



Automated Weather Observing System

Elevated/Rooftop Site Preparation Manual

<input checked="" type="checkbox"/>	FAA APPROVED ECP231 — 2020 Mar 9
<input type="checkbox"/>	NOT FAA APPROVED

3000-R-025

Rev. D



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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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- **Online** support is available by filling out a request at www.allweatherinc.com/support/online-support/
- **E-mail** your support request to support@allweatherinc.com

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 siting requirements per FAA Order 6560.20
D	2020 Mar 9	Added 6498 Present Weather and Visibility Sensor installation details

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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 mounting the tower, sensor mounts, and electrical conduit.

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 III P/T/Z	PLATFORM	ELEVATED

All drawing references, unless otherwise noted, refer to the drawings at the back of this manual.

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 drawings are a guide for generic rooftop mounting of the AWOS sensors. Every rooftop installation is unique, and the rooftop site must meet the requirements of *FAA Order #6560.20, Appendix 1, Section 4*. Ideally, the sensors should each be separated by 10 ft, but if there is insufficient rooftop space, contact AWI for further assistance.

A site survey is highly recommended before a site is selected. In particular, the site needs to accommodate the needs of the following sensors.

- Model 2020 Vane and Model 2030 Anemometer — Large obstructions within 300 m of the sensor dictate the minimum height for the sensor. Refer to the *Model 2020 Micro Response Vane User's Manual* and to the *Model 2030 Micro Response Anemometer User's Manual* for more information.
- Model 2040 Ultrasonic Wind Sensor — Large obstructions within 300 m of the sensor dictate the minimum height for the sensor. Avoid locations that may be in the plane of a radar scanner, and do not place this sensor in the line of sight to a satellite radio transmitting antenna. The sensor should be at least 1 m away from VHF transmitters. Refer to the *Model 2040 Ultrasonic Wind Sensor User's Manual* for more information.
- Model 6498 Present Weather and Visibility Sensor — Locate the sensor as far as practical from strobe lights and other modulated light sources. Do not locate it in an area that is subject to localized obstructions to vision (e.g., smoke, dust, etc.). At the same time, it should not be so isolated that it cannot detect more widespread obstructions when they affect visibility in the area of concern. Refer to the *Model 6498 Present Weather and Visibility Sensor User's Manual* for more information.
- Model 6500 Thunderstorm/Lightning Detector — The antenna is sensitive to static charges, so care must be taken to ensure that the antenna and ground plane are as far removed as possible from composite materials (e.g., plastic materials or fiberglass), since these materials have a tendency to build up static charge. The sensor should be mounted as far as possible from devices that emit high levels of radio frequency interference (RFI) and electromagnetic interference (EMI), such as VHF and UHF radios, RF modems, fluorescent lamps, and ballasts, air conditioner and heater blowers, as well as any current-carrying cables. Refer to the *Model 6500 Thunderstorm/Lightning Detector User's Manual* for more information.

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, pedestals, conduits, and other physical preparations for the AWOS.

The customer has the additional responsibility for a rooftop installation to secure the services of a qualified civil engineer to verify the structural integrity of the building/rooftop to accommodate mounting the AWOS system. The civil engineer shall specify the additional materials, mounting bolts, and bracing needed for the specified AWOS system category to be installed beyond the basic materials identified in drawing 3000-R-007. Drawing 3000-R-007 also provides the weights of the AWOS components.

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

1.5 Coordination with Building Authorities

The Building Superintendent or designate will furnish the contractor with information relative to the facility. As available, this information will include equipment layout drawings, existing termination points for commercial power and communications systems, and plot plans delineating proposed construction. Specific manufacturer's data is included in this document.

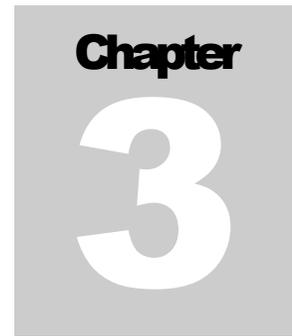
Coordination with the Building Superintendent or designate will address locations of power and communication termination for the site. Coordination with the Building Superintendent or designate should also include site access procedures and site contact information for use during site preparation and 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. Prepare the tower base, sensor pedestal poles, etc.
2. Install the 20 ft tower with obstruction lights.
3. If applicable, provide and install a data cable from the 20 ft tower to the central data processing computer.
4. Provide and install a 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.
5. Provide and install all grounding for the AWOS system.
6. Install and energize the tower lights (see the *Tower Lighting Installation* drawings).
7. Provide and install antenna masts.

The tower, obstructions lights, 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

Solar noon, a radio direction finder, a compass, or the North Star can be used to identify a North-South reference line.

A wind direction reference point must be established in one of the four cardinal directions to align the wind direction sensor. It is simplest to use True North as the reference, though at some installations this may not be feasible. The reference point should be established relative to the center of the AWOS tower. Any of the other three directions can be determined once True North has been established.

Once the location for the wind direction reference point has been established, place a North label or other marking at a suitable location, and note its distance and direction from the AWOS tower in the AWOS log book.

In addition to determining a wind direction benchmark, the barometric pressure sensor site elevation needs to be determined to the nearest foot by a qualified surveyor so that it can be factored into the altimeter calculations. Then just add the sensor rooftop elevation to the building baseline elevation.

4. Hardware Installation

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

It is very important to know what category of AWOS is being installed before starting. Refer to the following table to identify the relevant sensors and site preparation associated with the AWOS 3000 system category being installed.

AWOS SYSTEM CATEGORY	SENSORS	SITE PREPARATION
AWOS A	Dual Digital Barometer	Pedestals Tower Bottom Section
AWOS I	Dual Digital Barometer Wind (speed, direction, gusts) Temperature/Dewpoint	Pedestals Tower
AWOS II AWOS A-V	Dual Digital Barometer Wind (speed, direction, gusts) Temperature/Dewpoint Visibility	Pedestals Tower Visibility Sensor Pole
AWOS III	Dual Digital Barometer Wind (speed, direction, gusts) Temperature/Dewpoint Present Weather and Visibility Ceilometer	Pedestals Tower Present Weather and Visibility Sensor Pole
AWOS III P	Dual Digital Barometer Wind (speed, direction, gusts) Temperature/Dewpoint Present Weather and Visibility Ceilometer	Ceilometer Pole

AWOS SYSTEM CATEGORY	SENSORS	SITE PREPARATION
AWOS III T	Dual Digital Barometer Wind (speed, direction, gusts) Temperature/Dewpoint Visibility Ceilometer Thunderstorm/Lightning	Pedestals Tower Present Weather and Visibility Sensor Pole Ceilometer Pole Thunderstorm/Lightning Sensor Pole
AWOS III P/T	Dual Digital Barometer Wind (speed, direction, gusts) Temperature/Dewpoint Present Weather and Visibility Ceilometer Thunderstorm/Lightning	
AWOS III P/T/Z	Dual Digital Barometer Wind (speed, direction, gusts) Temperature/Dewpoint Present Weather and Visibility Ceilometer Thunderstorm/Lightning Freezing Rain	

4.1 Rooftop Mounting Kits

4.1.1 Twenty-Foot Tower

Refer to drawing M408527-00-010 for details on installing the rooftop tower base. Secure the mounting bolts to the rooftop structural supports.

The 20 ft tower height represents the minimum height for the wind sensors above the tallest point of the building. If any part of the building such as elevator housing extends above the rest of the rooftop, the tower height must be such that the wind sensors will be at least 20 ft above the tallest point of the building. See *FAA Order 6560.20B, Appendix 1 (Siting Criteria for AWOS Systems)*, for more information.

4.1.2 Sensor Pedestals

Refer to drawing M105619-00-012 for details on installing the rooftop sensor pedestals for the sensor poles. Secure the mounting bolts to the rooftop structural supports.

4.2 Conduits

All sensor locations will require signal, and power cables.

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). Place power conduits and attach junction boxes or 90° condulets at the sensor pedestals. The ends at the tower connect to the circuit breaker cabinet. The junction boxes or condulets at the sensor poles are supported by rigid conduit and straps attached to the pedestal. 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 poles.

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

4.3 Utility Services

4.3.1 Input Power

The contractor shall provide and install the required AC input power (see the *Power Requirements sheet* in drawing 3000-R-007) 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 rooftop locations 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.

Installation of the tower assumes completion of the rooftop tower base.

4.4.1 Tower Lights

The tower lights must be installed immediately after erection of the tower

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 for the radio mast, contact All Weather Inc. for further instructions. This antenna is usually mounted on the eaves of a building; however other mounting configurations are available (see the *Antenna Mast Options* drawing). The mast should be at least 5 ft in length. 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. This antenna 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.

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.



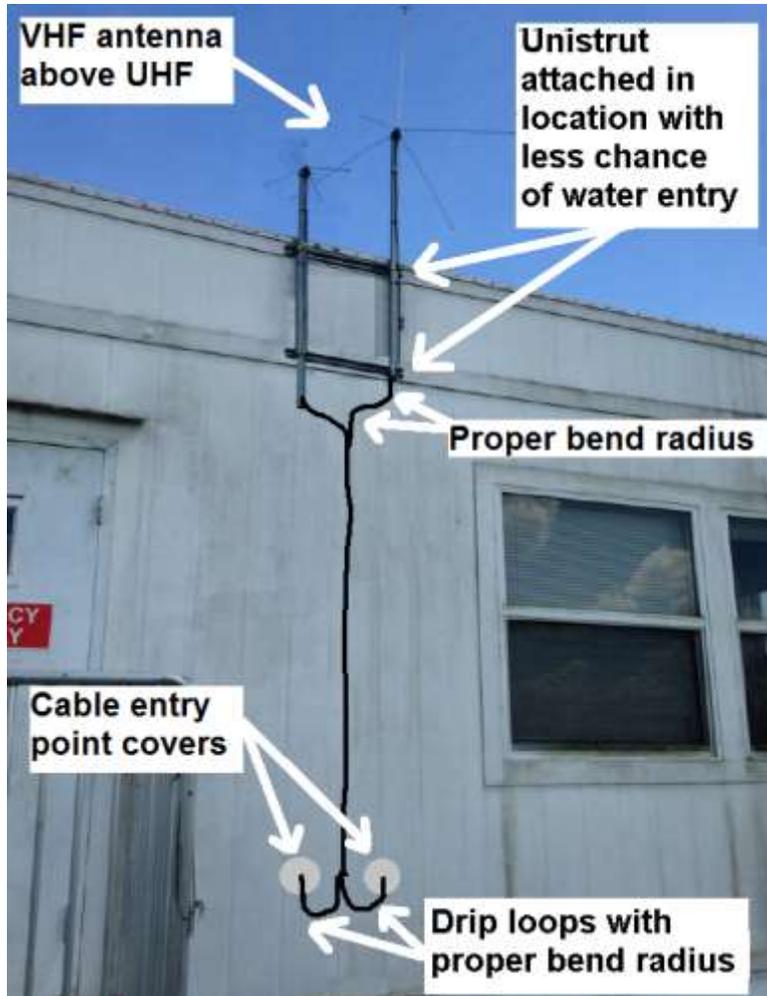
Secure the antenna cable to the mast every three feet with cable ties and route the cable to the indoor location of the radio.

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. 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 poles 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 the drawing corresponding to the AWOS system category being installed. In addition to these materials, the site preparation contractor shall also provide the additional materials and bracing specified by the qualified civil engineer retained to verify the structural integrity of the building/rooftop to accommodate mounting the AWOS system.



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

Antenna and antenna cables supplied by All Weather Inc.



10. Drawings

The following pages contain drawings detailing site preparation activities.

3000-R-007	Site Preparation Roof Mount/Elevated Platform
M408527-00-010	8509 Tower Flat Roof Mount Base
M105619-00-012	Sensor Foundation Pad Adapter
—	UHF/VHF Antenna Assembly

NOTES: UNLESS OTHERWISE SPECIFIED;

1 THIS DRAWING IS A GUIDE FOR GENERIC ROOFTOP MOUNTING OF THE AWOS SENSORS. EVERY ROOFTOP AWOS INSTALLATION IS UNIQUE. THE AWOS SITE SHOULD MEET THE CONDITIONS OF FAA ORDER #6560.20, APPENDIX 1, SECTION 4. TEN FOOT SEPARATION BETWEEN SENSORS IS A DESIGN GOAL. IF ROOFTOP AVAILABLE SPACE DOES NOT PERMIT 10 FOOT SEPARATION, OTHER SPACING MAY BE USED, CONTACT AWI.

2. IT IS THE RESPONSIBILITY OF THE CUSTOMER TO SECURE THE SERVICES OF A QUALIFIED CIVIL ENGINEER TO VERIFY THE STRUCTURE OF THE BUILDING/ ROOFTOP FOR MOUNTING THE AWOS SYSTEM.

3. WEIGHT OF AWOS COMPONENTS
- T995065 Tower Section, 2-10 Foot sections 140 pounds
 - M408527-00 Tower, Roof Mount 24
 - 2020 Wind Direction Sensor 2.5
 - 2030 Wind Speed Sensor 2.5
 - 2040 Ultrasonic Wind Sensor 4
 - 8190 Motor Aspirated Radiation Shield 10
 - 5190-D Temp/RH Sensor 1
 - 7190 Dual Barometric Pressure Sensor 2
 - 8339 Cloud Height Sensor 61
 - 6498 Present Weather and Visibility Sensor 40
 - 6500 Lightning Sensor 40
 - 6495 Freezing Rain Sensor 16
 - 1190 Data Collection Platform 20
 - 2020/2030 Crossarm 8
 - 6021-A Rain Gauge 8
 - Rain Gauge Cross 5
 - Obstruction Light 16
 - Present Weather and Visibility Sensor Pole 46
 - Lightning Sensor Pole 46
 - Cloud Height Sensor Pole 46
 - Freezing Rain Sensor Pole 46
 - M105619-00 Sensor Pole Mtg Base (4X) 204
 - Misc Cable and Mounting Hardware 80
 - TOTAL ESTIMATE 943 pounds

THE 8339 CLOUD HEIGHT SENSOR, 6500 LIGHTNING SENSOR, AND THE 6495 FREEZING RAIN SENSOR (NOT SHOWN) WILL BE MOUNTED SEPARATELY ON THEIR OWN POLE. ALL OTHER LISTED EQUIPMENT WILL BE MOUNTED ON THE TOWER.

Contact AWI for assistance in defining conduit routing and mounting for grounding, power, and data cables.

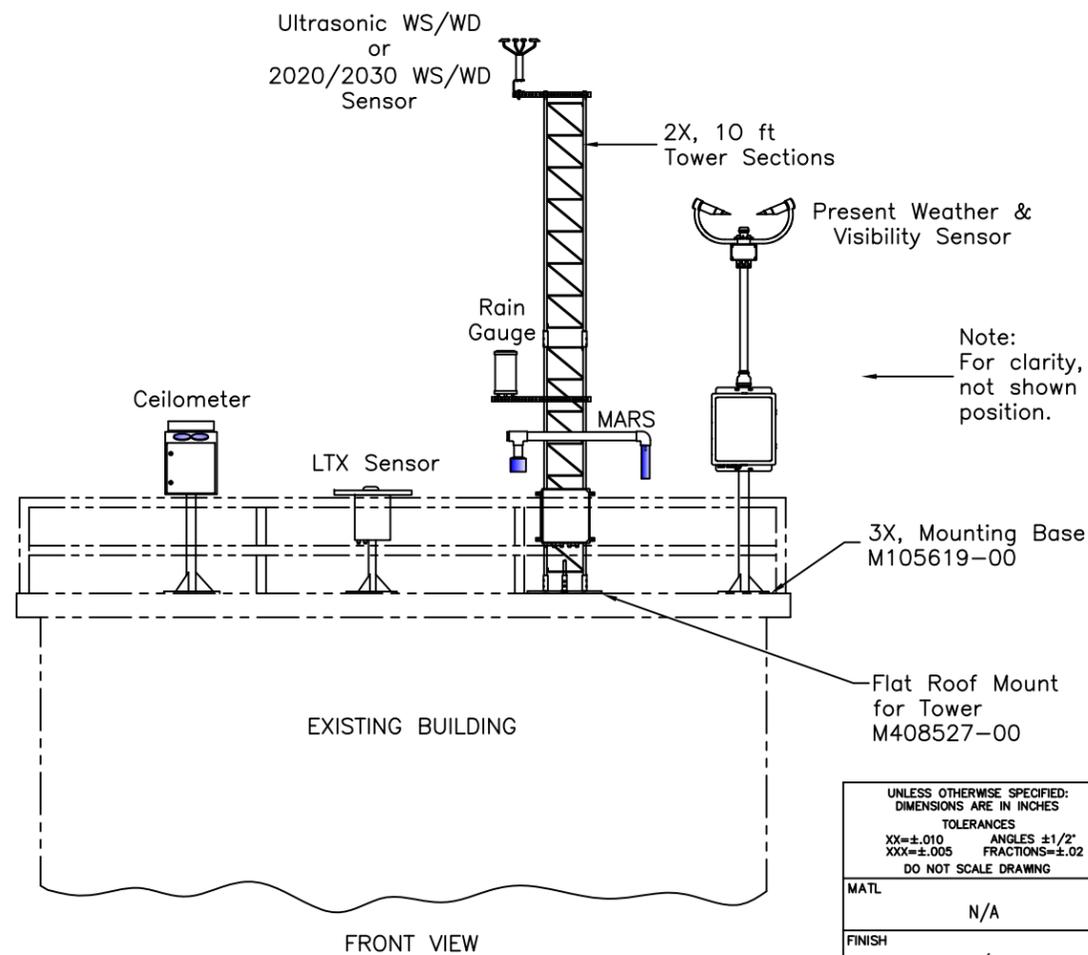
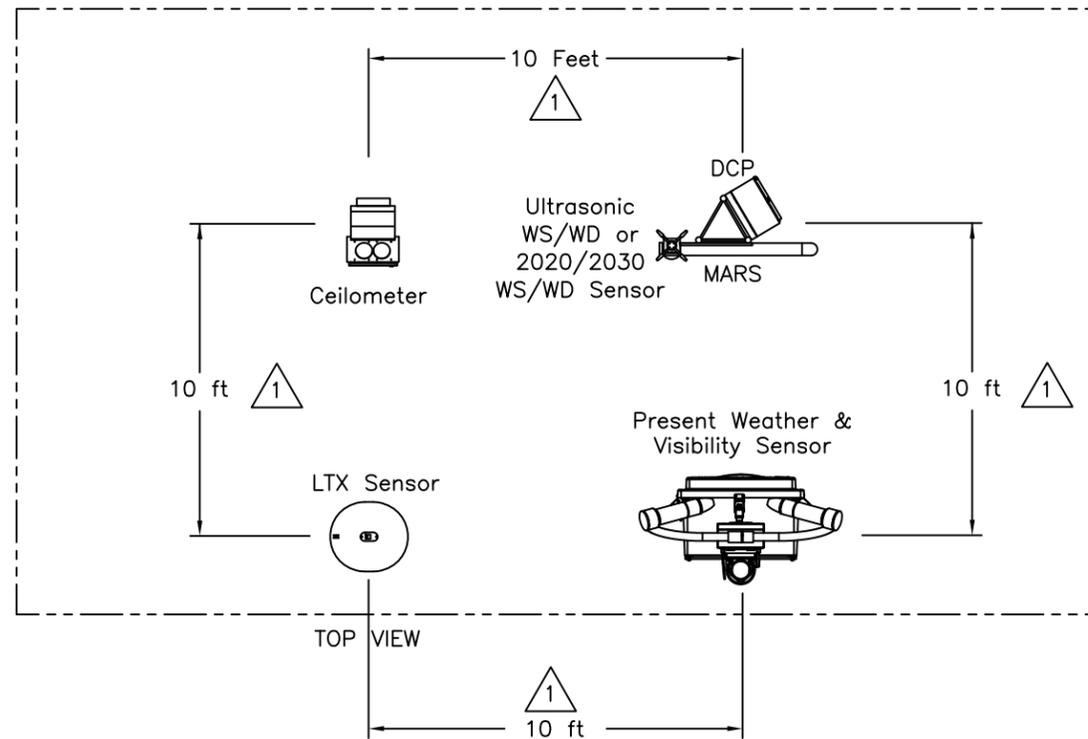
115 V AC 60 Hz 1 PH

SENSOR SITE		
LOCATION	LOAD	BREAKER SIZE
OBSTRUCTION LIGHTS (TOWER)	400 VA MAX.	15 A
DATA COLLECTION PLATFORM	500 VA MAX.	15 A
RAIN GAUGE (TOWER)	200 VA MAX.	15 A
GFCI DUPLEX OUTLET (TOWER)	500 VA MAX	15 A
PRESENT WEATHER AND VISIBILITY SENSOR	200 VA MAX.	15 A
CLOUD HEIGHT SENSOR	1000 VA MAX.	20 A
LIGHTNING SENSOR	200 VA MAX.	15 A
FREEZING RAIN SENSOR	400 VA MAX.	15 A
OTHER SENSORS, AS APPLICABLE	1000 VA MAX.	20 A EACH

CENTRAL DATA PROCESSOR		
CENTRAL DATA PROCESSING EQUIPMENT	LOAD	BREAKER SIZE
CENTRAL DATA PROCESSING EQUIPMENT	600 VA MAX.	15 A

POWER REQUIREMENTS

REVISIONS				DWG NO. 3000-R-007	
REV	ECO	DESCRIPTION	DATE	APPROVED	
A	1535	INITIAL RELEASE	07-01-10	BRG	
B	4629	CLARIFIED DUPLEX OUTLET TO BE GFCI	11-21-16	T. IWANOWSKI	
C	4410	REPLACED 8364 VISIBILITY SENSOR WITH 6498	02-06-18	T. IWANOWSKI	



Note:
For clarity, the sensors are not shown in their exact position.

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

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES XX=±.010 ANGLES ±1/2' XXX=±.005 FRACTIONS=±.02 DO NOT SCALE DRAWING	DRAWN BY: P KOOYMAN	3-5-08	TITLE AWOS SITE PREP DRAWING, ROOF MOUNT/ ELEVATED PLATFORM		
	REVISOR BY: T. IWANOWSKI	02-06-18			
	MATL N/A	CHECKED BY: J CONNER	3-5-08	SIZE D	DWG NO. 3000-R-007
	FINISH N/A	DESIGN ENGINEER: J CONNER	3-5-08		
TREATMENT	PROJECT MANAGER: B PERRIN	3-5-08	SCALE NONE	RELEASE DATE	
APPROVALS	DATE	SHEET 1 OF 7			

Material List for 3000-A		
Quantity	Description	Part No. (or equiv.)
10'	#4/0 AWG copper grounding wire	
1	Circuit breaker panel w/ 100A main breaker (if required), a 20 A breaker and 2 (min.) 15 A 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, 15 A, 125 V (AC power outlet)	Hubbell GF-5262
1	GFCI duplex receptacle plate w/cover and gasket	Hubbell WPFS 26
3	U-Bolt, 1/4" X 1-1/2" I.D. X 2-3/4" long (antenna mast)	Gerwin 309

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Material List for 3000-2		
Quantity	Description	Part No. (or equiv.)
20'	#4/0 AWG copper grounding wire	
1	Circuit breaker panel w/ 100A main breaker (if required), a 20 A breaker and 5 (min.) 15 A 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	
2	Conduit outlet bodies, 2 holes, 3/4" (Present Weather & Visibility sensor power & signal)	Appleton C75-M
2	Conduit outlet body covers	Appleton K75-M
2	Conduit outlet body rubber gaskets	Appleton GK75-N
2	Device box, 5 holes min., 3/4" (power & signal distribution)	Appleton WST275
2	Device box cover	Appleton WCB24
1	GFCI duplex receptacle, 15 A, 125 V (AC power outlet)	Hubbell GF-5262
1	GFCI duplex receptacle plate w/cover and gasket	Hubbell WPFS 26
3	U-Bolt, 1/4" X 1-1/2" I.D. X 2-3/4" long (antenna mast)	Gerwin 309

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Material List for 3000-3		
Quantity	Description	Part No. (or equiv.)
30'	#4/0 AWG copper grounding wire	
1	Circuit breaker panel w/ 100A main breaker (if required), a 20A breaker and 6 (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	
4	Conduit outlet bodies, 2 holes, 3/4" (Present Weather & Visibility sensor Ceilometer, power & signal)	Appleton C75-M
4	Conduit outlet body covers	Appleton K75-M
4	Conduit outlet body rubber gaskets	Appleton GK75-N
2	Device box, 5 holes min., 3/4" (power & signal distribution)	Appleton WST275
2	Device box cover	Appleton WCB24
1	GFCI duplex receptacle, 15 A, 125 V (AC power outlet)	Hubbell GF-5262
1	GFCI duplex receptacle plate w/cover and gasket	Hubbell WPFS 26
3	U-Bolt, 1/4" X 1-1/2" I.D. X 2-3/4" long (antenna mast)	Gerwin 309

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Material List for 3000-T		
Quantity	Description	Part No. (or equiv.)
40'	#4/0 AWG copper grounding wire	
1	Circuit breaker panel w/ 100A main breaker (if required), a 20A breaker and 7 (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	
6	Conduit outlet bodies, 2 holes, 3/4" (Present Weather & Visibility sensor Ceilometer, Lightning sensor, power & signal)	Appleton C75-M
6	Conduit outlet body covers	Appleton K75-M
6	Conduit outlet body rubber gaskets	Appleton GK75-N
2	Device box, 5 holes min., 3/4" (power & signal distribution)	Appleton WST275
2	Device box cover	Appleton WCB24
1	GFCI duplex receptacle, 15 A, 125 V (AC power outlet)	Hubbell GF-5262
1	GFCI duplex receptacle plate w/cover and gasket	Hubbell WPFS 26
3	U-Bolt, 1/4" X 1-1/2" I.D. X 2-3/4" long (antenna mast)	Gerwin 309

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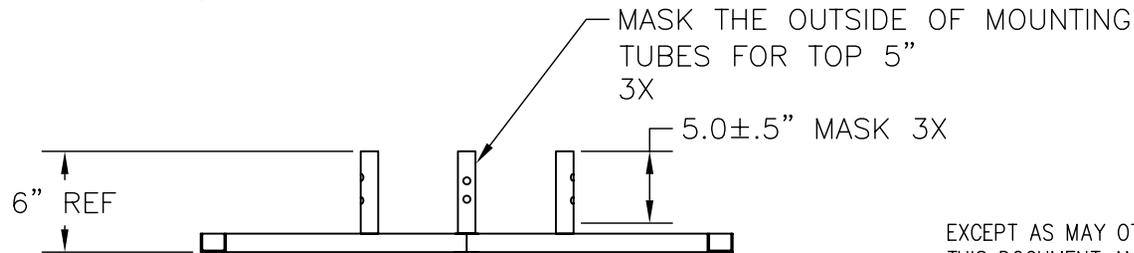
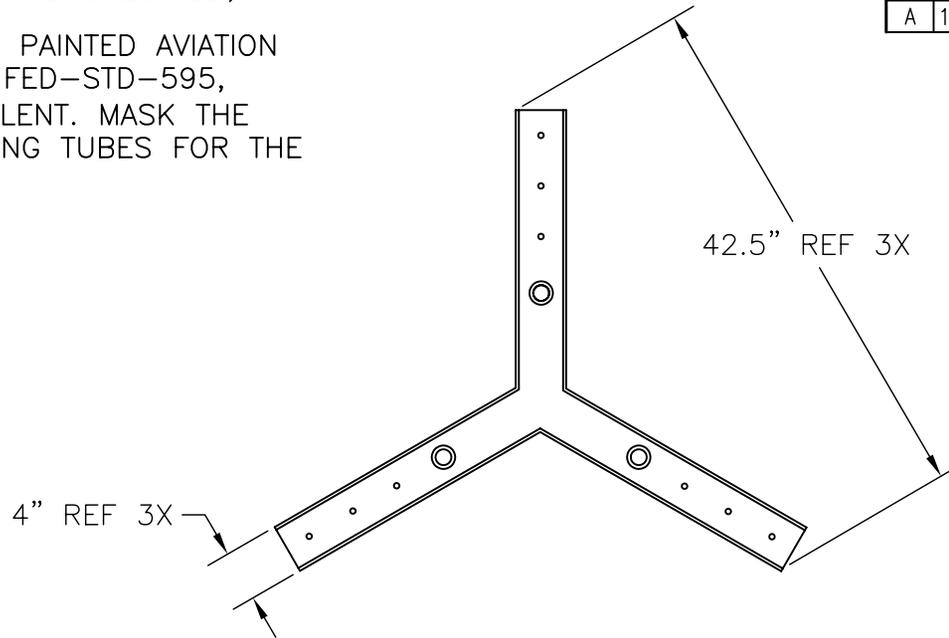
Material List for 3000-Z		
Quantity	Description	Part No. (or equiv.)
50'	#4/0 AWG copper grounding wire	
1	Circuit breaker panel w/ 100A main breaker (if required), a 20A breaker and 8 (min.) 15A circuit breakers	
1	Main power disconnect box, if required by code	
as req.	Main power transformers	
as req.	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	
8	Conduit outlet bodies, 2 holes, 3/4" (Present Weather & Visibility sensor Ceilometer, Lightning sensor, Freezing Rain sensor, power & signal)	Appleton C75-M
8	Conduit outlet body covers	Appleton K75-M
8	Conduit outlet body rubber gaskets	Appleton GK75-N
2	Device box, 5 holes min., 3/4" (power & signal distribution)	Appleton WST275
2	Device box cover	Appleton WCB24
1	GFCI duplex receptacle, 15 A, 125 V (AC power outlet)	Hubbell GF-5262
1	GFCI duplex receptacle plate w/cover and gasket	Hubbell WPFS 26
3	U-Bolt, 1/4" X 1-1/2" I.D. X 2-3/4" long (antenna mast)	Gerwin 309

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NOTES: UNLESS OTHERWISE SPECIFIED;

1. TOWER BASE TO BE PAINTED AVIATION WHITE, COLOR PER FED-STD-595, #17875, OR EQUIVALENT. MASK THE OUTSIDE OF MOUNTING TUBES FOR THE TOP 5", 3X.

REVISIONS			M408527-00-010	
REV	ECN	DESCRIPTION	DATE	APPROVED
A	1635	INITIAL RELEASE	8-9-08	J.CONNER



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APPEND THE FOLLOWING DOCUMENTS WHEN CHANGING THIS DOCUMENT:	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES	DRAWN BY:	J.CONNER	9-9-08	TITLE	SPECIFICATION DRAWING MOUNT, FLAT ROOF, 8509 TOWER			
	TOLERANCES XX=±.010 ANGLES ±1/2' XXX=±.005 CONCENTRICITY: .003 TIR DO NOT SCALE DRAWING	REVISED BY:							
	MATL	SEE BILL OF MATERIALS	CHECKED BY:	J CONNER	9-9-08	SIZE	DWG NO.	B	M408527-00-010
	FINISH	AS ISSUED	DESIGN ENGINEER:	J CONNER	9-9-08				
TREATMENT		PROJECT MANAGER:	W MARSH	8-9-08	SCALE	NONE	RELEASE DATE	SHEET	1 OF 1
		APPROVALS		DATE					

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).

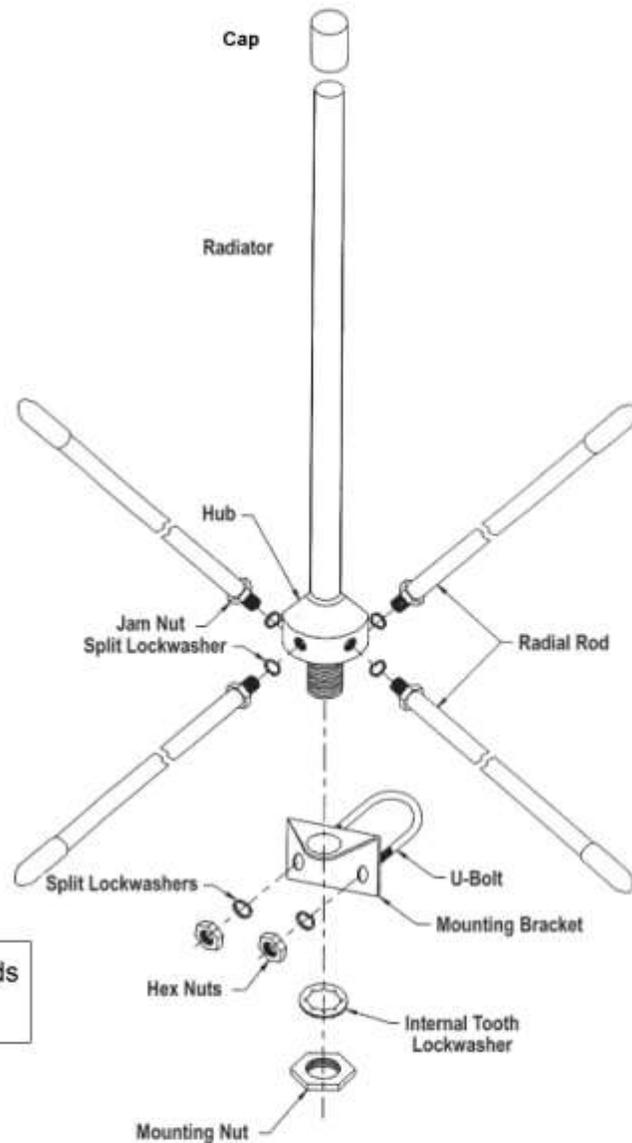
Some models are supplied with cable and connector for the antenna end. Radio end connector is not supplied.

- 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.



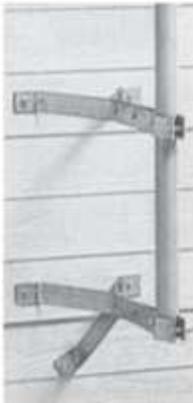
UHF/VHF ANTENNA ASSEMBLY



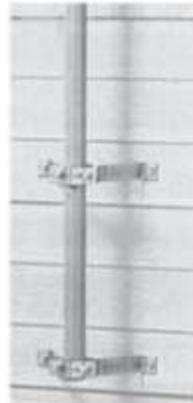
Base and Roof Mount.
Heavy-gauge steel swivel base fits the slope of most roofs. 1¼" mast locks into U-bolt.
Radio Shack P/N 15-889



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

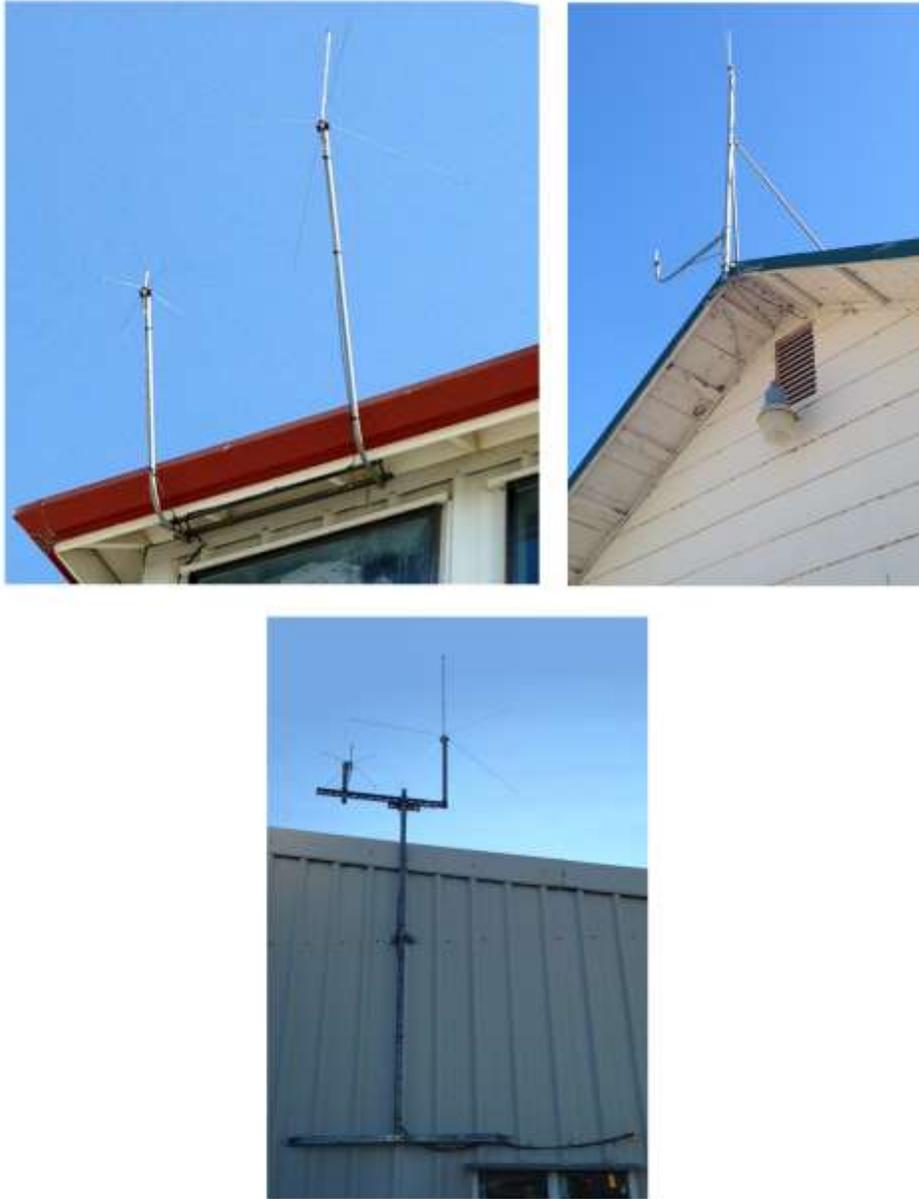


3' Tripod Mount.
Designed for larger antennas and areas subject to strong winds. Fits slope of most roofs. Fits 1¼" mast.
Radio Shack P/N 15-516
GC Electronics P/N 9160

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



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-R-025
Revision D
March, 2020