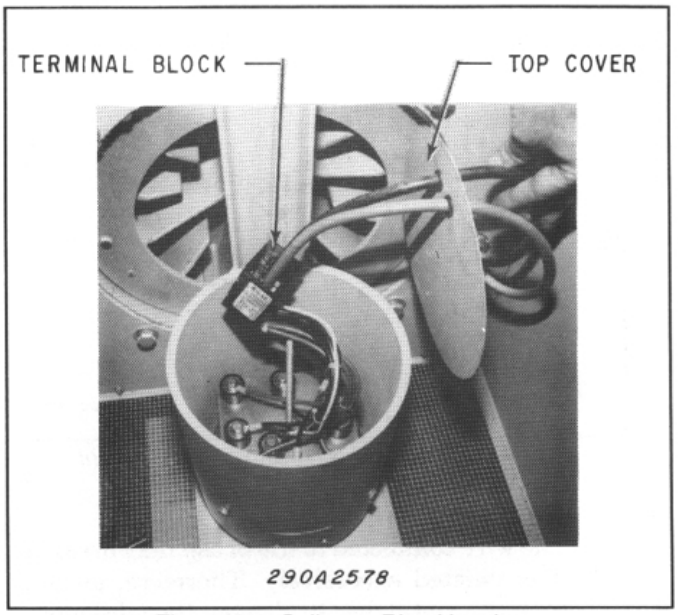


Figure 4-4. Collector Ring Housing.

4. Remove the four bolts on the side of the collector housing assembly (see figure 4-5) and remove the brush assembly. Note: Press down on brush assembly while removing the four bolts. Brush assembly is under spring tension while in position.

5. Use a file or sandpaper to flatten the concave surface and bevel the edges of the replacement brushes as shown in figure 4-6A.

6. Remove the worn collector ring brush from the brush holder in the brush holder bar.

7. Insert the replacement brush into the brush holder. If the brush protrudes through the brush holder so that the installation resembles figure 4-6B, the wire length needs to be shortened.

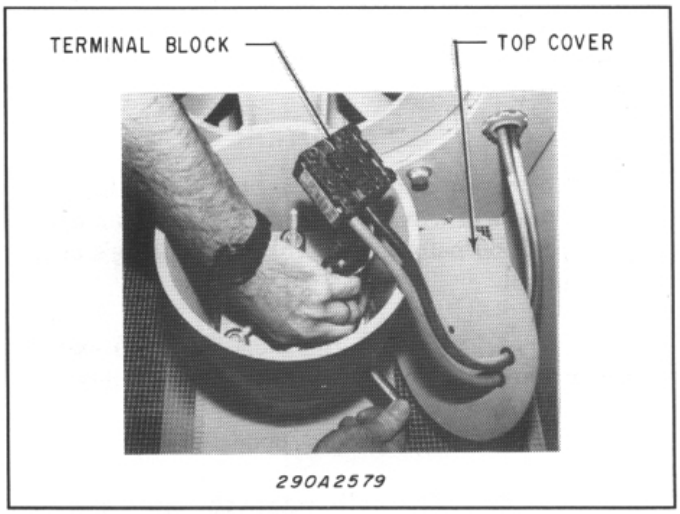


Figure 4-5. Installation/Removal Collector Brush Assy.

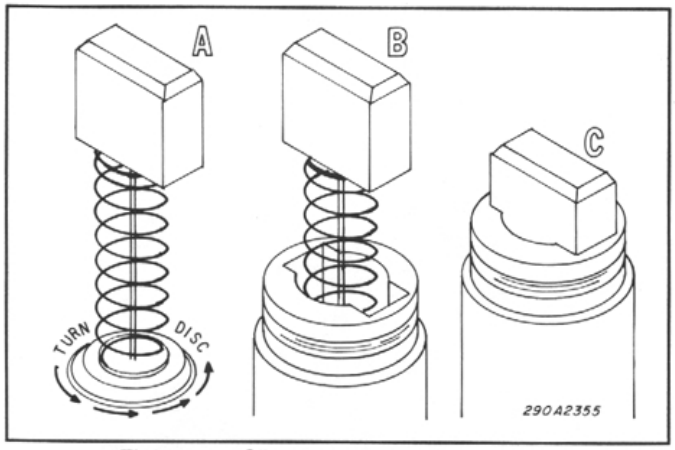


Figure 4-6. Slip Ring Brush Replacement.

CAUTION

The wire connected to the brush may break if it is twisted excessively. Therefore, do not turn the metal disc to shorten the wire more than absolutely necessary to obtain the proper length.

8. To shorten the wire length, remove the brush from the brush holder and turn the metal disc on the end of the spring two or three turns counterclockwise (see figure 4-6A). Repeat steps 7 and 8 until the installation looks like figure 4-6C.

D. *Collector Ring Removal.*

1. Remove the brush assembly as described above.

2. Disconnect the three wires from the terminal block (TB5) inside the rotator housing and begin feeding wires up into the siren shaft (see figure 4-2).

3. Federal suggests that the rotator drive band be loosened, as described in paragraph 4-4.B., to rotate the siren during removal of the collector ring bolts.

CAUTION

To prevent damage to the cover assembly, use a piece of wire to secure the cover in an open position before removing the housing's back panel.

4. Remove the back panel to expose the cover plate on the collector housing assembly.

5. Remove the cover plate.

6. Manually rotate the siren and remove each of the four bolts that hold in the collector rings (see figure 4-7). Access to these bolts can be gained through the cover plate opening.

7. Remove the collector rings with stand-offs and cables still attached (see figure 4-8).

8. Reassemble the collector rings, stand-offs, and cables before reinstallation.

9. To replace collector ring assembly, align the stand-offs before replacing the four bolts removed in step seven above.

10. Ensure that collector rings are concentrically aligned before replacing the brush assembly.

11. Replace the brush assembly.

12. Look through the cover plate opening and ensure that brushes are contacting the proper collector rings.

13. Replace the cover plate on the collector housing assembly.

14. Replace the back panel.

E. *Rotator Motor Brush and Bearing Replacement.*

1. Remove both large panels from the rotator housing.

2. Remove the rotator housing side panel next to the rotator motor (see figure 4-9).

3. Remove the rotator belt as described in paragraph 4-2.

4. Remove the rotator motor.

5. Loosen allen head set screw on motor pulley (see figure 4-10). Remove pulley and key from motor shaft.

6. Replace brushes and/or bearings as required.

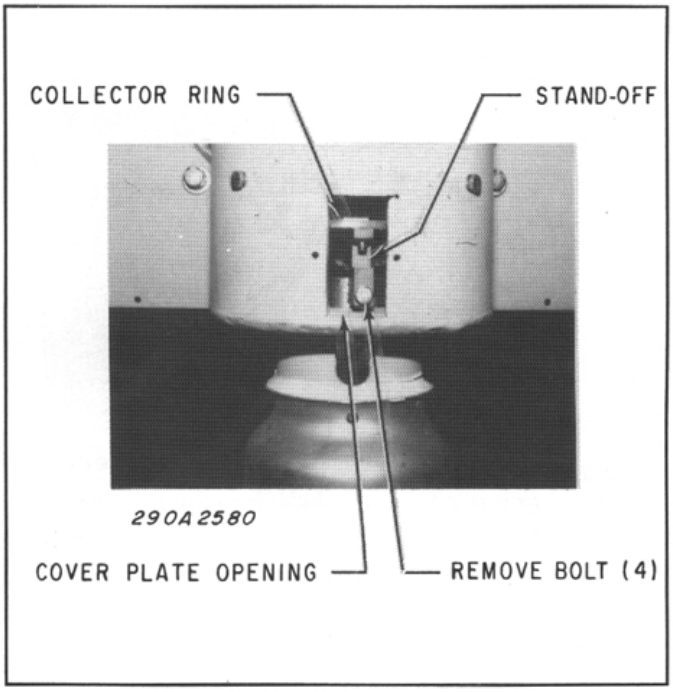


Figure 4-7. Collector Housing Cut-Out.

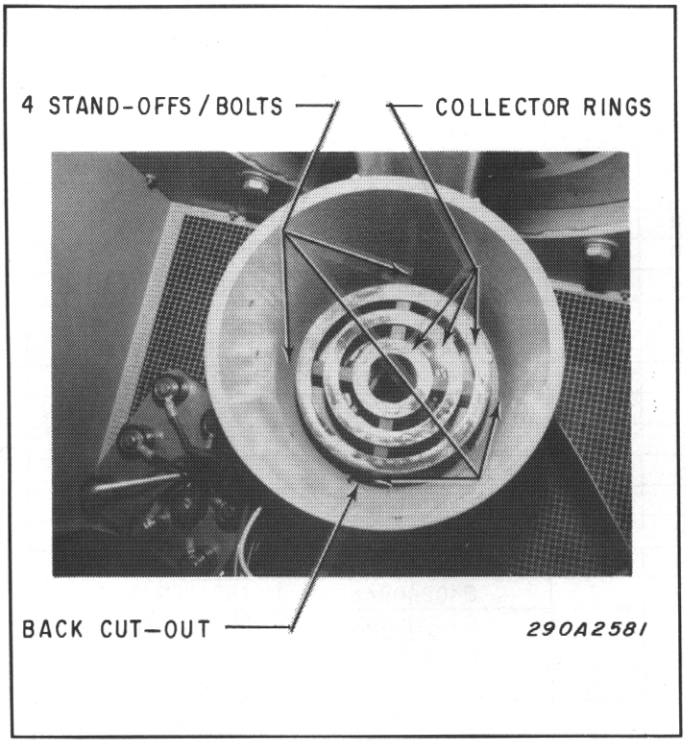


Figure 4-8. Collector Rings/Stand-Offs.

7. Replace the key and pulley. Do not tighten the allen head set screw at this time.

8. Replace rotator motor. Do not tighten motor mounting bolts.

9. Before tightening the allen head set screw, use a straight edge to ensure that the two pulleys are properly aligned (see figure 4-11).

10. Replace rotator belt following the instructions in paragraph 4-2. in reverse order.

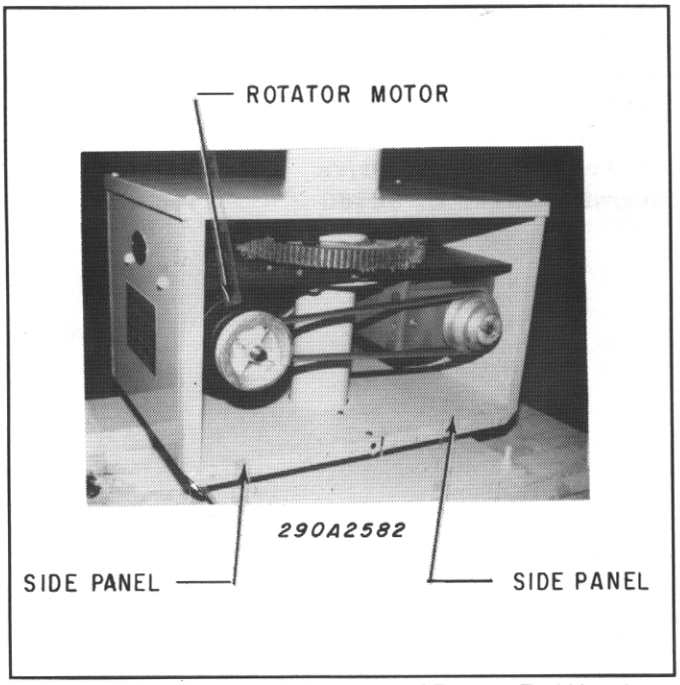


Figure 4-9. Removal/Replacement of Rotator End Housing.

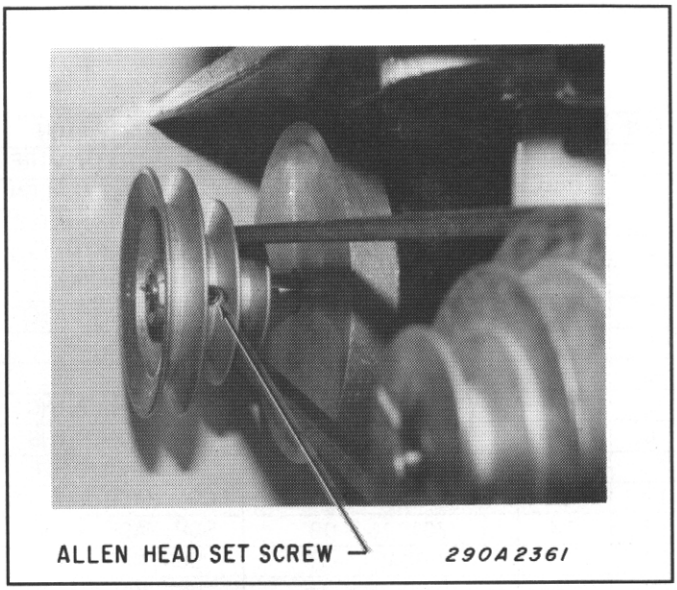


Figure 4-10. Rotator Motor Pulley and Set Screw.

11. Tighten the rotator belt and finish reassembly following the instructions in paragraph 4-4.A.5. through 4-4.A.8.

F. *Siren Motor Brush Replacement.*

1. Remove the outer cone. Remove the inner cone by removing the four 1/4-20 bolts which secure the cone to the four intermal mounting brackets (8402087E-01).

2. Note siren motor wiring and remove both terminal connectors.

3. Remove steel mesh brush covers from motor.

4. Replace worn brushes.

5. Replace steel mesh brush covers.

6. Replace terminal connectors, lockwashers, and nuts. Tighten nuts.

7. Replace inner and outer cones.

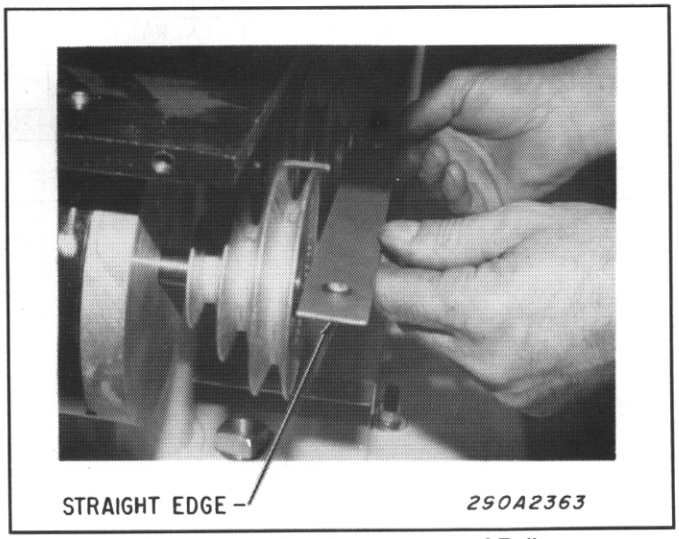


Figure 4-11. Checking Alignment of Pulleys.

SIREN PARTS LIST

ITEM	REQ'D	PART NUMBER	DESCRIPTION
1	.01	R015-02-01	STL,STRAIN,WIRE
2	.58	R92-11-01	CONDUIT,CARFLON
3	1	T300A104-02-0001	WIRE,TERMINATED
4	1	T300A104-02-0002	WIRE,TERMINATED
5	1	T300A104-10-0001	WIRE,TERMINATED
6	1	T300A104-10-0002	WIRE,TERMINATED
7	1	161693A	LABEL,FS
8			
9	1	161A506A	LABEL,WARNING
10	1	161A507A	LABEL,WARNING
11	1	229A203A	TERM.PWR.DIST.
12	2	7000A408-14	SCR, MACH PAN HD
13	14	7011167-08	SCR,MACH RD HD
14	14	7000A311-10	SCR,MACH HEX
15	2	7000A345-16	SCR,MACH HEX
16	4	7000A311-36	SCR,MACH HEX
17	14	7000A346-08	SCR,MACH HEX
18	4	7002A009-16	BOLT,HEX HD
19	2	7099A103-15	RIVET
20	4	7002A013-20	SCR,CAP HEX HD
21	2	7000A070-09	SCR,MACH,RD HD
22	1	7003A007	BOLT,EYE STL
23	2	7057A056	NUT,S.S., 1/2-13
24	4	7058A045	NUT, 8-32
25	10	7072A015	WASHER,FLAT,#10 SS
26	2	7058A010	NUT, EL STOP
27	1	H447-104	NAMEPLATE
28	2	7074A011	LKWASH,SPLIT
29	10	7058A047	NUT,KEPS,10-32
30	4	150A109	TIE WRAP
31	4	7072A059	WASH, FLAT
32	6	7060A019A	CLIP,PUSH ON
33	18	7075A072	WASH,#10 INT.TTH.
34	10	7072A024	WASH,FLT,SS
35	4	7072A140	WASH,FLT,STL
36	14	7060A000	TINNERMAN CLIP,8 A
37	19	7074A016	LK WASH,SPLIT
38	2	7074A021	LK WASH,SPLIT
39	5	7074A059	LK WASH,SPLIT,S.S.
40	9	7074A046	LK WASH,SPLIT
41	2	7075A007	LKWASH,EXT TT
42	1	161319A	LABEL,MOTOR
43	1	7064A010	NUT, WING, 1/4-20
44	2	8108A002	GROMMET
45	1	8549A083A	ACCY. KIT, MTG.

ITEM	REQ'D	PART NUMBER	DESCRIPTION
46	4	8549A170A	BRACKET ASSY.
47	2	8279A033	BOLT,LOCKING
48	1	8402A005A	PLATE,LOCKING
49	1	8402D001B	STATOR,DC SIREN
50	4	8402A023B	INSULATOR,RING
51	1	8402037C	COVER, CONE
52	1	8402038B	SCREEN,OUTER
53	1	8402D014A	ROTATOR MECH.
54	1	8402036C-01	CONE ASSY.,INNER
55	1	8402A052A	KEY,WOODRUFF
56	1	8402A067A	SCR,LOCKING
57	1	8402A068A	FITTING,1"COND.
58	1	8402A069A	WINDOW,HOUSING
59	4	8402087E-01	BRKT.,CONE MTG.
60	1	8402A084A	SPACER,ROTOR
61	1	8402B006B	MOTOR,48V,ROTOR
62	1	8402B015B	COVER,COLLECTOR
63	1	8402B019A	RING,COLLECTOR
64	1	8402086C	COVER
65	1	R70-16-01	RTV, BLUE
66	1	8402C002A	ROTOR,DC SIREN
67	1	8402C020A	RING,COLLECTOR
68	1	8402C024A	ASSY,BRUSH HOLDER
69	1	8402026B	CONE ASSY,OUTER
70	2	8402028E	HOUSING,SIDE

DO NOT ORDER PARTS BY ITEM NUMBER. Give model, voltage, description and part number. Refer to PARTS PRICE LIST (Part No. 1001) for prices of parts.

Federal Signal Corporation
Signal Division
2645 Federal Signal Drive
University Park, IL 60466

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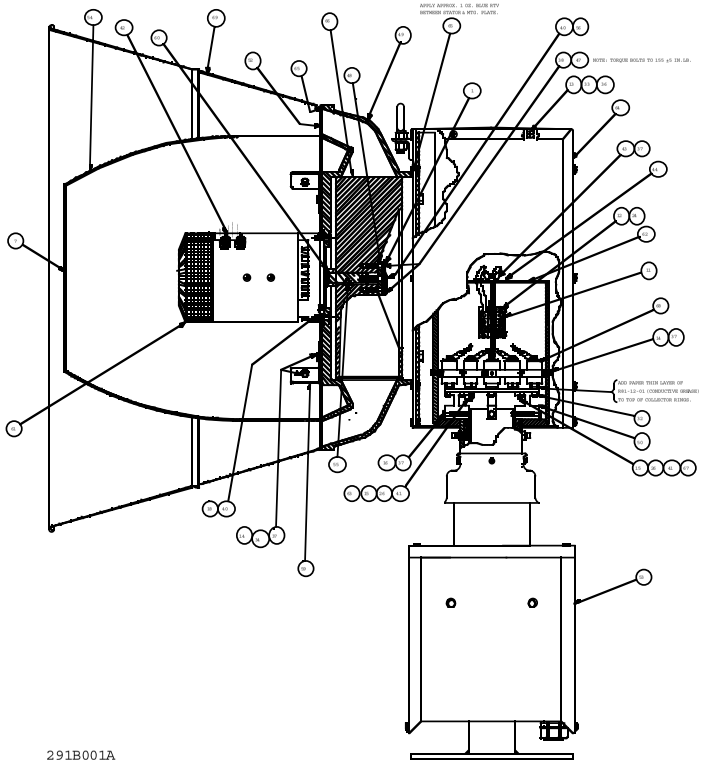
291B004A

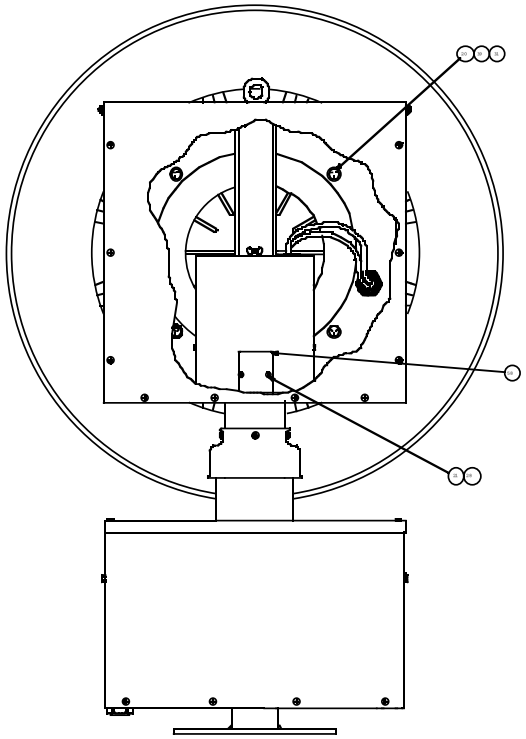
FEDERAL SIGNAL CORPORATION

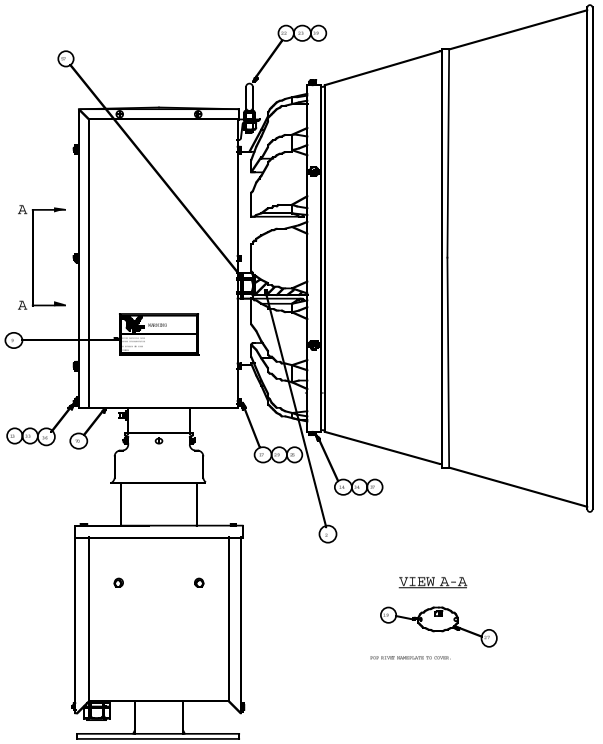
PARTS INDEX

2001SRN
DC SIREN

SIREN PARTS







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ROTATOR PARTS LIST

ITEM	REQ'D	PART NUMBER	DESCRIPTION
1	1	229A206A	TERM,PWR,DIST
2	2	7000A070-16	SCR,MACH,RD HD
3	4	7000A070-09	SCR,MACH,RD HD
4	4	7002A005-06	SCR,CAP,HEX HD
5	1	288A112	GROMMET
6	4	7002A005-14	SCR,CAP,HEX HD
7	4	7002A009-16	SCR,CAP,HEX HD
8	1	7000A326-32	SCR,CAP,HEX HD
9	1	7002A007-56	SCR,CAP,HEX HD
10	4	7002A013-20	SCR,CAP,HEX HD
11	2	7058A013	NUT,EL STOP
12			
13	9	7058A047	NUT,KEPS,#10-32
14	9	7072A015	WASH,FLT,#10 SS
15	4	7072A032	WASH,FLT,STL
16	2	7072A034	WASH,FLT,STL
17	4	7074A011	LKWASH,SPLIT
18	4	7074A046	LKWASH,SPLIT
19	8	7074A021	LKWASH,SPLIT
20	4	7074A059	LKWASH,SPLIT,SS
21	2	7058A008	STOP NUT
22	9	7000A346-08	SCR,CAP,10-32 SS
23	1	8283A886	SPRING
24	8	7011167A-08	SCREW, #8 A
25	1	8400A017	BEARING,SLEEVE
26	2	8400A077-01	PULLEY,3 STEP
27	.01 oz.	R72-16-01	LOCTITE, MED.STRENGTH
28	8	7060A000	CLIP,TINNERMAN
29	2	8402118A	FITTING, GREASE
30	2.06 oz.	R70-20-01	CALK,ACRLIC LATEX
31	1	8402090B	BELT,V TYPE 4
32	4	8400A280	PIN,ROLL
33	1	8400A363A	KEY,ROTATOR
34	1	8400A456C	GEAR REDUCER ASSY
35	1	8400B031L	PLATE,ROTATOR
36	1	8400B041	COVER,ROTATOR
37	2	8400B055	DRIVE BAND ASSY
38	1	8400C008	GEAR,SPUR
39	2	8402126A	END & BOTTOM
40	1	8402089A	FOOT MTG. KIT
41	1	8402A068A	FITTING,1",COND
42	1	8402B007C	MOTOR,48V,ROTATING
43	1	8402C049C	HOUSING,PLATE
44	1	8402D056A	TUBE,PLATE,ASSY
45	2	8400C311E	COVER,ROT. FRONT
46	1	8402125A	COVER ASSY.
47	1	231200A	PLUG,KNOCKOUT

DO NOT ORDER PARTS BY ITEM NUMBER. Give model, voltage, description and part number. Refer to PARTS PRICE LIST (Part No. 1001) for prices of parts.

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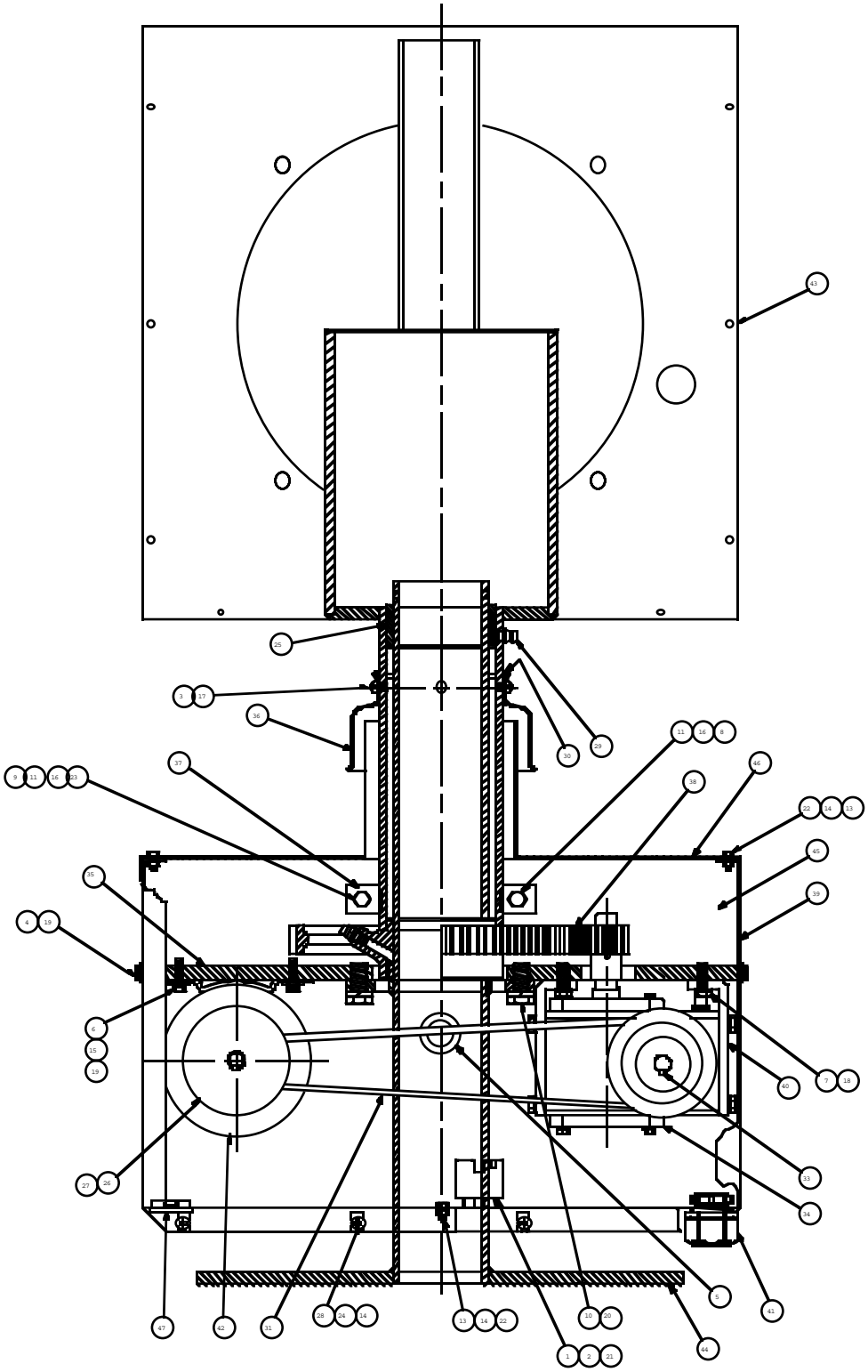
Figure 4-13. Siren Parts Location Diagram.

PARTS INDEX

2001SRN DC SIREN

FEDERAL SIGNAL CORPORATION

ROTATOR PARTS



291B005A

Affidavit of Non-Collusion

a form required of Bidders and Proposers on purchases of supplies, materials, equipment and services for the

City of Franklin, Tennessee

State of TENNESSEE)
) SS
County of DAVIDSON)

Affiant, STEVEN M. RICH, deposes and makes oath that:
(printed name of person signing Affidavit)

1. He or she is the SECRETARY / VP of
(Owner or Authorized Partner, Officer, Representative or Agent of Owner)
COMMUNICATIONS GROUP, INC. dba COMMTECH,
(legal name of entity submitting bid or proposal)

the Bidder or Proposer who has submitted the attached bid or proposal;

2. The Bidder or Proposer is fully informed respecting the preparation and content of the attached bid or proposal and of all pertinent circumstances respecting such bid or proposal;
3. Such bid or proposal is genuine and is not a collusive or sham bid or proposal;
4. Neither the said Bidder or Proposer nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this Affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any official or agent of the City of Franklin or with any other firm, person, or potential or actual bidder or proposer to submit a collusive or sham bid or proposal in connection with the contract for which the attached bid or proposal has been submitted, or to refrain from bidding or proposing indirectly, or sought by agreement, or collusion, or communication, or conference with any other firm, person, or potential or actual bidder or proposer to fix the price or prices or cost element of the bid, quoted or proposed price or the bid, quoted or proposed price of any other potential or actual bidder or proposer, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against the City of Franklin or any person interested in the proposed contract;
5. The price or prices quoted in the attached bid or proposal are fair and proper and are not tainted by a collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or Proposer or any of its agents, representatives, owners, employees, or parties in interest, including this Affiant; and
6. He or she understands that Article VIII, Section 16, of the City Charter of Franklin, and T.C.A. §6-54-107, prohibit any member of the Board of Mayor and Aldermen, or officer elected by said Board, from being interested in any contract, or work of any kind whatever, under its control and direction, and any contract in which any such person shall have an interest shall be void and unenforceable, subjecting any funds received by contractor to be returned in full to the City, in addition to any other penalties provided by law.

JENNA BOOKER
STATE OF TENNESSEE NOTARY PUBLIC
DAVIDSON COUNTY

Steven M. Rich — Sec
(signature of Affiant) (title of Affiant)

Sworn and subscribed to before me this 28th day of October, 2015

Jenna Booker
(Notary Public)

My Commission Expires: 11/5/2018

(Submitted in response to City of Franklin Purchasing Office Solicitation No. 2015-025)

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 04/27/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

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Tillman/Allen Insurance Inc. 500 Wilson Pike Circle Suite 230 Brentwood, TN 37027	PHONE (A/C, No, Ext): (615)370-9080	FAX (A/C, No): (615)370-9691
	E-MAIL ADDRESS: myagent@tillmanallen.com	

INSURER(S) AFFORDING COVERAGE	NAIC #
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INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

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441 Donelson Pike
Suite 420
Nashville, TN 37214

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY			PBP101643624	3/15/2015	3/15/2016	EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 100,000
	X Contractors Plus End SL1011						MED EXP (Any one person)	$ 5,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						PERSONAL & ADV INJURY	$ 1,000,000
	X POLICY PRO-JECT LOC						GENERAL AGGREGATE	$ 2,000,000
	OTHER:						PRODUCTS - COMP/OP AGG	$ 2,000,000
								$
A	AUTOMOBILE LIABILITY			BAP6559265	3/15/2015	3/15/2016	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS X SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS X NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
	X Comp & Coll						Comp & Collision Ded	$ 250
A	X UMBRELLA LIAB X OCCUR			PBP101643624	3/15/2015	3/15/2016	EACH OCCURRENCE	$ 1,000,000
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ 1,000,000
	DED RETENTION $							$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y/N			WCP687725927	3/15/2015	3/15/2016	X PER STATUTE OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? N/A						E.L. EACH ACCIDENT	$ 1,000,000
	(Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
A	Electrical Permit Bond			SUR003274923	10/7/2014	10/7/2015	Limit - $40,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

(615)371-2233

City of Brentwood
5211 Maryland Way
Brentwood, TN 37027

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Susan B. Reid

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 04/27/2015

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
Tillman/Allen Insurance Inc. 500 Wilson Pike Circle Suite 230 Brentwood, TN 37027	PHONE (A/C, No, Ext): (615)370-9080	FAX (A/C, No): (615)370-9691
	E-MAIL ADDRESS: myagent@tillmanallen.com	

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : State Auto	25135
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Communications Group, Inc
441 Donelson Pike
Suite 420
Nashville, TN 37214

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

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	X POLICY PRO-JECT LOC						GENERAL AGGREGATE	$ 2,000,000
	OTHER:						PRODUCTS - COMP/OP AGG	$ 2,000,000
								$
A	AUTOMOBILE LIABILITY			BAP6559265	3/15/2015	3/15/2016	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	ANY AUTO						BODILY INJURY (Per person)	$
	ALL OWNED AUTOS X SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS X NON-OWNED AUTOS						PROPERTY DAMAGE (Per accident)	$
	X Comp & Coll						Comp & Collision Ded	$ 250
A	X UMBRELLA LIAB X OCCUR			PBP101643624	3/15/2015	3/15/2016	EACH OCCURRENCE	$ 1,000,000
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ 1,000,000
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A	Electrical Permit Bond			SUR003274923	10/7/2014	10/7/2015	Limit - $40,000	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

(615)794-7012 (615)591-9066

City of Franklin
Attn: Purchasing Manager
109 3rd Avenue South
Franklin, TN 37064

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Susan G. Reid

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 04/27/2015

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INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Communications Group, Inc
441 Donelson Pike
Suite 420
Nashville, TN 37214

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

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	OTHER:						PRODUCTS - COMP/OP AGG	$ 2,000,000
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	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ 1,000,000
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DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

(615)790-5466

Williamson County Government
1320 West Main Street, Suite 130
Franklin, TN 37064

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Susan G. Reid

8860770
294845

State of Tennessee

BOARD FOR LICENSING CONTRACTORS

CONTRACTOR

COMMUNICATIONS GROUP, INC.

This is to certify that all requirements of the State of Tennessee have been met.

ID NUMBER: 00048216
LIC STATUS: ACTIVE
EXPIRATION DATE: 01/31/2016

E-D;
S-TELECOMMUNICATIONS;
$1,000,000.00

THE GREAT SEAL OF THE STATE OF TENNESSEE XVI AGRICULTURE COMMERCE 1796

IN-1313
DEPARTMENT OF
COMMERCE AND INSURANCE

CEF001

CITY OF FRANKLIN, TENNESSEE
PROCUREMENT AGREEMENT

(City of Franklin Contract No. 2015-0123)

Attachment No. 2

Contact information for a minimum of three references

City of Spring Hill, Tennessee
199 Town Center Parkway
Spring Hill, TN 37174
Brandie Arabie-Smith
931-486-2252 ext 246

Wilson County EMA
110 Oak Street
Lebanon, TN 37087
Marty Heckman
615-444-8799 x122

Metro/Nashville Office of Emergency Management
(Installation Contract for 93 Federal Signal warning sirens)
Metro Radio Shop
Jody Clinard
615-862-5122

We have also supplied and maintained Federal Signal warning sirens for the City of Brentwood, the City of Franklin, and Williamson County for the past 10 years.

CITY OF FRANKLIN, TENNESSEE
PROCUREMENT AGREEMENT

(City of Franklin Contract No. 2015-0123)

Attachment No. 3

CITY's Standard Procurement Terms and Conditions with VENDOR's contact information inserted

Standard Procurement Terms and Conditions
City of Franklin, Tennessee

1. Assignment/Subcontracting. Neither party may assign any rights or obligations under these Standard Procurement Terms and Conditions or any Statement of Work without the prior written consent of the other party. These Standard Procurement Terms and Conditions will be binding upon and inure to the benefit of the parties and their respective successors and permitted assigns. Vendor may subcontract any portion of the work only with the prior consent of the City, but such subcontracting will not relieve Vendor of its duties under these Standard Procurement Terms and Conditions.

2. Time of the Essence. The parties agree that TIME IS OF THE ESSENCE with respect to the vendor's performance of all provisions of this procurement.

3. Taxes. As a tax-exempt entity, the City shall not be responsible for sales or use taxes incurred for products or services. Upon request, the City shall supply Vendor with a copy of its Sales and Use Tax Exemption Certificate. Vendor shall bear the burden of providing its suppliers with a copy of the City's tax exemption certificate and shall assume all liability for such taxes, if any, that should be incurred.

4. Notices. Any notice provided pursuant to these Standard Procurement Terms and Conditions, if specified to be in writing, will be in writing and will be deemed given: (a) if by hand delivery, then upon receipt thereof; (b) if mailed, then three (3) City business days after deposit in the mail where sender is located, postage prepaid, certified mail return receipt requested; (c) if by next day delivery service, then upon such delivery; or (d) if by facsimile transmission or electronic mail, then upon confirmation of receipt. All notices will be addressed to the parties at the addresses set forth below (or set forth in such other document which these Standard Procurement Terms and Conditions may accompany, or such other address as either party may in the future specify in writing to the other):

In the case of the City:	In the case of Vendor:
City of Franklin	Communications Group, Inc. d/b/a CommTech
Attn: Purchasing Manager	Beverly Ash
Re: City of Franklin Purchasing Office Solicitation No. 2015-025	
109 Third Ave. South	441 Donelson Pike, Suite 420
P.O. Box 305	P.O. Box 148242
Franklin, TN 37065-0305	Nashville, TN 37214
FAX: 615/550-0079	Fax 615 391-0300
E-mail: purchasing@franklintn.gov	beverly@commtechradio.com

5. Confidentiality and Proprietary rights. Vendor waives any right to confidentiality of any document, e-mail or file it fails to clearly mark on each page (or section as the case may be) as confidential or proprietary. Proprietary rights do not extend to the data created by the City's users of the System; all rights to that data (including derivative or hidden data such as metadata) shall vest solely in City at the moment of creation and City shall retain exclusive rights, title, and ownership of all data and images created therefrom at the moment of creation and utilization, through and including image creation. City may be required to disclose documents under state or federal law. City shall notify Vendor if a request for documents has been made and shall give Vendor a reasonable opportunity under the circumstances to respond to the request by redacting proprietary or other confidential information. In exchange, Vendor agrees to indemnify, defend, and hold harmless City for any claims by third parties relating thereto or arising out of (i) the City's failure to disclose such documents or information required to be disclosed by law, or (ii) the City's release of documents as a result of City's reliance upon Vendor 's representation that materials supplied by Vendor (in full or redacted form) do not contain trade secrets or proprietary information, provided that the City impleads Vendor and Vendor assumes control over that claim.

6. Derivative Works. To the extent that the Agreement contains Vendor's reservation of rights, such definitions and limitations are superseded by the following: "Derivative Work" means a program that is based on or derived from one or more existing programs or components. If the original software is modified to create a new program, a derived work is created. If the original software was designed to accept plug-ins or drivers using a defined mechanism, such a driver or plug-in does not form a derived work. Linking to a library in the way it was designed to be interfaced with, does *not* constitute deriving a work. "Derivative work" is *not* the data that the Licensee inputs, manipulates, modifies or otherwise improves, nor the images resulting therefrom.

7. Arbitration/Mediation. No arbitration shall be required as a condition precedent to filing any legal claim arising out of or relating to the Contract. No arbitration or mediation shall be binding.

8. Waiver. Neither party's failure or delay to exercise any of its rights or powers under these Standard Procurement Terms and Conditions will constitute or be deemed a waiver or forfeiture of those rights or powers. For a waiver of a right or power to be effective, it must be in writing signed by the waiving party. An effective waiver of a right or power shall not be construed as either (a) a future or continuing waiver of that same right or power, or (b) the waiver of any other right or power.

9. Warranties/Limitation of Liability/Waiver. City reserves all rights afforded to local governments under law for all general and implied warranties. The City does not waive any rights it may have to all remedies provided by law and therefore any attempt by Vendor to limit its liability shall be void and unenforceable.

10. Severability. If any term or provision of these Standard Procurement Terms and Conditions is held to be illegal or unenforceable, the validity or enforceability of the remainder of these Standard Procurement Terms and Conditions will not be affected.

11. Precedence. In the event of conflict between the provisions of these Standard Procurement Terms and Conditions and any contract, agreement or other document which these Standard Procurement Terms and Conditions may accompany, the provisions of these Standard Procurement Terms and Conditions will to the extent of such conflict take precedence unless such document expressly states that it is amending these Standard Procurement Terms and Conditions.

12. Indemnification. Vendor agrees to indemnify and save the Government of Franklin, the City of Franklin and individual, on or off duty, officers, and employees of the City of Franklin, harmless from any and all losses, damages and expenses, including court costs and attorneys' fees, by reason of any loss, whatsoever, arising out of or relating to or in consequence of the work done in connection with the contract of which this agreement is a part, excepting only such losses as shall be occasioned solely by the negligence of the City of Franklin.

13. Additions/Modifications. If seeking any addition or modification to the Contract, the parties agree to reference the specific paragraph number sought to be changed on any future document or purchase order issued in furtherance of the Contract, however, an omission of the reference to same shall not affect its applicability. In no event shall either party be bound by any terms contained in any purchase order, acknowledgement, or other writings unless: (a) such purchase order, acknowledgement, or other writings specifically refer to the Contract or to the specific clause they are intended to modify; (b) clearly indicate the intention of both parties to override and modify the Contract; and (c) such purchase order, acknowledgement, or other writings are signed, with specific material clauses separately initialed, by authorized representatives of both parties.

14. Applicable Law; Choice of Forum/Venue. These Standard Procurement Terms and Conditions are made under and will be construed in accordance with the laws of the State of Tennessee without giving effect to any state's choice-of-law rules. The choice of forum and venue shall be exclusively in the Courts of Williamson County, TN.

15. Termination. Unless the City has indicated otherwise for a specific procurement solicitation, either party may terminate these Standard Procurement Terms and Conditions, with or without cause, upon thirty (30) calendar days' notice to the other. Upon termination by the vendor, the City shall be entitled to retain ownership of any and all goods and equipment purchased. Upon termination by the City, the vendor shall be entitled to receive any amounts due as a result of goods and equipment already delivered and/or services already rendered; however, the City shall maintain ownership and control of any goods and equipment purchased. Upon termination of services, whether connected or unconnected to goods and equipment, such services shall be rendered until the conclusion of the 30th calendar day as stated in the notice or until a contractual benchmark has been achieved, or as the parties may otherwise agree.

16. Breach. Upon deliberate breach of these Standard Procurement Terms and Conditions, or of any contract, agreement or other document which these Standard Procurement Terms and Conditions may accompany, by either party, the non-breaching party shall be entitled to terminate these Standard Procurement Terms and Conditions without notice, with all of the remedies it would have in the event of termination under section 10 ("Severability") above, and may also have such other remedies as it may be entitled to in law or in equity.

17. Default. If Vendor fails to perform or comply with any provision of these Standard Procurement Terms and Conditions, or of any contract, agreement or other document which these Standard Procurement Terms and Conditions may accompany, then the City (i) may cancel the purchase award and/or the accompanying contract or agreement or purchase order, in whole or in part, without penalty or protest by Vendor; (ii) may consider such failure to perform or comply as a breach of contract; (iii) reserves the right to purchase its requirements from the vendor that submitted the next lowest and best responsive and responsible bid, or the vendor that submitted the next best proposal, if that vendor will still honor that bid or proposal, or to seek new bids or proposals, or to pursue one or more other options available to the City in compliance with its then current purchasing policy; and (iv) may hold the defaulting vendor liable for all damages provided by law, including cost of cover.

18. Entire Agreement. These Standard Procurement Terms and Conditions, including any contract, agreement or other document which these Standard Procurement Terms and Conditions may accompany, constitutes the entire agreement between the parties and supersedes any prior or contemporaneous communications, representations or agreements between the parties, whether oral or written, regarding the subject matter of these Standard Procurement Terms and Conditions. The terms and conditions of these Standard Procurement Terms and Conditions may not be changed except by an amendment expressly referencing these Standard Procurement Terms and Conditions by section number and signed by an authorized representative of each party.

19. Survival. These Standard Procurement Terms and Conditions shall survive the completion of or any termination of any contract, agreement or other document which these Standard Procurement Terms and Conditions may accompany.