



Model 8509

30 ft AWOS Stacking Tower

A.0 Disclaimer / Standard Warranty

CE certification

The equipment listed as CE certified means that the product complies with the essential requirements concerning safety and hygiene. The European directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

ETL certification

The equipment listed as ETL certified means that the product complies with the essential requirements concerning safety and C22.2 No.180:13 (R2018) regulations. The CSA directives that have been taken into consideration in the design are available on written request to ADB SAFEGATE.

All Products Guarantee

ADB SAFEGATE will correct by repair or replacement per the applicable guarantee below, at its option, equipment or parts which fail because of mechanical, electrical or physical defects, provided that the goods have been properly handled and stored prior to installation, properly installed and properly operated after installation, and provided further that Buyer gives ADB SAFEGATE written notice of such defects after delivery of the goods to Buyer. Refer to the Safety section for more information on Material Handling Precautions and Storage precautions that must be followed.

ADB SAFEGATE reserves the right to examine goods upon which a claim is made. Said goods must be presented in the same condition as when the defect therein was discovered. ADB SAFEGATE further reserves the right to require the return of such goods to establish any claim.

ADB SAFEGATE's obligation under this guarantee is limited to making repair or replacement within a reasonable time after receipt of such written notice and does not include any other costs such as the cost of removal of defective part, installation of repaired product, labor or consequential damages of any kind, the exclusive remedy being to require such new parts to be furnished.

ADB SAFEGATE's liability under no circumstances will exceed the contract price of goods claimed to be defective. Any returns under this guarantee are to be on a transportation charges prepaid basis. For products not manufactured by, but sold by ADB SAFEGATE, warranty is limited to that extended by the original manufacturer. This is ADB SAFEGATE's sole guarantee and warranty with respect to the goods; there are no express warranties or warranties of fitness for any particular purpose or any implied warranties of fitness for any particular purpose or any implied warranties other than those made expressly herein. All such warranties being expressly disclaimed.

Standard Products Guarantee

Products manufactured by ADB SAFEGATE are guaranteed against mechanical, electrical, and physical defects (excluding lamps) which may occur during proper and normal use for a period of two years from the date of ex-works delivery, and are guaranteed to be merchantable and fit for the ordinary purposes for which such products are made.

NOTE



See your applicable sales agreement for a complete warranty description.

Replaced or repaired equipment under warranty falls into the warranty of the original delivery. No new warranty period is started for these replaced or repaired products.

FAA Certified products manufactured by ADB SAFEGATE

ADB SAFEGATE L858 Airfield Guidance Signs are warranted against mechanical and physical defects in design or manufacture for a period of 2 years from date of installation, per FAA AC 150/5345-44 (applicable edition).

ADB SAFEGATE LED products (with the exception of obstruction lighting) are warranted against electrical defects in design or manufacture of the LED or LED specific circuitry for a period of 4 years from date of installation, per FAA EB67 (applicable edition). These FAA certified constant current (series) powered LED products must be installed, interfaced and powered with and through products certified under the FAA Airfield Lighting Equipment Program (ALECP) to be included in this 4 (four) year warranty. This includes, but is not limited to, interface with products such as Base Cans, Isolation Transformers, Connectors, Wiring, and Constant Current Regulators.

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1. Overview

The Model 8509 30 ft Stacked Tower is constructed of hot-dip galvanized post-fabrication steel tubing in an equilateral triangular pattern. The cross bracing is a zigzag design of continuous, solid steel rods.

The tower consists of three 10-foot sections and a footing section for mounting in a concrete foundation. The tower sections are completely hot dip galvanized after fabrication to give permanent protection against corrosion. Since galvanization is the last step in the process, all welding points and other points of construction are fully covered with molten zinc, which tends to seal itself should there ever be any breakage on the surface.

The Model 8509 is engineered to withstand winds with a safety factor of 1.5. Table 1 shows the maximum area of attached equipment allowed at 30 ft above the ground under specific wind conditions.

This tower complies with EIA standards.

Design Wind	Maximum Area
70 mph	10.0 ft ² (0.9 m ²)
85 mph	5 ft ² (0.45 m ²)
100 mph	2 ft ² (0.19 m ²)
110 mph	1 ft ² (0.09 m ²)

Table 1. Allowable Equipment Area

1.1 Models

Two Model 8509 Stacked Tower models are available based on their capability to withstand strong winds.

Model	Maximum Design Wind Resistance
8509	90 mph (140 km/h)
8509-A	140 mph (220 km/h)

1.2 Optional Guying Kits

Guying kits are available from ADB Safegate to increase the load rating.

1.3 Accessories

The following accessories are offered for use with the Model 8509 series of Stacked Towers.

Part Number	Description
M488276-00	Dual 120 V LED Obstruction Light Kit
M488150	Tower Grounding Rod Kit

2. Installation

2.1 Foundation

The Model 8509 series of towers 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 described below for each model.

The tower should be installed according to local building codes. When used in an AWOS system, install the tower according to the AWOS Site Preparation Manual specific to your AWOS system. Standard foundation designs must be in accordance with ANSI/TIA-222-G, "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures," Section 9 and Annex F for the following presumptive clay soil parameters.

N	Φ	Y	C	Ultimate Bearing		Ultimate Skin Friction	k	E50
				Shallow Ends	Deep Ends			
8 blows/ft 26 blows/m	0°	110 lb/ft ³ 17 kN/m ³	1000 lb/ft ² 48 kPa	5000 lb/ft ² 240 kPa	9000 lb/ft ² 431 kPa	500 lb/ft ² 24 kPa	150 lb/in ³ 41,000 kN/m ³	0.01

Actual site soil parameters must be verified to meet or exceed ANSI/TIA-222-G presumptive clay soil design parameters. The depth of standard foundations must be adequate based on frost penetration and/or seasonal moisture variation zones at the site. Foundation design modifications may be required if the presumptive clay soil parameters are not applicable for the actual subsurface conditions encountered.

All foundation work must be in accordance with local codes, safety regulations, and (unless otherwise allowed) the latest revision of ACI 318, "Building Code Requirements for Reinforced Concrete." Procedures for the protection of excavations, existing construction, and utilities must be established before installing any foundations.

2.1.1 Model 8509 Tower

Figure 1 provides the details for the Model 8509 Stacked Tower foundation. There are round and square foundation options — either one may be used.

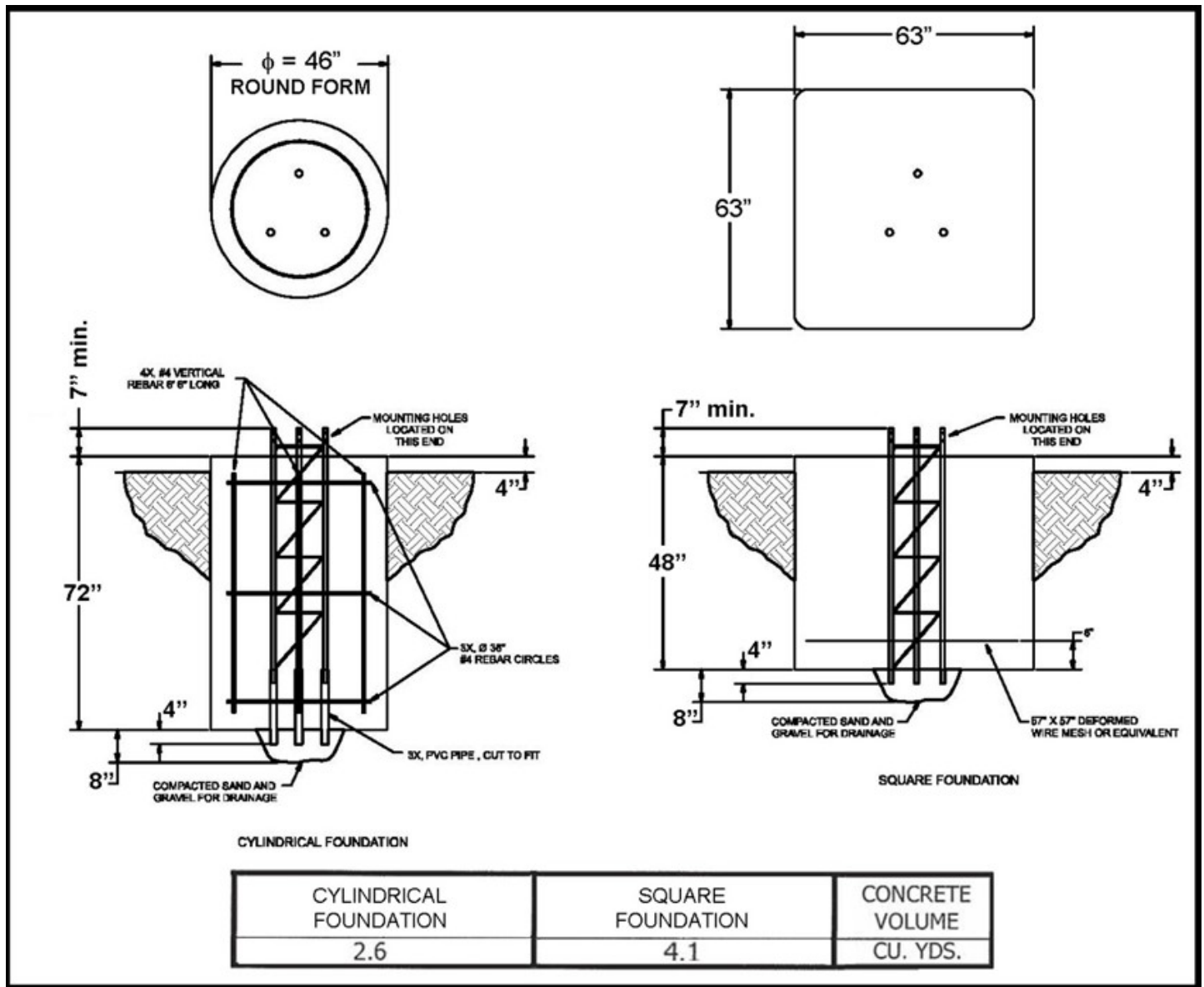


Figure 1. Model 8509 Stacked Tower Foundation

The base of the footing section should extend four inches below the concrete into compacted sand and gravel to allow for drainage.

2.1.2 Model 8509-A Tower

Figure 2 provides the details for the Model 8509-A Stacked Tower foundation. Only the square foundation should be used for this model.

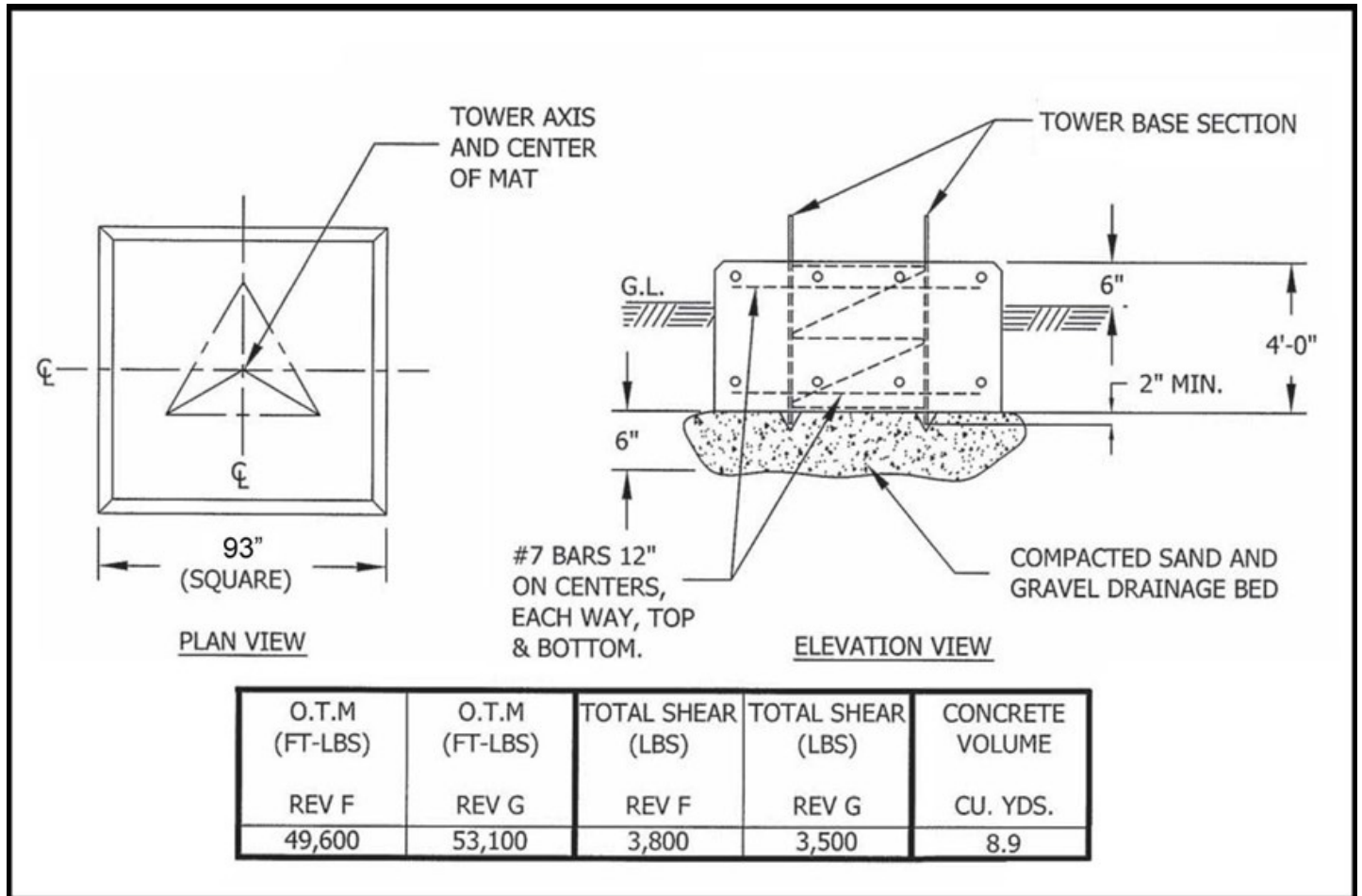


Figure 2. Model 8509-A Stacked Tower Foundation

The base of the footing section should extend four inches below the concrete into compacted sand and gravel to allow for drainage.

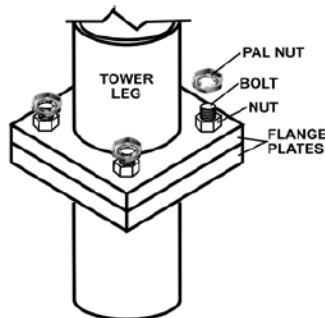
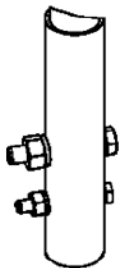
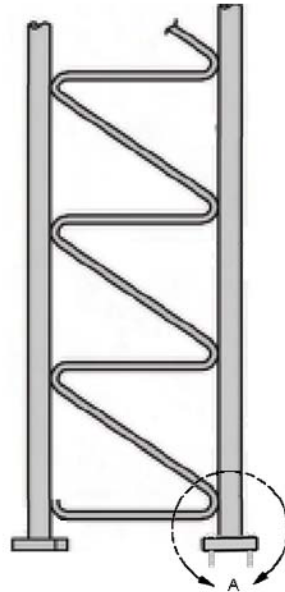
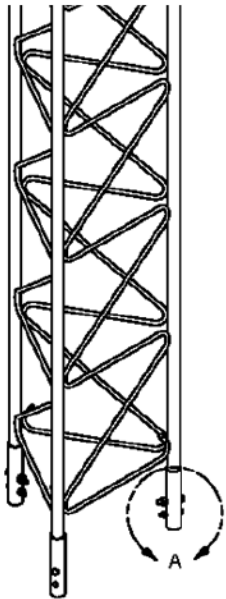
2.2 Tower Assembly

The tower may be erected using the supplied hardware once the base foundation has set.



NOTE

Always use a climbing belt when climbing the AWOS tower.



Model 8509 Tower

Model 8509-A Tower

Figure 3. Tower Assembly Details



NOTE

When pal nuts are provided, with the Model 8509-A Stacking Tower, they are to be installed after the remaining nuts are tight and with their edge lip out as shown. Pal nuts are not required when self-locking nuts or lock washers are provided.

All bolts must be tightened to a “snug tight condition” as defined in the June 23, 2000, AISC Specification for Structural Joints Using ASTM325 or A490 Bolts.

ADB Safegate recommends that the tower sections be assembled on the ground (see Figure 3, then lifted in place and connected to the base as shown in Figure 3. A crane, winches, or other heavy equipment will likely be needed, especially for the Model 8509-A tower.



NOTE

Obstruction lights must be in place and operational before dusk the day the tower is erected.

2.3 Tower Obstruction Lights

Figure 4 shows the details to install tower lights onto the Model 8509 series of towers.

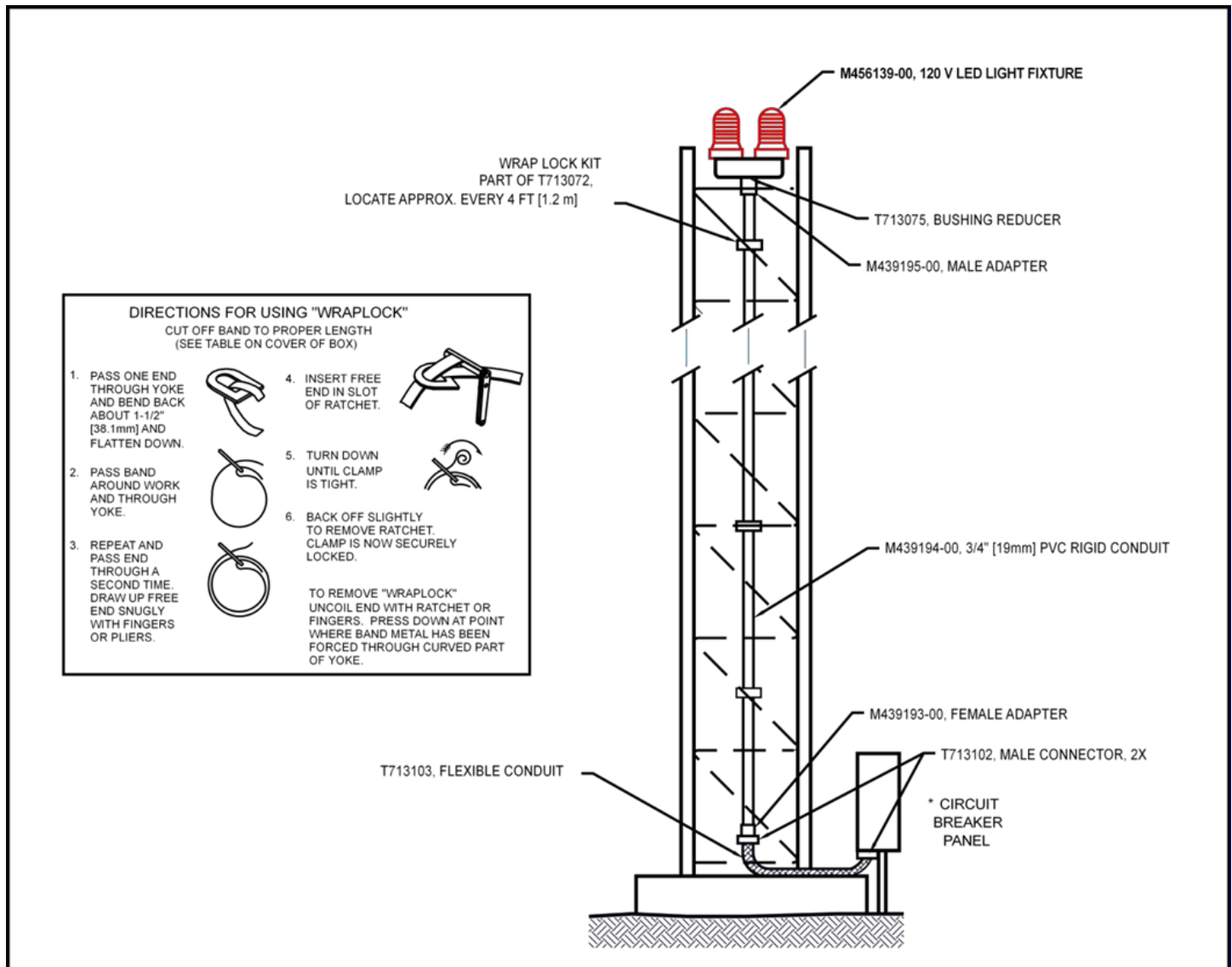


Figure 4. Installation of Obstruction Lights

These steps explain how to install the obstruction lights and conduit.

1. Mount the obstruction lights at the top of the tower.
2. Cut the M439194-00 conduit to the length required to fit the installation.
3. Secure this conduit on the inside of the tower frame to allow other equipment to be mounted on the outside of the tower faces. Use the wrap lock kit to secure the conduit to the tower braces approximately every meter (every 3 to 4 ft). You may prefer to use Steel City RC34HDG beam clamps instead.
4. Cut the T713103 flexible conduit at the base of tower to the length required to connect it to the customer-supplied circuit breaker panel.
5. Attach the male and female conduit adapters near the top and base of the tower using PVC cement.
6. Route wire through the conduit from the circuit breaker panel to wire the obstruction lights in parallel. The obstruction lights should be on a dedicated circuit.

2.4 Lightning Rod

A customer-supplied 10 ft (3 m) lightning rod must be installed onto the tower. Refer to Figure 5.

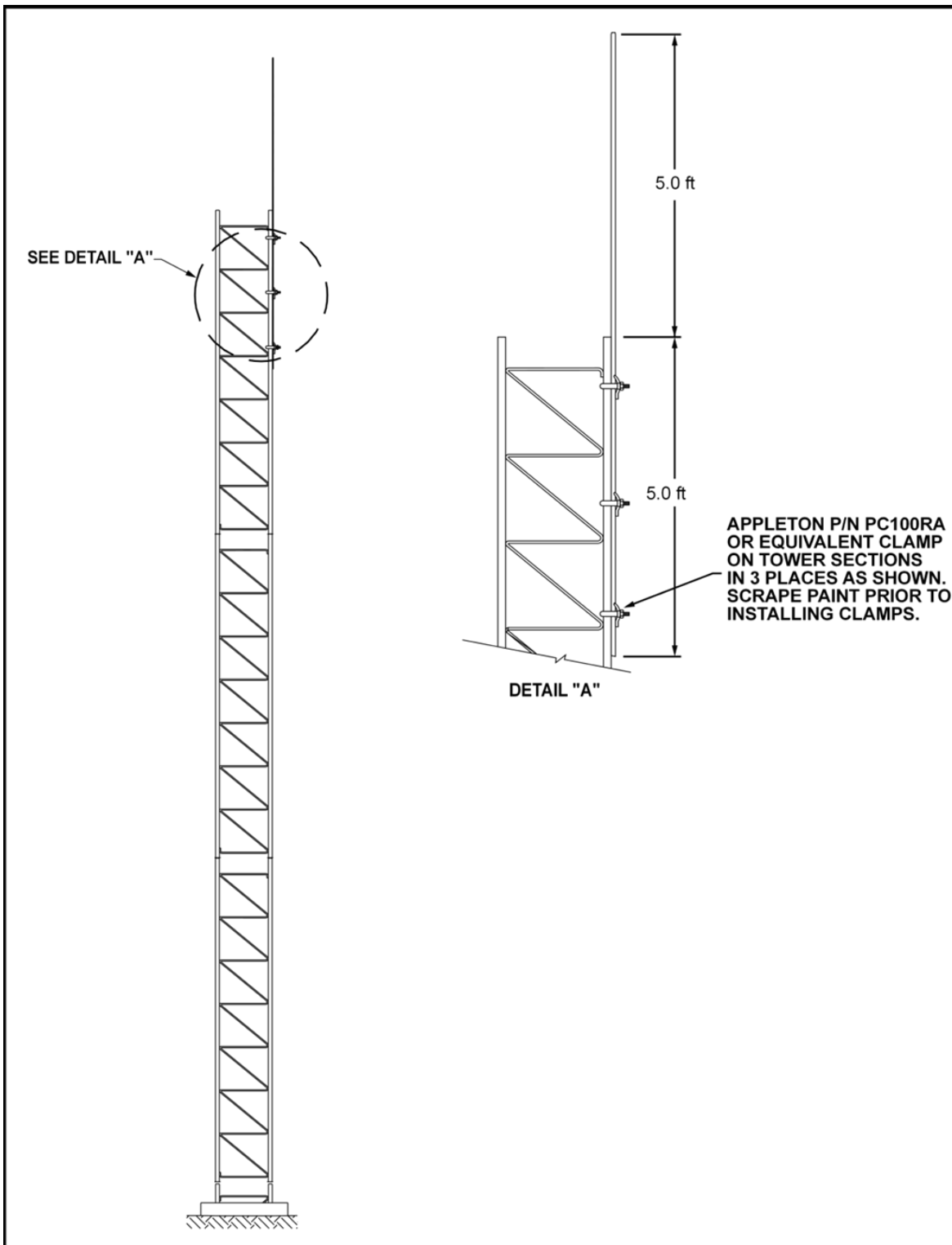


Figure 5. Lightning Rod Installation



NOTE

Standoffs may be needed when mounting the lightning rod on the Model 8509-A tower to allow the lightning rod to clear the flange at the top of the tower.

2.5 Ground Rod

The tower and lightning rod must be grounded as shown in Figure 6.

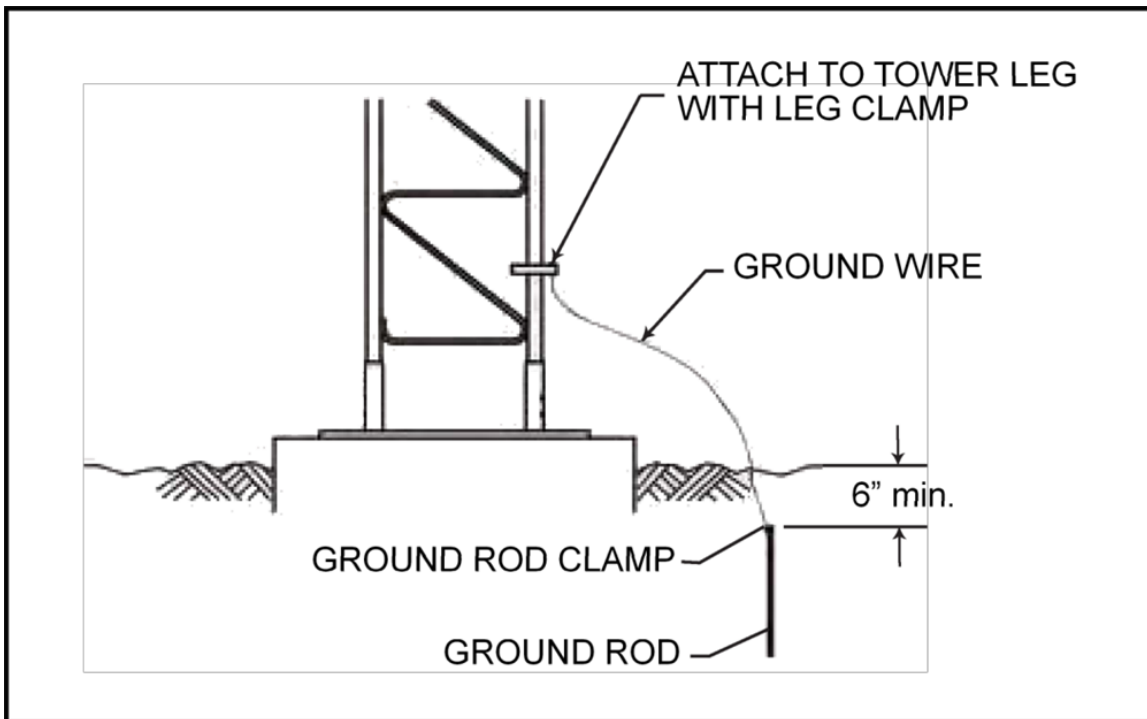


Figure 6. Tower Ground Rod and Grounding

1. You will have to scrape the paint off the tower leg where the leg clamp will be attached.
2. Sink the ground rod firmly into the ground, and then connect the ground wire.

Check for ground continuity once the ground wire is connected. Additional ground rods may be needed for proper grounding. Local building codes may also require specific grounding beyond the minimum requirements described in this section.

Customer requirements may also stipulate that the ground wire be connected directly to the lightning rod. In this case, route the ground wire from the lightning rod down a tower leg, and secure the wire to the tower leg with ultraviolet-resistant cable ties at least every meter (every 3 to 4 ft).

3. Maintenance

The only maintenance required is replacing the tower obstruction light bulbs. Both bulbs should be replaced after one bulb fails.

3.1 Monthly Maintenance

Monthly maintenance consists of verifying visually that the tower obstruction lights are in working order. Replace both bulbs if either bulb fails.

3.2 Triannual Maintenance

Triannual maintenance consists of verifying visually that the tower obstruction lights are in working order. Replace both bulbs if either bulb fails.

3.3 Annual Maintenance

Annual maintenance consists of verifying visually that the tower obstruction lights are in working order. Replace both bulbs if either bulb fails.

4. Specifications

Parameter	Specification	
	8509	8509-A
Tower Height	30 ft (9.1 m)	30 ft (9.1 m)
Material	Steel Tubing	Steel Tubing
Design Wind Load (no ice)*	90 mph (140 km/h)	140 mph (220 km/h)
Section Length	10.4 ft (3.17 m)	10 ft (3.05 m)
Section Weight	70 lb (32 kg)	175 lb (80 kg)
Tower Weight	245 lb (111 kg)	610 lb (277 kg)
Shipping Weight	570 lb (260 kg)	1400 lb (635 kg)
Concrete Base Width	63" (1.6 m) square 46" (1.2 m) round	93" (2.4 m) square
Concrete Base Depth	48" (1.2 m) square 72" (1.8 m) round	48" (1.2 m) square

* Based on obstruction lights, lightning rod, Model 2040 Ultrasonic Wind Sensor, UHF antenna, Model 6490 Present Weather Sensor, Model 6021 Rain Gauge, Model 5190 Temperature/Relative Humidity Probe in Model 8190 MARS shield, and Model 1190 DCP being attached with associated cables to tower in standard locations.

5. Warranty

Unless specified otherwise, ADB Safegate (the Company) warrants its products to be free from defects in material and workmanship under normal use and service for one year from date of installation or a maximum of two years from date of shipment, subject to the following conditions:

- a. The obligation of the Company under this warranty is limited to repairing or replacing items or parts which have been returned to the Company and which upon examination are disclosed, to the Company's satisfaction, to have been defective in material or workmanship at time of manufacture.
- b. The claimant shall pay the cost of shipping any part or instrument to the Company. If the Company determines the part to be defective in material or workmanship, the Company shall prepay the cost of shipping the repaired instrument to the claimant. Under no circumstances will the Company reimburse claimant for cost incurred in removing and/or reinstalling replacement parts.
- c. This warranty shall not apply to any Company products which have been subjected to misuse, negligence or accident.
- d. This warranty and the Company's obligation thereunder is in lieu of all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, consequential damages and all other obligations or liabilities.

No other person or organization is authorized to give any other warranty or to assume any additional obligation on the Company's behalf, unless made in writing and signed by an authorized officer of the Company.

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