



Automated Weather Observing System

AWOS A Site Preparation Manual

3000-A-025

Rev. E



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Disclaimer

The information and specifications described in this manual are subject to change without notice.

Latest Manual Version

For the latest version of this manual, see the *Product Manuals* page under *Reference* on our web site at www.allweatherinc.com/.



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Revision History

| Revision | Date | Summary of Changes |
|----------|--------------|--|
| B | 2016 Nov 21 | Enhanced specifications for North benchmark, added information on survey marker installation, and updated antenna mounting information |
| C | 2017 Oct 31 | Updated ref to siting requirements per FAA Order 6560.20 |
| D | 2022 Feb 1 | Updated Site Prep drawings for circuit breakers to match wire gauge current limits |
| E | 2022 July 14 | Replaced M105656-00 lugs with M419132-01 lugs |
| | | |
| | | |

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1. General

1.1 Introduction

This manual is designed to assist a contractor retained to prepare a site for an Automated Weather Observing System (AWOS). Site preparation includes not only the actual physical work, but permits, licenses, and coordination with airport authorities. This document provides details for concrete, towers, conduit and underground lightning protection.

The actual installation of sensors and equipment described in the *AWOS 3000 Installation and Checkout Manual* (3000-017) will be performed by or under the direction of All Weather, Inc.

There are several different AWOS 3000 systems that differ in the sensors that are installed. There is a Site Preparation Manual is specific to each AWOS 3000 system category, so you will need to refer to the correct Site Preparation manual for the system category you are installing. The different AWOS system categories are listed below.

| AWOS SYSTEM CATEGORIES | | | | | | | |
|------------------------|--------|---------------------|------------------------|----------------------------|-----------|----------|----------|
| AWOS A | AWOS I | AWOS II AWOS A-V | AWOS III AWOS III P | AWOS III T AWOS III P/T | AWOS IV Z | PLATFORM | ELEVATED |

An AWOS A site uses only the base and the lower section of a stacked tower (Model 8509), shown in the 3000-A-007 drawings at the back of this manual. Each drawing sheet is labeled with a text caption. These captions will be used within this document to identify the relevant sheet(s).

1.2 Definitions

As used herein, the term contractor refers to the site preparation contractor who has been assigned responsibility for all site survey and preparation tasks.

The term manufacturer refers to All Weather Inc., who will provide and install the AWOS hardware.

1.3 Steps Before Site Preparation Begins

The proposed locations of the tower and sensors also take into account the requirements of FAA Order 6560.20, *Siting Criteria for Automated Weather Observing Systems (AWOS)*, so that the tower and sensor locations conform to operational, regulatory, and safety requirements. Some guidelines for locating sensors are included in the User's Manuals for the individual sensors, where appropriate, but these are only technical guidelines for the individual sensors and do not take into consideration the broader guidelines for a complete system.

Send FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, to the FAA Air Traffic regional office located in the area you plan to build the tower at least

- 30 days prior to the date you propose to begin construction, or
- 30 days before you plan to file an application for a construction permit,

whichever is earlier.

Site preparation activities may not commence until a *Notice to Proceed* is received and all permits and licenses required by local authorities for the work have been procured.

1.4 Requirements

Site preparation consists of all functional responsibilities from coordination with airport authorities to the installation of the wind tower, foundations, conduits, and other physical preparations for the AWOS.

NOTE: NATIONAL AND LOCAL CODES SHALL HAVE PRECEDENCE OVER ANY INSTRUCTION OR DETAIL IN THIS DOCUMENT.

1.5 Coordination with Airport Authorities

The Airport will furnish the contractor with information relative to the facility. As available, this information will include equipment layout drawings, aerial photographs, coverage charts, obstruction plots, contour maps, existing termination points for commercial power and communications systems, and plot plans delineating proposed construction. Specific manufacturer's data is included in this document.

Coordination with airport authorities will address locations of power and communication termination for the remote site as well as the central site. Coordination with airport authorities should also include site access procedures and site contact information for use during site preparation and system installation.

2. Site Preparation

Once a *Notice to Proceed* is received and all permits and licenses required by local authorities for the work have been procured, the contractor shall perform the following site preparation work.

1. Perform clearing, grading, excavation, filling and backfilling.
2. Provide all concrete work (tower base, sensor foundation pads, etc.)
3. Install the 10 ft tower with obstruction lights and lightning rod.
4. If applicable, provide and install a data cable from the 10 ft tower to the central data processing computer.
5. Provide and install an underground power run to the AWOS sensor site, terminating in (as required) junction box(es), disconnect box, transformer, duplex outlet, and a circuit breaker panel next to the tower.
6. Provide and install all below grade grounding for lightning protection for the AWOS system.
7. Provide and install the conduits between the 10 ft tower and junction boxes at the sensor foundations. Refer to the *Site Layout, Trenching and Grounding* and *Electrical Conduit* drawings.
8. Install and energize the tower lights (see the *Tower Lighting Installation* drawings).
9. Provide and install antenna masts.

The tower, obstructions lights, lightning rod, VHF radio mast, and optional tower-mounted UHF radio masts are either provided by All Weather, Inc. or are procured by the airport authority. All other materials required to perform the site preparation instructions listed are provided by the site preparation contractor. The Material List in Chapter 8 describes the materials required to do the site preparation work.

3. Elevation and Wind Direction Benchmarks

A surveyor should be retained to locate the AWOS True North or True South marker approximately 100 ft from the tower. This marker is primarily used to align the wind sensor mounted on the tower. The reference point should be established relative to the center of the AWOS tower.

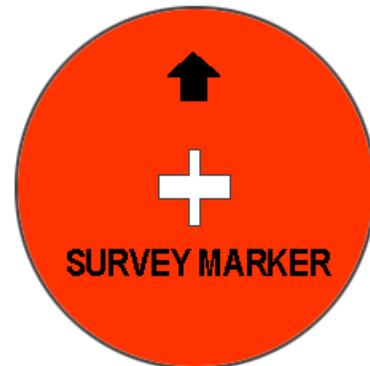
Once the location for the marker has been established, install the marker, and note its distance and direction from the AWOS tower in the AWOS log book. Any records left by the surveyor should be kept with the AWOS log book.

An ideal marker will be a corrosion-resistant brass marker set in a small concrete pad about 6" in diameter and 6" deep. Allow the concrete to set for about 10–15 min after pouring before placing the marker in the concrete so its top is level with the surface of the concrete. This will allow the marker to survive mowing.



A plastic survey marker may also be used, and is anchored to the ground with a stake.

As shown in the photograph, it is a good idea to stamp something like **AWOS TRUE NORTH** (or south) **MARKER** on the brass marker.



The benchmark must be suitably protected from being buried, cut down, or destroyed during normal maintenance of the area.

The installation of the marker as described makes it convenient to mow any grass around the marker, but the marker will be hard to see or locate from some distance away. It may also get covered by grass clippings or snow. An optional post may be placed near the marker to make it easier to locate. The plastic survey marker is sometimes placed near the brass survey marker in a prominent area with the arrow pointing to the brass survey marker to help locate the brass survey marker.



In addition to determining a wind direction benchmark the barometric pressure sensor elevation needs to be determined so that it can be factored into the altimeter calculations. The elevation of the tower base above Mean Sea Level (MSL) elevation must be determined to the nearest whole foot by a qualified surveyor.

4. Hardware Installation

The hardware installation includes the construction of all foundations, placement of conduit, erection of the tower, connection of the AC power distribution system, tower lights, and lightning rod, and, for radio data link installations, installation of the antenna mast and antenna.

4.1 Foundations

Foundations described in this section apply to installations in the continental U.S. where the frost depth does not exceed 36 inches. Increase foundation depth accordingly where frost depths may exceed 36 inches.

An AWOS A site uses only the base and the lower section of a stacked tower (Model 8509), shown in the 3000-A-007 drawings at the back of this manual.

4.1.1 Ten-Foot Tower

Refer to the *Tower Foundation* drawing for tower foundation construction details. Only the bottom section is need for an AWOS A installation.

Construct a 2×4 frame for the portion of the pad above ground surface. Locate foundation bolts in the 2×4 frame as specified in the drawings for later use to secure a mounting frame for the junction boxes, etc. The bottom of the hole should have a six-inch indentation that is filled with compacted sand and gravel for drainage of the tower legs.

When all forms and wire mesh are installed and the tower base is in place (*note: install the tower base with the mounting holes up*), pour the concrete, making sure that the tower is vertical to ± 2 degrees. The concrete should be crowned slightly to allow water to runoff. When the concrete has set, remove the 2×4 forms and backfill as required. Bevel all pad edges.

4.2 Conduit, Trenching, and Lightning Protection

All sensor locations will require signal, power, and lightning protection cables. The conduit, trenching, and lightning protection details are specified in the drawings.

After the foundations are poured, excavate a trench from the incoming power source (and land line communications cable, if applicable) to the 10 ft tower and from there to each of the foundation pads. Refer to the *Site Layout, Trenching and Grounding* drawings for trenching details. All conduits and lightning protection cables will be installed in this trench. Install the 3/4" x 10 ft ground rod. To this ground rod, weld or clamp a #4/0 AWG ground wire for each foundation pad, and any other ground wires that may be necessary. Route a cable to each pad in the most direct method. Do not bend any of the ground cables in less than an 8" radius at any point in the cable length, and do not bend any cable to an angle sharper than 90°. Connect each cable to the point on the pad shown in the individual *Sensor Foundation* drawings using an M419132-01 lug. The lug is attached to the tower leg on either tower according to the *Tower Installation* drawing. Before attaching the lug, remove paint by scraping or sanding to ensure a good electrical connection, as the tower itself will function as a lightning down conductor. Another cable is attached by an M419132-01 lug to a bolt on the mast on the visibility pad. A lug is to be left attached to the cable that comes out of the ground at the ceilometer pad, with the cable length such as to reach the approximate center of the pad. The All Weather, Inc. engineer will connect this when installing the sensors.

Note that all buried ground connections are to be exothermically welded to comply with Advisory Circular 150/5220-16C, Section 34, with respect to lightning and surge protection.

Install the power cables and conduit that supply power to the site to the equipment mounted on the frame at the tower location (see Section 4.3). The frame details are defined in the drawings. Place power conduits in the trench, and attach junction boxes or 90° condulets at the sensor foundations. The ends at the tower connect to the circuit breaker cabinet. The junction boxes or condulets at the sensor pads are supported by rigid conduit and straps attached to the foundation. Install the signal conduits in the same manner, securing the ends at the tower to a junction box on the frame. If applicable (land line sites), install the incoming communications conduit and cable from the central data processing computer to a junction box next to the tower (see Section 4.3.2).

Place electrical wire of an appropriate size and type in the electrical conduits running from the circuit breaker panel to junction boxes at the sensor pads.

Place 3/16" pull ropes in all signal conduits running between the tower and the sensor pads.

Backfill and compact the trench.

4.3 Utility Services

4.3.1 Input Power

The contractor shall provide and install the required AC input power (see the *Power Requirements* drawing) for use by the AWOS, connecting to an existing power source as determined during the site survey.

Transformers, main disconnect boxes etc., if required, shall be provided in accordance with ANSI-C57, 12.25-1981.

4.3.2 Communications

At airports designated as “land line” (as opposed to UHF radio data link), provide and install a communications data cable as specified in the materials list from a junction box next to the tower to the AWOS central data processing computer. The maximum length is 4,000 feet. The cable should be either in a conduit for its full length, or of a type suitable for direct burial.

4.4 Tower Installation

Do not install towers near power lines. All towers should be installed by experienced and trained personnel. All installations must be grounded per local and national codes.

The use of a climbing belt is mandatory for any person climbing the stacked tower.

Do not install the tower until the foundation concrete has cured adequately. See the *Tower Installation* drawings for installation details.

4.4.1 Lightning Protection

Remove paint from the area under the lightning rod clamps, and install the lightning rod according to the *Tower Installation* drawing.

Note that a lightning rod does not need to be installed if there are taller structures with existing lightning rods in the vicinity.

4.4.2 UHF Data Link Antenna Mast and Antenna (Data Link Installations Only)

The AWOS installer will install the UHF mast and antenna on the tower during the AWOS installation.

4.5 Central Data Platform (CDP)

Place the CDP at an indoor location specified by the airport authority. The indoor space must accommodate the 11RU equipment rack, which is 22" × 20.5" × 20", and weights about 150 pounds, including the UPS power supply. The location should take into account the need to access the front and both sides of the rack.

4.5.1 Equipment

The CDP is mounted in an industrial-grade 11RU rack along with a UPS. The rack also houses the VHF ground-to-air radio and the CDP options.

4.5.2 Temperature Requirements

The indoor equipment must be located in a conditioned space where the temperature is maintained between 40°F and 105°F, with a relative humidity between 5% and 90%.

4.5.3 Power Requirements

The indoor equipment must be located within three feet of an outlet with 120 V AC, 60 Hz ($\pm 5\%$). The indoor equipment requires 500 V·A and should be on a dedicated 15 A circuit.

4.5.4 Telephone Requirements

The indoor equipment must be located with access to a telephone line terminated with an RJ-11 connector. The phone line is dedicated to the AWOS modem and must not be shared with other telephones, FAX machines, etc.

4.5.5 VHF Voice Radio Antenna Mast

The VHF radio antenna will be located outdoors and away from obstructions. The antenna should not be mounted within 100 ft of other radio transmitters, such as a UNICOM transmitter. If such a location is not available, contact All Weather Inc. for further instructions. The antenna mast is usually mounted on the eaves of a building as part of the site preparation activities; however other mounting configurations are available (see the *Antenna Mast Options* drawing). The mast should be at least 5 ft long. Install the desired antenna mount and mast.

The antenna mast must be installed within 100 ft of the radio as measured by the routing of the antenna cable since that is the length of antenna cable provided with the Site Preparation Kit. Please contact All Weather Inc. if longer distances are required.

Section 4.6 describes how to install the VHF antenna and antenna cable for the voice radio. The AWOS installer will connect the antenna cable to the radio when the radio is installed.

4.5.6 UHF Data Link Radio Antenna Mast (Data Link Installations Only)

The UHF Data Link Radio Antenna (supplied by All Weather Inc.) must be located outdoors and away from obstructions. The antenna mast is usually mounted on the eaves of a building; however other mounting configurations are available (see the *Antenna Mast Options* drawing).

The antenna mast should be at least 1 ft longer than the length needed to secure it to the building. The antenna should be mounted at least 2 ft away from any metal objects.

The antenna mast must be installed within 100 ft of the radio as measured by the routing of the antenna cable since that is the length of antenna cable provided with the Site Preparation Kit. Please contact All Weather Inc. if longer distances are required.

Section 4.6 describes how to install the UHF antenna and antenna cable for the data link radio. The AWOS installer will connect the antenna cable to the radio when the radio is installed.

4.5.7 AWOS Net (optional)

Some AWOS systems use the optional AWOS Net. The AWOS Net can be used as a Web server and/or to support a remote display. There are three types of AWOS Net, each based on the communication protocol used by the AWOS Net.

4.5.7.1 RS-232 AWOS Net

The RS-232 protocol requires that the AWOS Net is within 100 ft of the CDP using the CAT 5/6 cable supplied. No additional site preparation work is needed unless conduit is desired or holes needs to be drilled to allow the cable to pass.

4.5.7.2 RS-485 AWOS Net

The RS-485 protocol requires that the AWOS Net is within 4000 ft of the CDP. No additional site preparation work is needed unless conduit is desired or holes needs to be drilled to allow the cable to pass.

4.5.7.3 UHF Radio AWOS Net

The UHF radio AWOS Net is used when the AWOS Net is not connected by wires to the CDP.

An antenna mount like the UHF antenna mount described in Section 4.5.6 must be installed within the line of sight to the CDP's UHF radio antenna. The AWOS Net device uses the same frequency as the DCP-CDP UHF radio link.

The antenna mast must be installed within 100 ft of the AWOS Net radio as measured by the routing of the antenna cable since that is the length of antenna cable provided with the Site Preparation Kit. Please contact All Weather Inc. if longer distances are required.

Section 4.6 describes how to install the UHF antenna and antenna cable for the AWOS Net radio. The AWOS installer will connect the antenna cable to the radio when the radio is installed.

4.6 Antenna Installation

(See the *UHF/VHF Antenna Assembly* and *Antenna Mast Options* drawings at the back of this manual).

Attach the plastic end caps to the radiator and the radials. Attach the four nuts and washers to the radials. Coat the threaded ends of the radials with PTFE lubricant (supplied with antenna). Attach the radials to the radiator section. Coat the threaded portion of the U-bolt with PTFE. Attach the U-bolt to the antenna as shown. Coat the threaded portion of the radiator with PTFE. Attach the completed antenna to the U-bolt mount as shown. Attach the antenna cable to the antenna.

Mount the antenna on the mast as shown in the *Radio Data Link Antenna Mast* drawing (3000-A-007 page 6). Use the M488292-00 antenna mount to attach the antenna to the mast instead of the bracket provided with the antenna.

Antenna cables are laid out in the building from the CDP location to the antenna as part of the site preparation activities. Section 4.6.1 provides suggestions on securing the antenna cable to the mast and routing it into the building. The AWOS installer will connect the cable to the radio that will be installed during the AWOS installation.

4.6.1 Antenna Cables

Leave some slack in the cable for the cable to connect to the antenna, but don't leave too much slack before the first tie down to keep the wind from stressing that connection. While the cable tie in the photo is about 15 cm (6") from the connector (good!), the recommended slack in the cable next to the connector is not there.



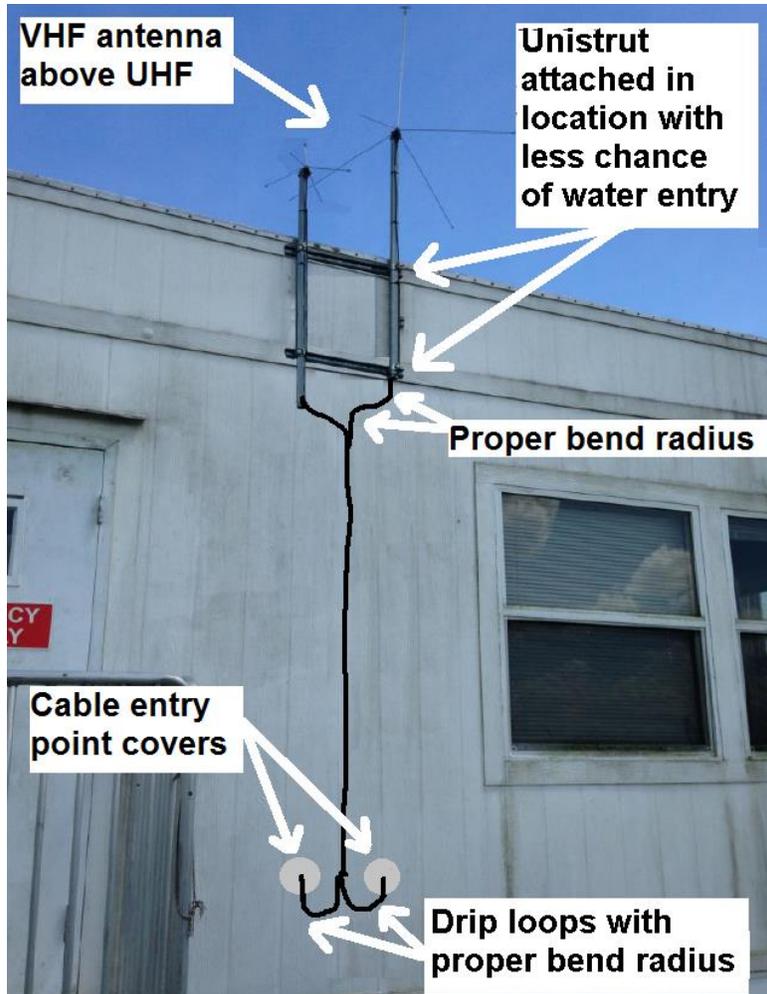
Secure the antenna cable to the mast every three feet with cable ties and route the cable to the indoor location of the radio.

When using cable ties to secure the antenna cable to the mast, join the cable tie by the cable. If the cable is secured at the opposite side, the cable tie could press into the cable, compressing the shield closer to the conductor through the dielectric, eventually leading to a short.



It is a good idea to have the antenna cable enter the building under an eave or through the side of the building to keep water from entering the building. **Do not** route the antenna cable through the roof.

Don't forget a drip loop at the bottom of the cable to keep rain from working its way into the wall and causing dry rot or wet rot or mold. The cable entry into the building must be sealed or covered once the cable is in place.





5. Site Cleanup and Restoration

Site cleanup and restoration shall include the following:

1. Removal of all contractor-furnished material, tools and equipment that will not become airport property upon acceptance of site work.
2. Removal of all trash, litter, packing, and excess material from the site, to be disposed of by the contractor.
3. Restoration of previously existing access roads, parking areas, building exterior or other portions of the site inadvertently damaged by the contractor so as to be returned to the same condition as existed before beginning work at the site.
4. Optionally, fill site with gravel or crushed rock for drainage and control of vegetation.
5. Upon completion of the site cleanup and restoration, the contractor shall obtain a written release from the property owner attesting that the sites have been restored to a satisfactory condition.

6. Tests and Inspections

The contractor is responsible for securing all necessary construction and electrical permits, waivers, etc., before commencing work. After completion of the work, the contractor shall demonstrate acceptable work to the airport owner, manager, or other authority as appropriate. It is the responsibility of the contractor that all aspects of this project that are under his control are in conformance with appropriate building and electrical codes. Nothing in this document shall preclude any requirement for code conformance.

As early as possible, the contractor shall notify All Weather Inc. of the date when the site will be ready for installation of the AWOS system. The contractor is required to provide digital photographs showing that all required work has been completed and that the equipment is at the site. All Weather, Inc. will not schedule an FSE (Field Service Engineer) for installation until these photographs have been submitted and reviewed to ensure the site is ready for installation. The contractor may also be required to provide a signed document attesting that all required work has been completed and that all equipment and material have been installed in accordance with the appropriate manuals and specifications, applicable building codes, and accepted engineering practices; that the tower lights are operational; that circuit breakers are available in the disconnect box; that pull ropes are in the signal conduits; that all towers and pads are leveled properly; and that the communication line to the central station is in place.

To assure that the site is completely ready for delivery and installation of AWOS equipment, the airport may invite the AWOS equipment vendor to participate in the acceptance inspection. The contractor shall correct all deficiencies detected during the inspection prior to the airport acceptance of site work. Facilities that give evidence of substandard contractor performance will not be accepted by the airport.

When All Weather Inc. is notified of completion as described above, if any part of the site preparation described in this document has not been accomplished and extra costs are incurred as a result of such deficiency, the contractor may be required to reimburse All Weather Inc. for such actual excess costs.



7. Coordination

The contractor shall perform all work in a manner that does not conflict with or adversely affect the air traffic operational environment. In the event of any actual or potential conflict, air traffic activities shall have priority over all contractor activities. The contractor shall provide services in a manner and at such times as will not disrupt the normal flow of air traffic.



8. Materials List

All Weather Inc. shall supply the tower and the tower light fixture. The site preparation contractor shall provide the remaining materials as listed in the *Material List* in drawing 3000-A-007.



9. Antenna Mounting Materials List

The following table lists suggested materials for mounting antennas installed as part of the Central Station equipment.

All sites require one antenna at the Central Station for VHF radio voice output. Sites using UHF data links require two antennas at the Central Station, along with mounting hardware and masts. Select one mounting option from the table for each antenna. Figures showing antenna assembly procedures and the various mounting options are included at the back of the *Drawings* section of this manual.

| Antennas and Antenna Mounting Materials List | | |
|---|--|--|
| Quantity | Description | Part No. (or equiv.) |
| 1* or 2** or more*** * (voice only) ** (voice and data link) ***(one more for each UHF Radio AWOS Net) | Antenna mast, 1-1/4" x 5 ft or 1-1/4" x 10 ft | Radio Shack 15-842 (5 ft) Radio Shack 15-843 (10 ft) GC Electronics 32-9013 (5 ft) GC Electronics 32-9014 (10 ft) |
| Select 1 mounting option for each antenna | Base and roof mount | Radio Shack 15-889 |
| | Vent pipe mount | Radio Shack 15-893 GC Electronics 8802 |
| | 12" wall mounts | Radio Shack 15-885 GC Electronics 8312 |
| | 4" wall mounts | Radio Shack 15-883 GC Electronics 8304 |
| | Eaves mount | Radio Shack 15-891 |
| | 3 ft tripod mount | Radio Shack 15-516 GC Electronics 9160 |

The antenna and antenna cables are supplied by All Weather Inc.



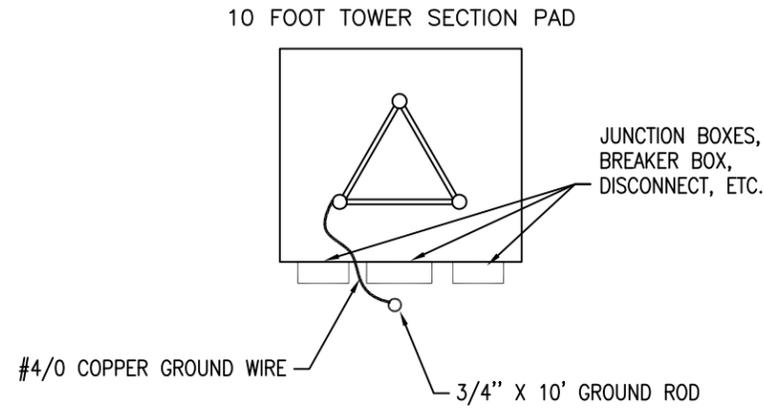
10. Drawings

The following pages contain drawings detailing site preparation activities.

| | |
|------------|---------------------------------------|
| 3000-A-007 | Site Layout, Trenching, and Grounding |
| — | UHF/VHF Antenna Assembly |

| REVISIONS | | | DWG NO. 3000-Z-007 | |
|-----------|------|---|--------------------|--------------|
| REV | ECO | DESCRIPTION | DATE | APPROVED |
| A | 1535 | INITIAL RELEASE | 11-18-09 | JPATTERSON |
| B | 4629 | CLARIFIED DUPLEX OUTLET TO BE GFCI | 11-21-16 | T. IWANOWSKI |
| C | 5476 | CHANGED SENSOR CIRCUIT BREAKERS TO 10 A | 01-27-22 | T. IWANOWSKI |

NOTES: UNLESS OTHERWISE SPECIFIED;
 1. DO NOT BEND GROUNDING CABLE TO LESS THAN 8" RADIUS.



EXCEPT AS MAY OTHERWISE BE SPECIFIED BY CONTRACT, THIS DOCUMENT AND THE DATA DISCLOSED HEREIN AND HERewith, IS NOT TO BE USED, REPRODUCED OR DISCLOSED, IN WHOLE OR IN PART, TO ANYONE WITHOUT THE WRITTEN PERMISSION OF ALL WEATHER INC.

| A | A | A | A | A | C | C | REV | REV STATUS |
|---|---|---|---|---|---|---|-------|------------|
| 7 | 6 | 5 | 4 | 3 | 2 | 1 | SHEET | OF SHEETS |

TOWER PAD
 SITE LAYOUT AND GROUNDING

| | | | |
|---|--|---|---|
| APPEND THE FOLLOWING DOCUMENTS WHEN CHANGING THIS DOCUMENT: | UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES XX=±.010 ANGLES ±1/2" XXX=±.005 CONCENTRICITY: .003 TIR DO NOT SCALE DRAWING | DRAWN BY: J PATTERSON 11-18-09 | TITLE AWOS SITE PREPARATION DOCUMENT FOR SITE LAYOUT, TRENCHING AND GROUNDING |
| | MATL SEE MATERIAL LIST | REVISED BY: T. IWANOWSKI 01-27-22 |  |
| | FINISH N/A | CHECKED BY: | |
| | TREATMENT | DESIGN ENGINEER: J PATTERSON 11-18-09 | SIZE D |
| | | PROJECT MANAGER: | DWG NO. 3000-A-007 |
| | | APPROVALS | SCALE NONE |
| | | DATE | RELEASE DATE 11-18-09 |
| | | | SHEET 1 OF 7 |

115 VAC 60 Hz 1 PH

| SENSOR SITE | | |
|------------------------------|--------------|--------------|
| LOCATION | LOAD | BREAKER SIZE |
| OBSTRUCTION LIGHTS (TOWER) | 400 VA MAX. | 10 A |
| DATA COLLECTION PLATFORM | 500 VA MAX. | 10 A |
| | | |
| GFCI DUPLEX OUTLET (TOWER) | 500 VA MAX. | 10 A |
| | | |
| | | |
| | | |
| OTHER SENSORS, AS APPLICABLE | 1000 VA MAX. | 10 A EACH |

| CENTRAL DATA PROCESSOR | | |
|-----------------------------------|-------------|------|
| CENTRAL DATA PROCESSING EQUIPMENT | 600 VA MAX. | 15 A |

POWER REQUIREMENTS

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| | | | |
|-------|------|---------|------------|
| SIZE | D | DWG NO. | 3000-A-007 |
| SCALE | NONE | REV LTR | C |
| | | SHEET | 2 OF 7 |

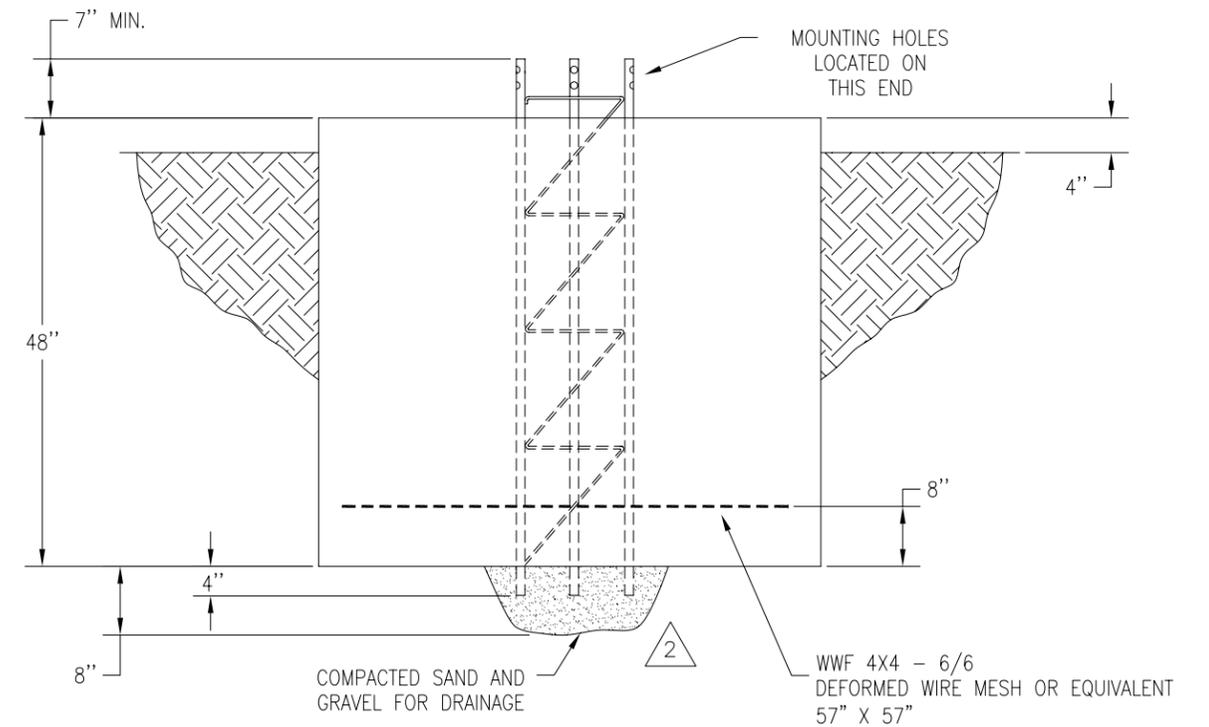
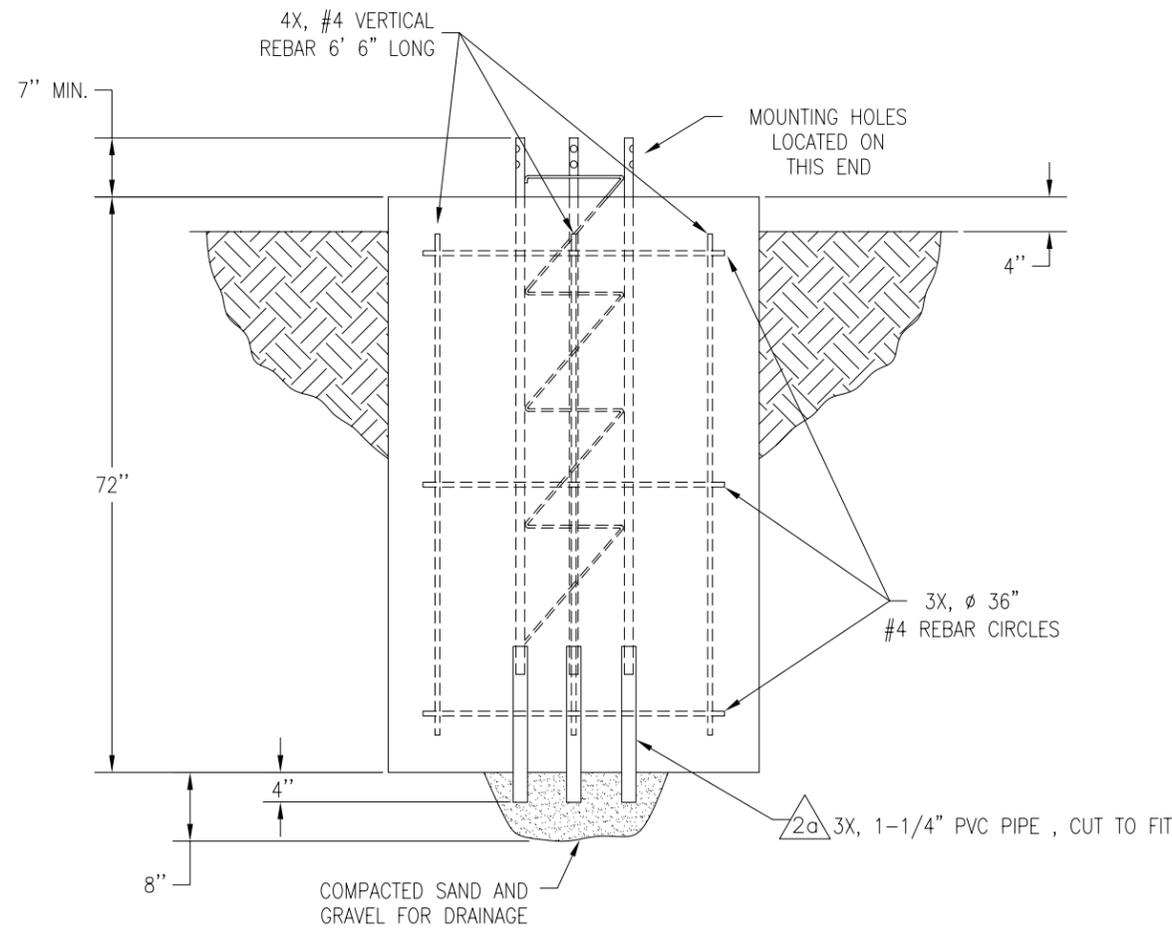
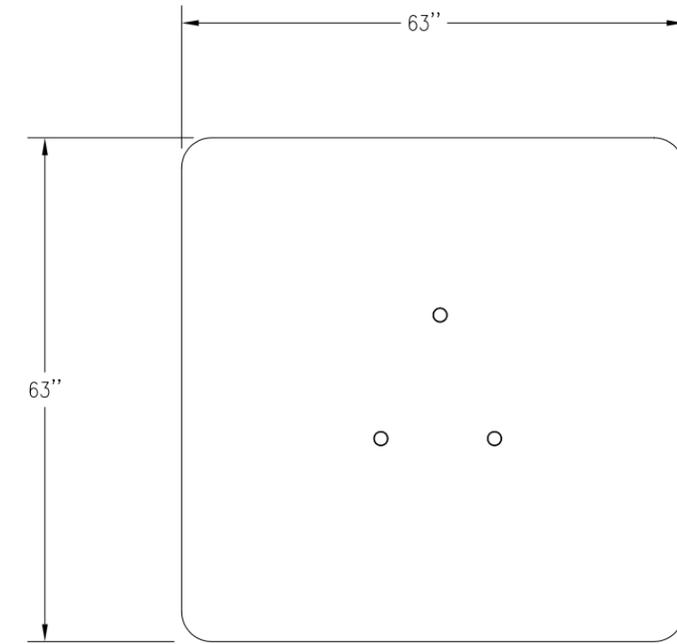
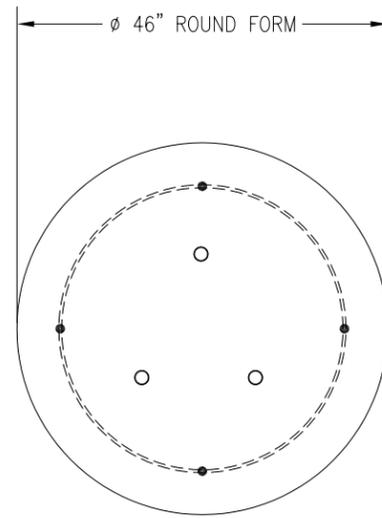
NOTES: CONT'D

2 THE TOWER MUST BE MOUNTED IN A CONCRETE BASE. A FOOTING SECTION IS INCLUDED WITH THE TOWER, AND THIS SECTION IS SET IN THE CONCRETE ACCORDING TO THE SPECIFICATIONS SHOWN. THE BASE OF THE FOOTING SECTION SHOULD EXTEND FOUR INCHES BELOW THE CONCRETE INTO COMPACTED SAND AND GRAVEL TO ALLOW FOR DRAINAGE.

2a FOR THE CYLINDRICAL FOUNDATION ONLY: INSTALL PVC PIPE TO THE BOTTOM OF THE THREE TOWER LEGS EXTENDING THEM BELOW THE CONCRETE INTO THE COMPACTED SAND AND GRAVEL TO ALLOW FOR DRAINAGE.

TOLERANCE FOR LEVEL/PLUMB IS $\pm 2'$.

NOTE:
INCREASE FOUNDATION DEPTH ACCORDINGLY WHERE FROST MAY EXCEED 36 INCHES.



CYLINDRICAL FOUNDATION

SQUARE FOUNDATION

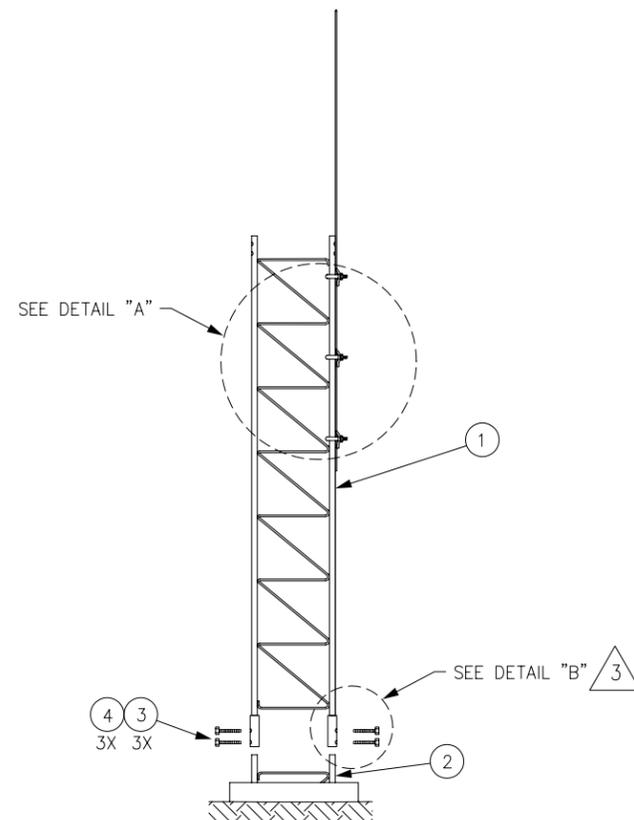
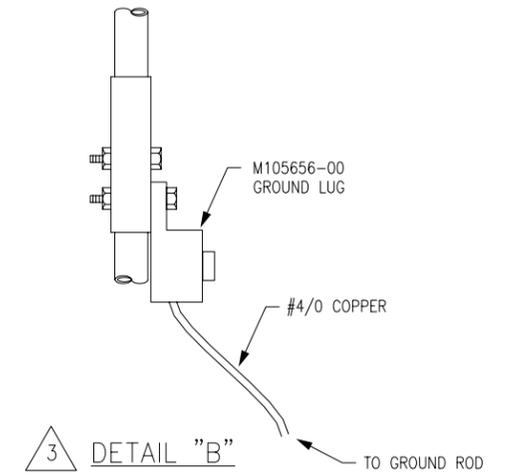
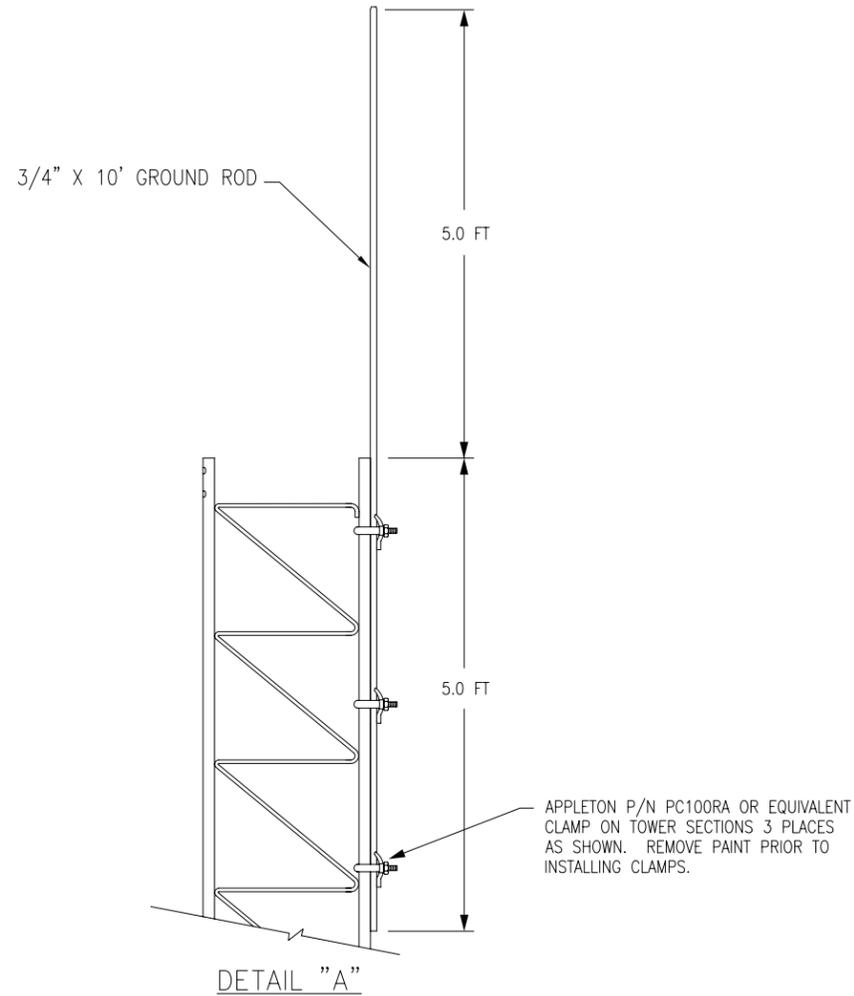
TOWER FOUNDATION FOR 10' TOWER SECTION

EXCEPT AS MAY OTHERWISE BE SPECIFIED BY CONTRACT, THIS DOCUMENT AND THE DATA DISCLOSED HEREIN AND HEREWITH, IS NOT TO BE USED, REPRODUCED OR DISCLOSED, IN WHOLE OR IN PART, TO ANYONE WITHOUT THE WRITTEN PERMISSION OF ALL WEATHER INC.

| | |
|-------|------------|
| SIZE | DWG NO. |
| D | 3000-A-007 |
| SCALE | REV LTR |
| NONE | A |
| SHEET | 3 OF 7 |

NOTES: CONT'D

3 ATTACH GROUND LUG UNDER BOLT ITEM 4 ON TOWER LEG CLOSEST TO GROUND CABLE.



| ITEM | PART NO. | DESCRIPTION | QTY. |
|------|----------|-----------------------------------|------|
| 1 | T995065 | TOWER SECTION * | 1 |
| 2 | T995064 | SHORT BASE * | 1 |
| 3 | INCLUDED | 7/16" X 2 1/2" NC BOLT WITH NUT * | 3 |
| 4 | INCLUDED | 5/16" X 2 3/8" NC BOLT WITH NUT * | 3 |

* SUPPLIED BY ALL WEATHER INC. PAINTED PER FAA REQUIREMENTS

10' TOWER SECTION INSTALLATION

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| | |
|------------------|-----------------------|
| SIZE D | DWG NO. 3000-A-007 |
| SCALE NONE | REV LTR A |
| | SHEET 4 OF 7 |

NOTES: CONT'D

10. ALL CONDUIT SHOWN IS 3/4" RIGID GALVANIZED STEEL OR EQUIVALENT.

11. INSTALL PER LOCAL BUILDING CODES.

12 ATTACH CONDUIT TO CONCRETE WITH RIGID CONDUIT STRAPS IN 2 LOCATIONS.

13. INSTALL PULL ROPES IN EACH SIGNAL CONDUIT. ALL WEATHER INC., TO INSTALL SIGNAL CABLES.

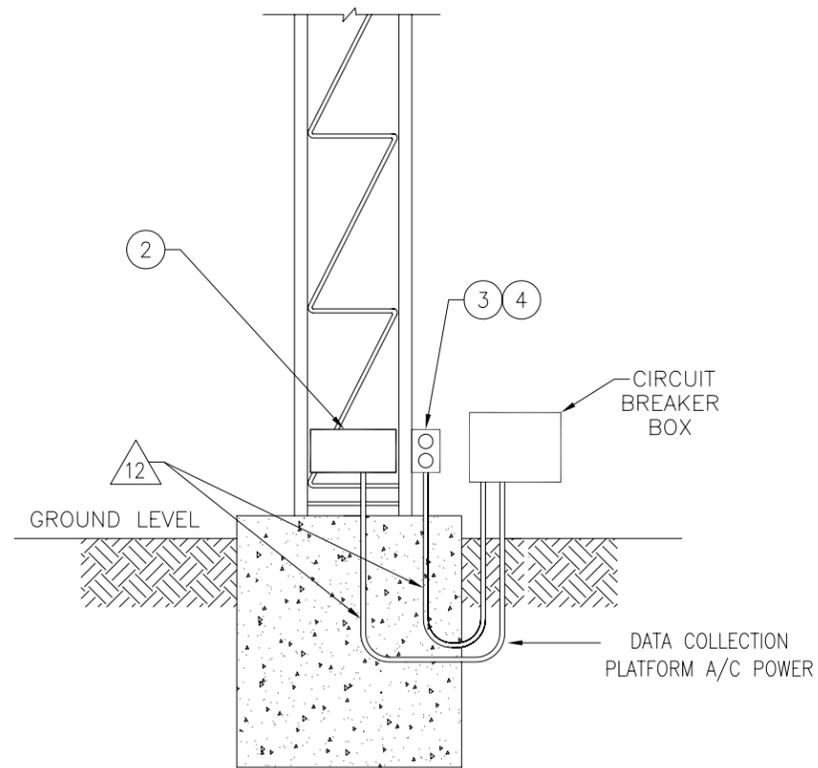
14. FOR LAND LINE DATA LINKS TO THE INDOOR EQUIPMENT, INSTALL JUNCTION BOX AND CONDUIT OR USE DIRECT BURIAL 6 CONDUCTOR RS485 CABLE AND TERMINATE WITH A JUNCTION BOX AT THE INDOOR LOCATION.

15. INSTALL 12 AWG THHN AC POWER WIRES OR EQUIVALENT FROM POWER DISTRIBUTION BOX TO AC POWER JUNCTION BOXES.

2 WEATHER TIGHT DEVICE BOX. FIVE 3/4" HOLES MIN. APPLETON WST275 AND COVER WCB24 OR EQUIVALENT. 1 REQUIRED.

3 GFCI RECEPTACLE PLATE WITH GASKET AND COVER. HUBBELL WPFS26 OR EQUIV. AND GFCI DUPLEX RECEPTACLE, 15 AMP, 125V HUBBELL GF-5262 OR EQUIVALENT. 1 REQUIRED.

4 WEATHER TIGHT DEVICE BOX, 3/4" HOLE. APPLETON FD-1-75 OR EQUIVALENT. 1 REQUIRED.



10 FOOT TOWER SECTION PAD

TOWER PAD
ELECTRICAL CONDUIT

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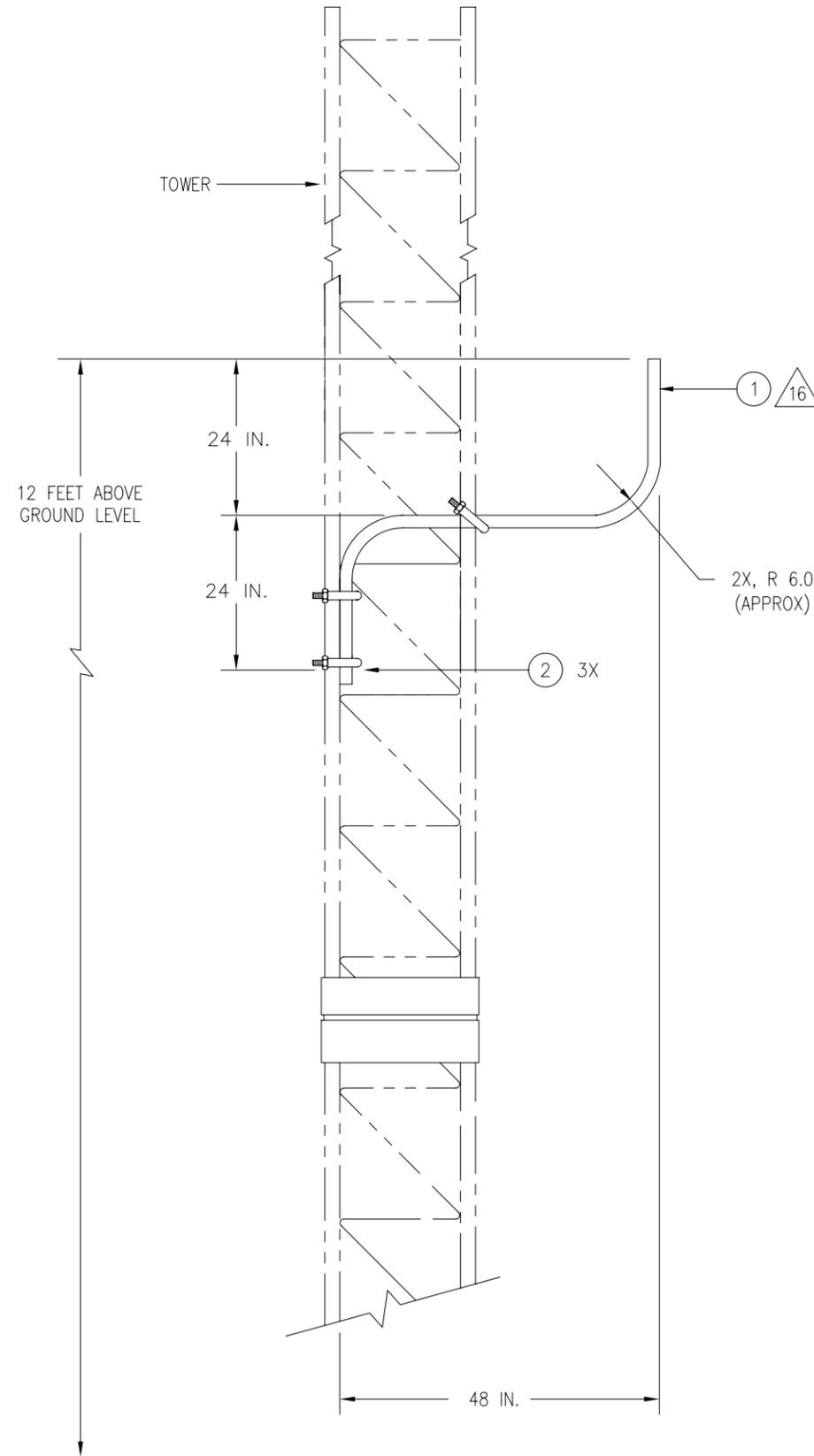
| | | | | |
|-------|------|---------|------------|--------------|
| SIZE | D | DWG NO. | 3000-A-007 | |
| SCALE | NONE | REV LTR | A | SHEET 5 OF 7 |

NOTES: UNLESS OTHERWISE SPECIFIED;

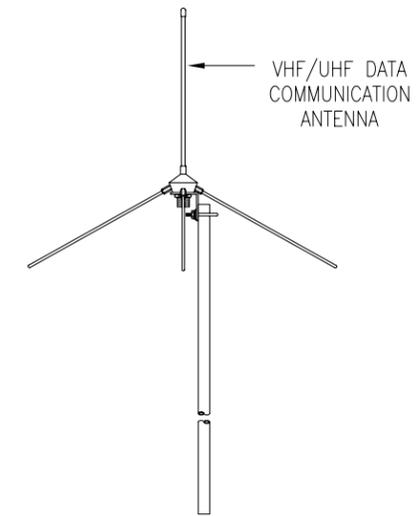
16 MOUNT ON THE SIDE OF THE TOWER NEAREST THE CENTRAL DATA PROCESSOR EQUIPMENT.

1 $\phi 3/4$ " CONDUIT (RIGID OR EMT). 1 REQUIRED.

2 U-BOLT $1/4$ " X $1 1/2$ " I.D. X $2 3/4$ " L. GERWIN 309 OR EQUIVALENT. 3 REQUIRED.



RADIO DATA LINK ANTENNA MAST



VHF/UHF ANTENNA MOUNTING

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| | | | | |
|-------|------|---------|------------|--------------|
| SIZE | D | DWG NO. | 3000-A-007 | |
| SCALE | NONE | REV LTR | A | SHEET 6 OF 7 |

| Material List | | |
|-----------------|--|---------------------------------|
| Quantity | Description | Part No. (or equiv.) |
| 30' | 3/4" rigid steel conduit (varies with location of power distribution box) | |
| 2 | 3/4" X 10' long copper clad ground rods (one used as lightning rod on 8509 Tower) | |
| 10' | #4/0 AWG copper grounding wire | |
| 5 cu. yds min | 3000 PSI concrete | |
| 0.2 cu. yds min | 1/2" to 1" crushed rock for drainage under tower, visibility, ceilometer, lightning sensor and freezing rain foundations | |
| 25 sq. ft. | 4X4 6/6 steel wire mesh (tower foundations) | |
| | | |
| | | |
| | | |
| | | |
| 1 | 46" Dia., 6' Long Ready-Form tube (8509 cylindrical foundation) | |
| | | |
| | | |
| 1 | 1-1/4" Dia. X 8' long PVC pipe (8509 cylindrical foundation) | |
| 3 | Conduit clamps for lightning rod (8509 Tower) | Appleton PC-100RA |
| 1 | Circuit breaker panel w/ 100A main breaker (if required), a 20A breaker and 2 (min.) 15A circuit breakers | |
| 1 | Main power disconnect box, if required by code | |
| as req. | Main power transformers | |
| as req. | Power cable, incoming | 120' ea. |
| 120' ea. | Power cable, intrasite | 12AWG THHN, Black, White, Green |
| as req. | Signal cable from tower to CDP and from CDP to Remote Display (at sites designated as "landline" as opposed to UHF radio data link, 4000 ft. max.) | |
| 25' | 3/16" polypropylene pull rope | |
| | | |
| | | |
| 1 | Device box, 5 holes min., 3/4" (power & signal distribution) | Appleton WST275 |
| 1 | Device box cover | Appleton WCB24 |
| 1 | GFCI duplex receptacle, 15A, 125V (ac power outlet) | Hubbell GF-5262 |
| 1 | GFCI duplex receptacle plate w/cover and gasket | Hubbell WPFS 26 |
| 4 | Conduit straps (attach conduit to foundations) | Appleton CF-750 |
| 8 | 1/4" expanding masonry bolts for conduit straps | |
| 3 | U-Bolt, 1/4" X 1-1/2" I.D. X 2-3/4" long (antenna mast) | Gerwin 309 |
| | | |
| | | |

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ASSEMBLING THE ANTENNA

- 1) Select antenna location and route cable from set to antenna.
- 2) Loosen mounting nut and assemble radials to hub as shown in illustration. Tighten jam nuts and lockwashers against hub to secure the radials. Retighten mounting nut.
- 3) Connect cable to antenna (accepts PL-259).

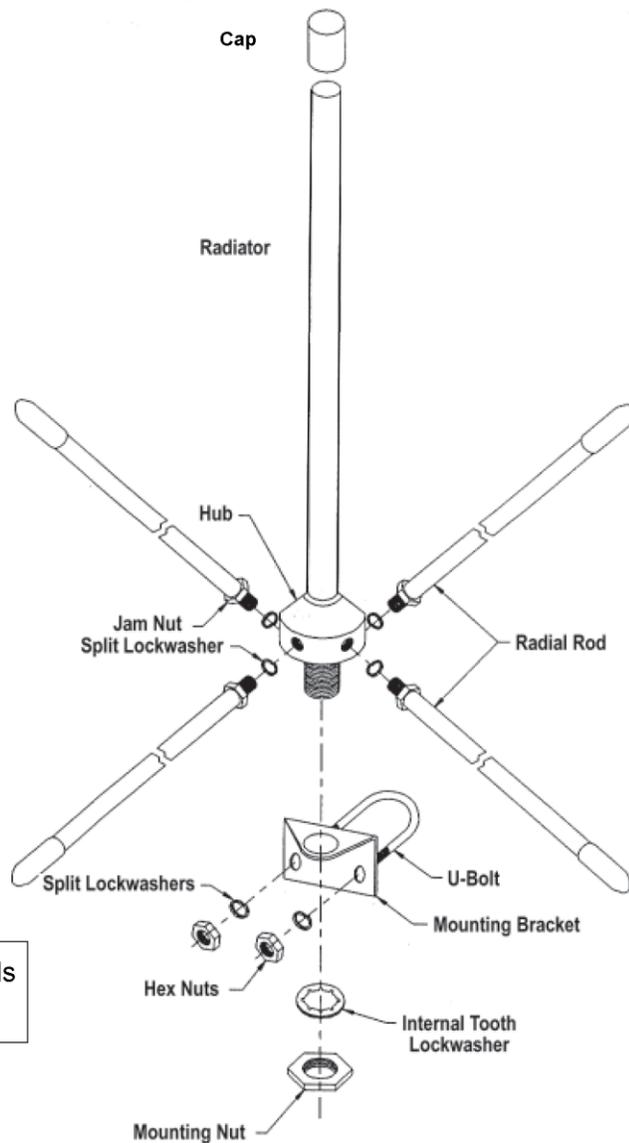
Some models are supplied with cable and connector for the antenna end. Radio end connector is not supplied.

- 4) Mount antenna onto 1/2"-3/4" pipe, or up to 1-3/8" O.D. tubing (not supplied) with U-bolt, lockwashers and hex nuts provided.

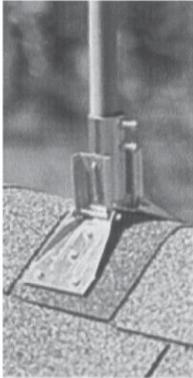
- 5) Secure cable to mounting pipe with straps or plastic tape to avoid strain on cable connections.

The use of a PTFE or similar lubricant on the threaded portions of the antenna prior to assembly will provide protection from weather and ease future disassembly.

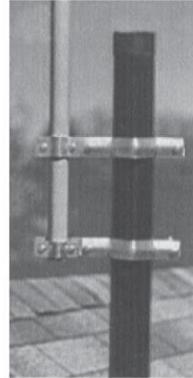
Note: VHF antenna radiators and radial rods are longer than their UHF counterparts.



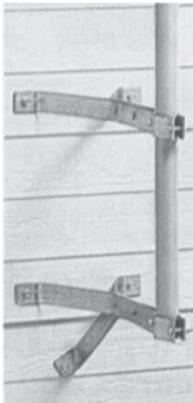
UHF/VHF ANTENNA ASSEMBLY



Base and Roof Mount.
Heavy-gauge steel swivel base fits the slope of most roofs. 1¼" mast locks into U-bolt.
Radio Shack P/N 15-889



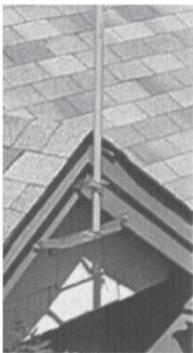
Vent Pipe Mount.
Brackets attach to 2" to 5" vent pipes (GC model fits 2" to 4" vents). 1¼" mast clamps into place.
Radio Shack P/N 15-893
GC Electronics P/N 8802



12" Wall Mounts.
Secures 1¼" mast 12" from side of building.
Radio Shack P/N 15-885
GC Electronics P/N 8312



4" Wall Mounts.
Secures 1¼" mast 4" from side of building.
Radio Shack P/N 15-883
GC Electronics P/N 8304



Eaves Mount.
Secures 1¼" mast to hanging rafters or trim boards; fits most medium-pitch roofs. Includes 4 lag bolts.
Radio Shack P/N 15-891



3' Tripod Mount.
Designed for larger antennas and areas subject to strong winds. Fits slope of most roofs. Fits 1¼" mast.
Radio Shack P/N 15-516
GC Electronics P/N 9160

Masts:

Use with 1¼" diameter 5' steel mast (Radio Shack P/N 15-842, GC Electronics P/N 32-9013) or 10' steel mast (Radio Shack P/N 15-843, GC Electronics P/N 32-9014).

Antenna Mast Options



Examples of Contractor-Made Antenna Masts and Mounting



allweatherinc
All Weather Inc.

1065 National Drive, Suite 1
Sacramento, CA 95818
Fax: 916.928.1165
Phone: 916.928.1000

Toll Free: 800.824.5873

3000-A-025
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