

Installation Guide (Typical) For Micro-Comm Radio Telemetry And Control Systems

Project:_____

Location:_____

Micro-Comm Project Manager:_____

NOTE: This Installation Guide is intended to be a **Typical Installation reference** and may not include all details required for installing Micro-Comm Equipment. If a specific detail or requirement is not covered in this guide, contact your Micro-Comm Project Manager.

Last Modified: September 12, 2011

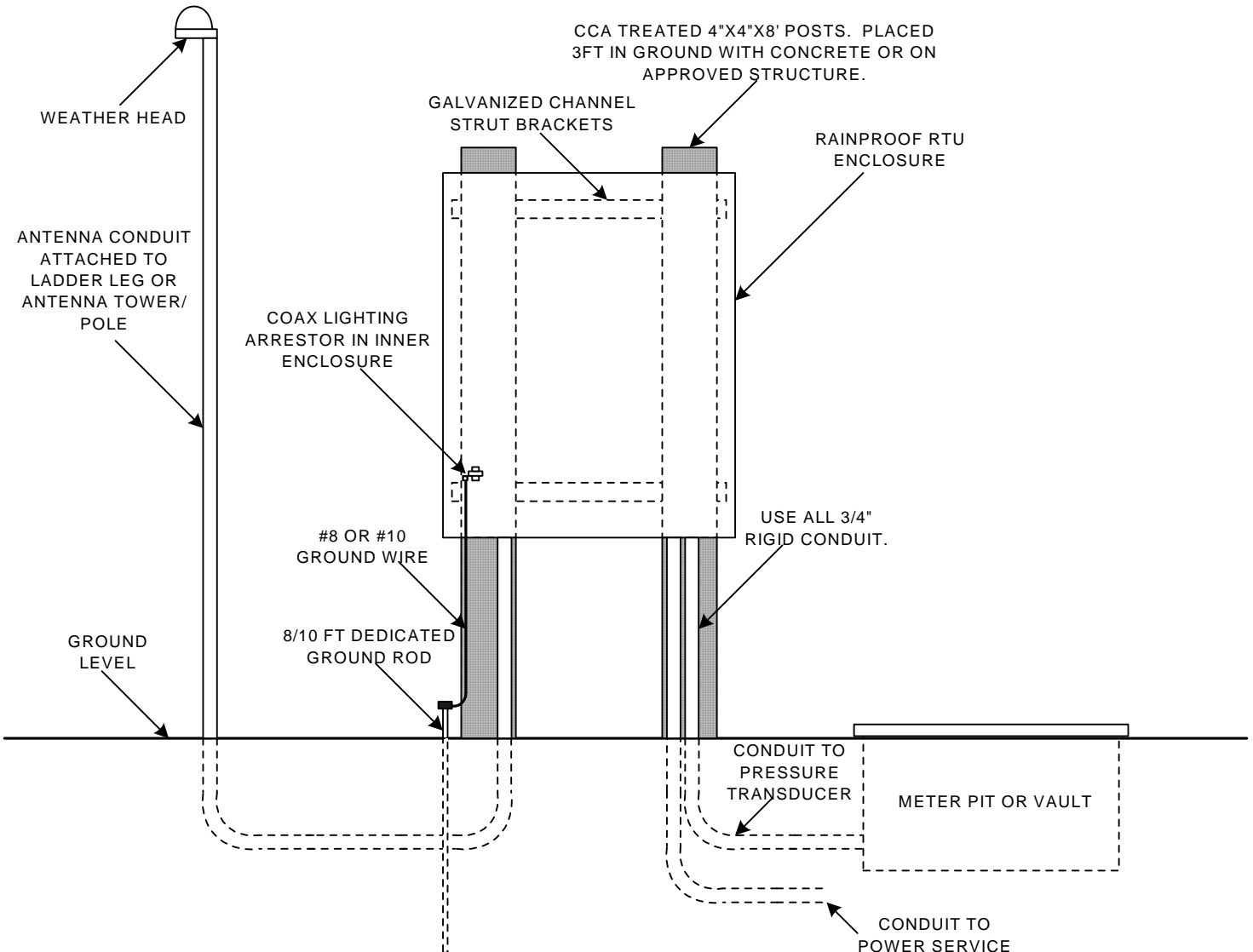
Micro-Comm, Inc.
15895 S. Pflumm Road
Olathe, KS 66062
Phone (913) 390-4500
Fax (913) 390-4550

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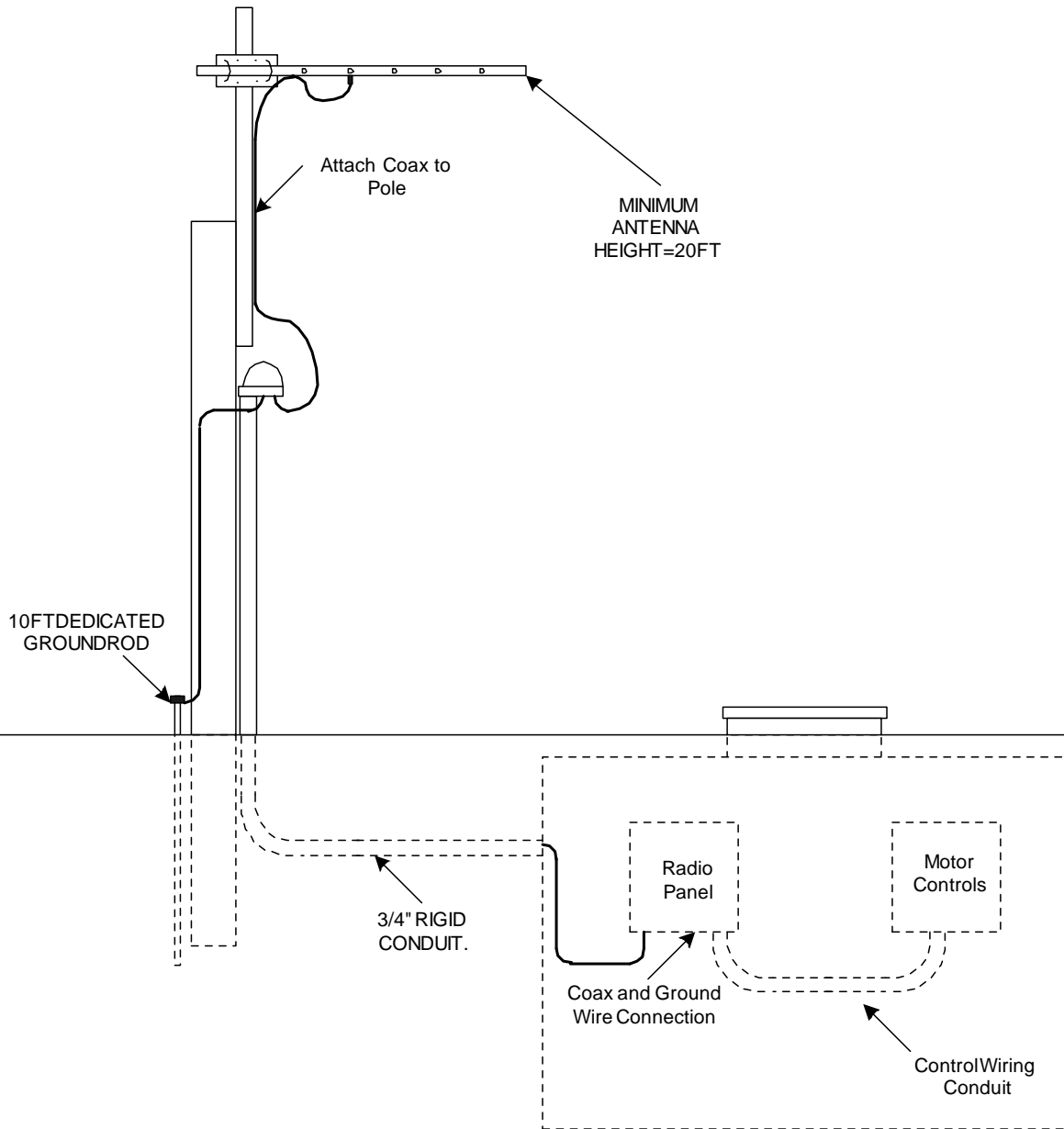
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Typical Mounting of Outdoor RTU General

All remote panel boxes should be mounted securely to eliminate excessive vibration. Outdoor installation can be done by mounting the rainproof enclosure to (2) four-inch by four inch treated posts or corrosion resistant supports using mounting-strut channel and brackets as shown. The remote unit should be located as close as possible to the water tower ladder or pole where the antenna is mounted. All $\frac{3}{4}$ " or 1" rigid power and transducer conduit connections to the enclosure shall be located in the lower right hand corner of the panel, and antenna coax conduit connections shall be located in the lower left hand corner of the panel. This will insure space is available for the RTU battery. All wires in and out of the RTU must be in $\frac{3}{4}$ " or 1" rigid conduit. The only exception will be the ground wire as shown. The ground wire can exit the box via a drilled hole in the rear left corner of the panel. Typical conduit runs will be to electrical service, meter pit or vault for the transducer, and the antenna. The antenna conduit vertical run must be at least 15 feet up to a weatherhead. **NO CONDUIT CONNECTIONS SHALL BE MADE IN THE TOP OF THE ENCLOSURE.** Grounding for the RTU is accomplished by driving an 8/10-ft copper clad ground rod as close to the remote as possible. Using #8 or #10 solid copper wire, attach the ground rod to the coax lightning arrestor on the interior panel as depicted below. Any holes in the exterior enclosure **MUST** be sealed with silicone to keep the insects out.



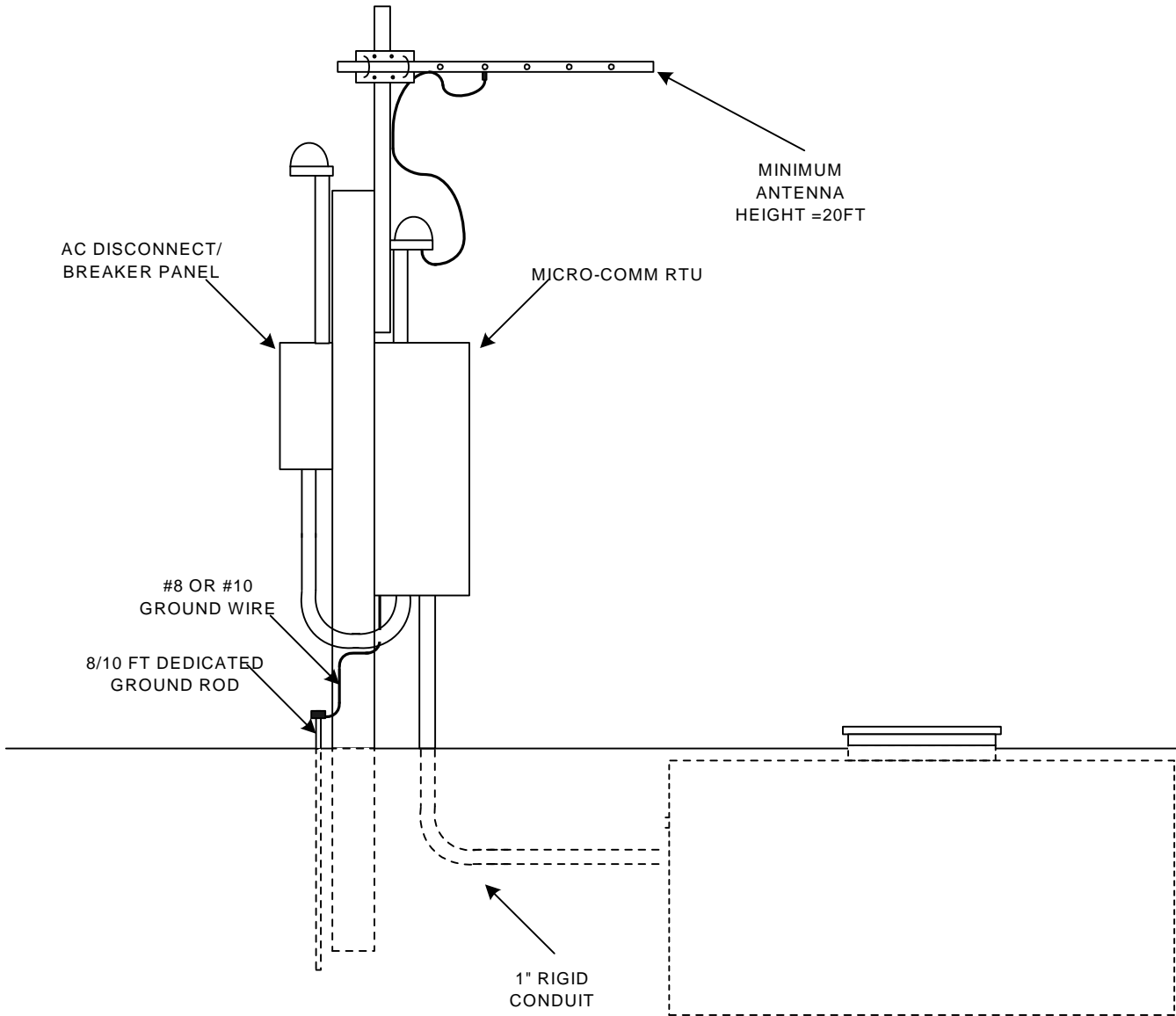
Typical Mounting of Underground Stations



1. Mount RTU on station wall or to existing mounting brackets.
2. Run 1" conduit to existing control panel for AC power, pump runs (& calls), low suctions, high discharge, etc.
3. Run 3/4" conduit to power pole or antenna tower with weather-head for coaxial cable and ground wire.
4. Install antenna on existing pole with 10ft mast, run coax to RTU enclosure.
5. Provide 8'/10' ground rod at antenna location and wire to antenna coax lightning arrestor with 8 gauge copper wire.
6. **NO CONDUIT CONNECTIONS SHALL BE MADE IN THE TOP OF THE ENCLOSURE.**

Typical Mounting of Outdoor RTU

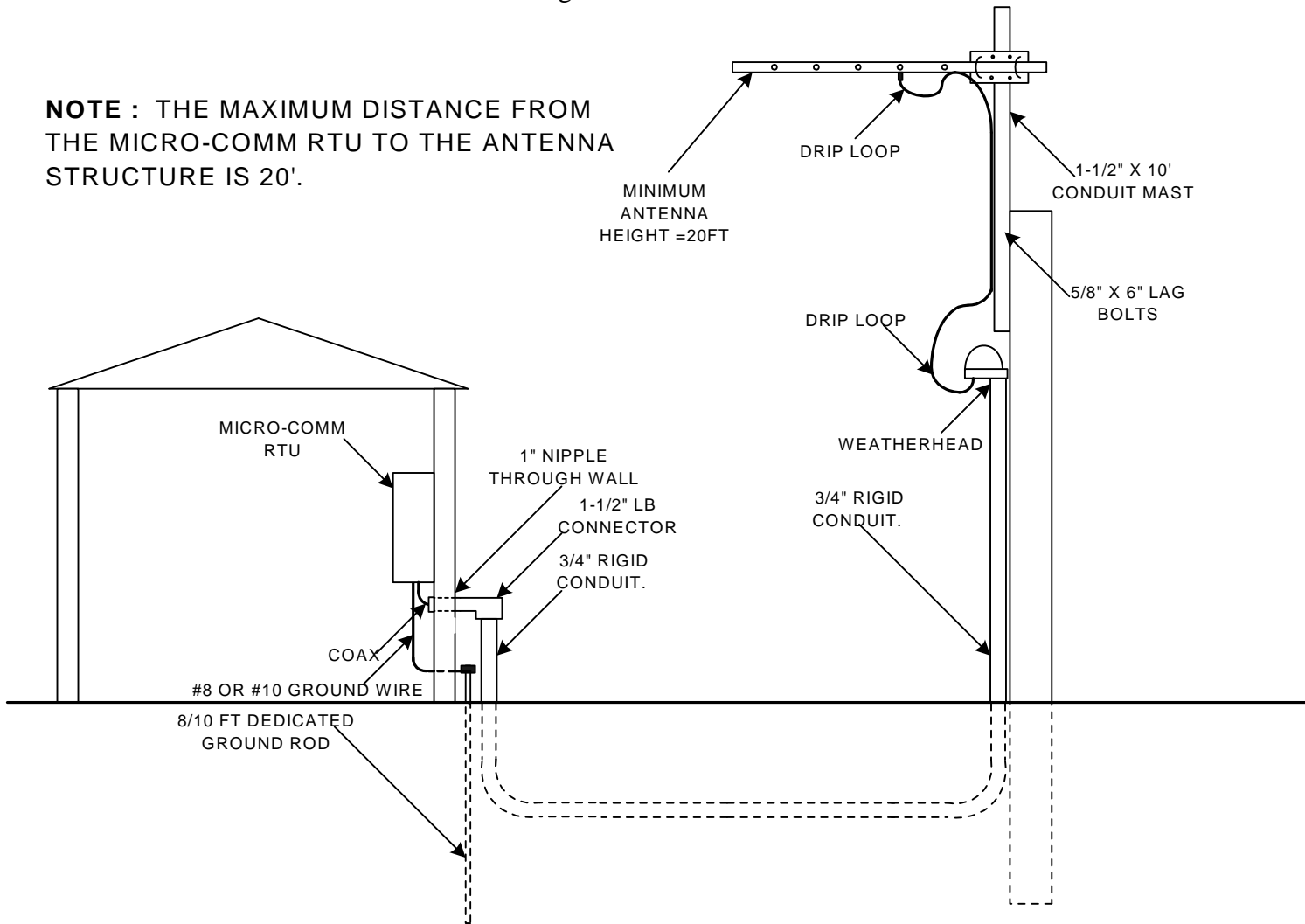
Master Meter/Sewage Lift Stations



1. Mount RTU on 4" x 8' CCA posts, power pole or other approved mounting structure
2. Run 3/4" conduit to existing AC power.
3. Provide 8/10' ground rod at RTU location and wire to antenna coax lightning arrestor with 8 gauge copper wire.
4. Run 3/4" conduit to up power pole/antenna structure with weather-head for coaxial cable.
5. Install antenna on pole with 10ft mast, run coax to RTU enclosure.
6. Run 1" conduit to existing vault. You may need to provide 3/4" hub connection if vault is not equipped. Install transducers/sensors in pit and connect.
7. Pressure taps will be provided by others unless specified otherwise.
8. Run flow rate signal wire in the 1" conduit shown above and connect to existing meter head transmitter.
9. Run miscellaneous 120VAC signal wires in above 1" conduit.
10. The maximum horizontal conduit run is 30ft.
11. **NO CONDUIT CONNECTIONS SHALL BE MADE IN THE TOP OF THE ENCLOSURE.**

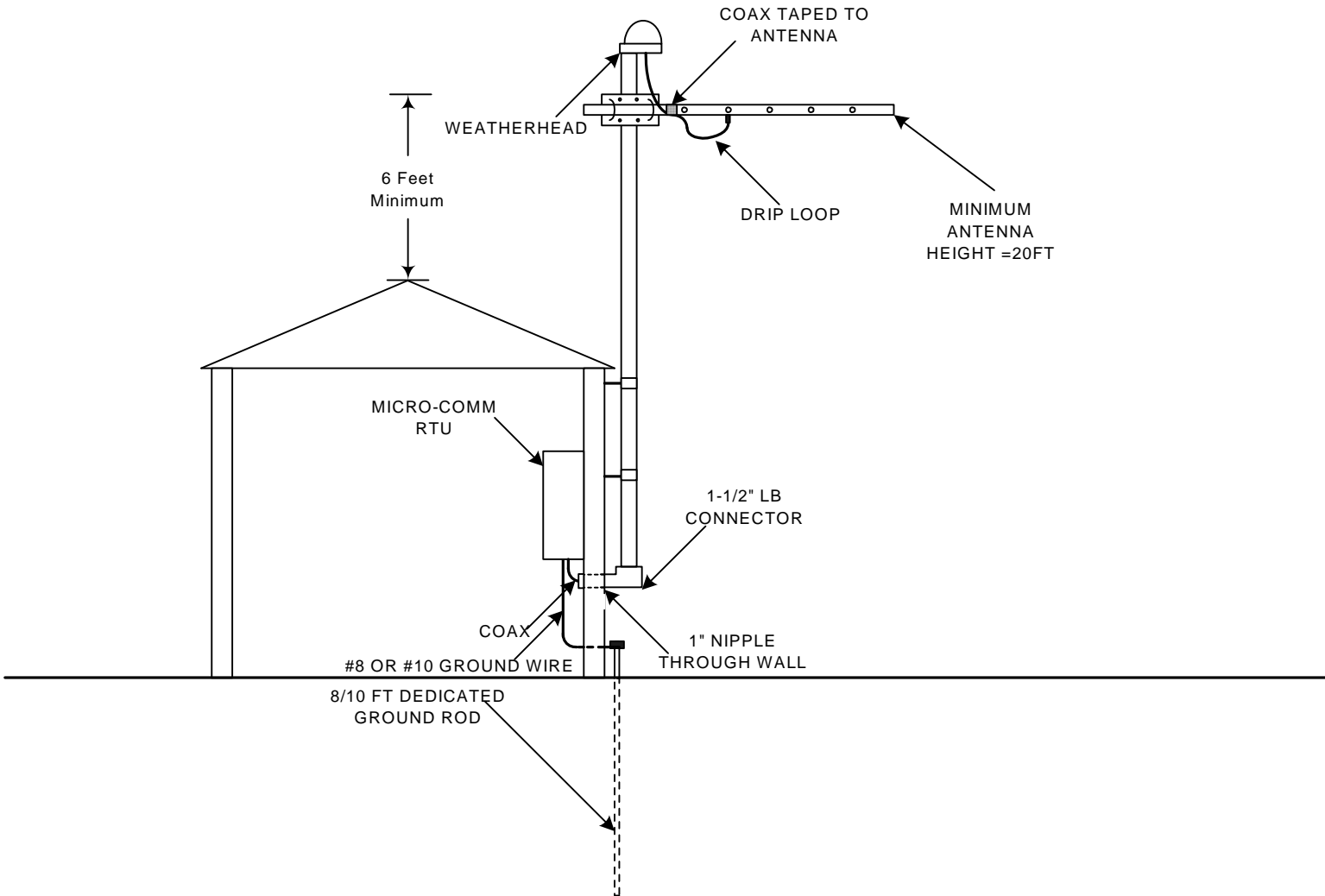
Typical Mounting of Indoor RTU RTU in Building with Antenna on Pole

NOTE : THE MAXIMUM DISTANCE FROM THE MICRO-COMM RTU TO THE ANTENNA STRUCTURE IS 20'.



1. Mount RTU on wall in building at eye level.
2. Run 3/4" conduit to existing AC power.
3. Provide 8'/10' ground rod at location outside near RTU and wire to antenna coax lightning arrestor with 8 gauge copper wire.
4. Run 3/4" conduit to existing power pole with weatherhead for coaxial cable.
5. Install antenna on pole with 10ft mast, run coax to RTU enclosure.
6. Run 1" conduit to motor controls for control wires. This conduit may also be used for incoming AC power.
7. Flow monitoring signals, pressure transducer signals or any other DC signals require separate conduit separated from AC signals.
8. Run miscellaneous 120VAC signal wires in above 1" conduit.
9. **NO CONDUIT CONNECTIONS SHALL BE MADE IN THE TOP OF THE ENCLOSURE.**

Typical Mounting of Indoor RTU RTU in Building with Antenna on Building



1. Mount RTU on wall in building at eye level.
2. Provide 10' ground rod at location outside near RTU and wire to antenna coax lightning arrestor with 8/10 gauge copper wire.
3. Run 1" conduit nipple through wall to LB conduit fitting then 1 1/2" conduit up side of building as an antenna mast and terminate with a weatherhead.
4. Install antenna on conduit mast, run coax to RTU enclosure through conduit.
5. Run 1" conduit to existing control panel for AC power, pump runs (& calls), low suctions, high discharge, etc.
6. Flow monitoring signals, pressure transducer signals or any other DC signals require separate conduit separated from AC signals.
7. **NO CONDUIT CONNECTIONS SHALL BE MADE IN THE TOP OF THE ENCLOSURE.**

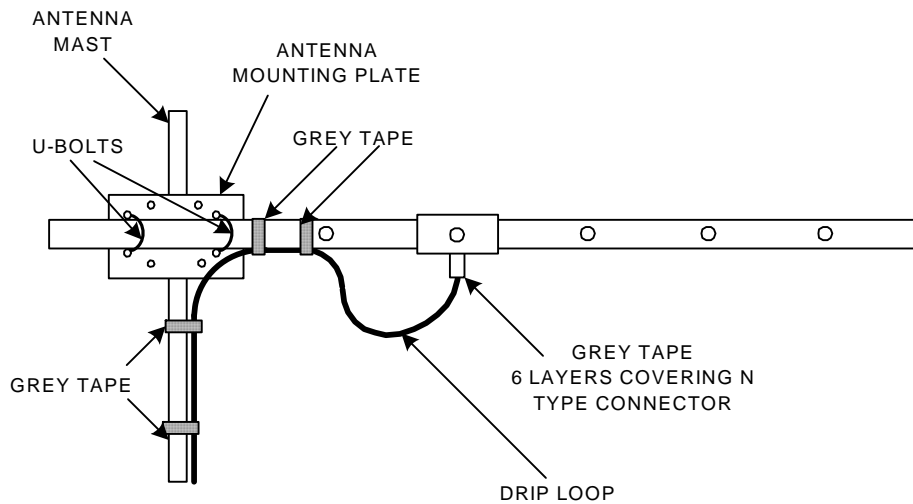
Antenna Installation

General

The antenna is a very critical link in radio telemetry. Correct installation is a **MUST** for proper radio communications. The installer/contractor of the equipment must follow the requirements set by Micro-Comm. If these requirements are not met, then the Installer/Contractor must redo the installation at their expense.

The minimum antenna height shall be fifty feet (50 ft), for standpipes, ground storage, and elevated tanks. Central terminal units located at plants and offices, shall have a minimum height of forty-five feet (45 ft). All other remotes shall have a minimum antenna height of twenty feet (20 ft). Use these heights unless otherwise specified. Micro-Comm supplies mounting brackets, U-bolts, coax, connectors, and tape for proper installation. Attaching the coax connector is very critical, requiring the installer to contact Micro-Comm for proper connection instructions. A typical procedure that works well at Micro-Comm is for the installer to complete the remote installation, with the exception of the antenna and coax. During start-up of the remote, Micro-Comm will attach the coax to the antenna (including proper taping), then allow the installer to finish mounting the antenna. The installer may make antenna connections if previous arrangements have been made with Micro-Comm. Antenna polarization (vertical or horizontal) will be specified on a job-by-job basis (if it is not specifically stated, use horizontal polarization). Specific information on installation is covered on pages 19, 20,21 of this manual.

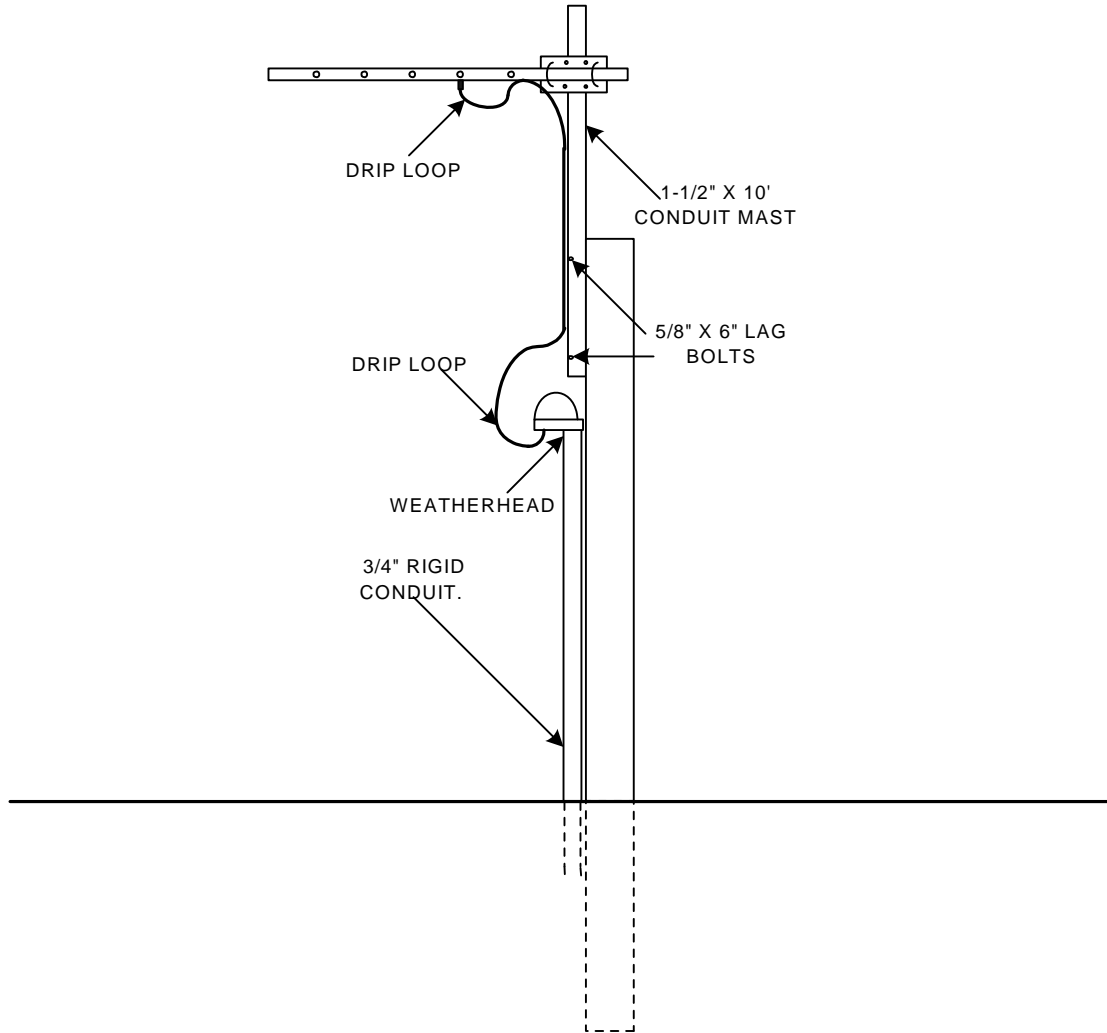
Side View of Antenna



NOTE: The antenna connector shall have six layers of electrical tape covering the coax connector. All other points have six layers of electrical tape (all tape is provided by Micro-Comm). Coax should be taped every 3' to the mounting structure.

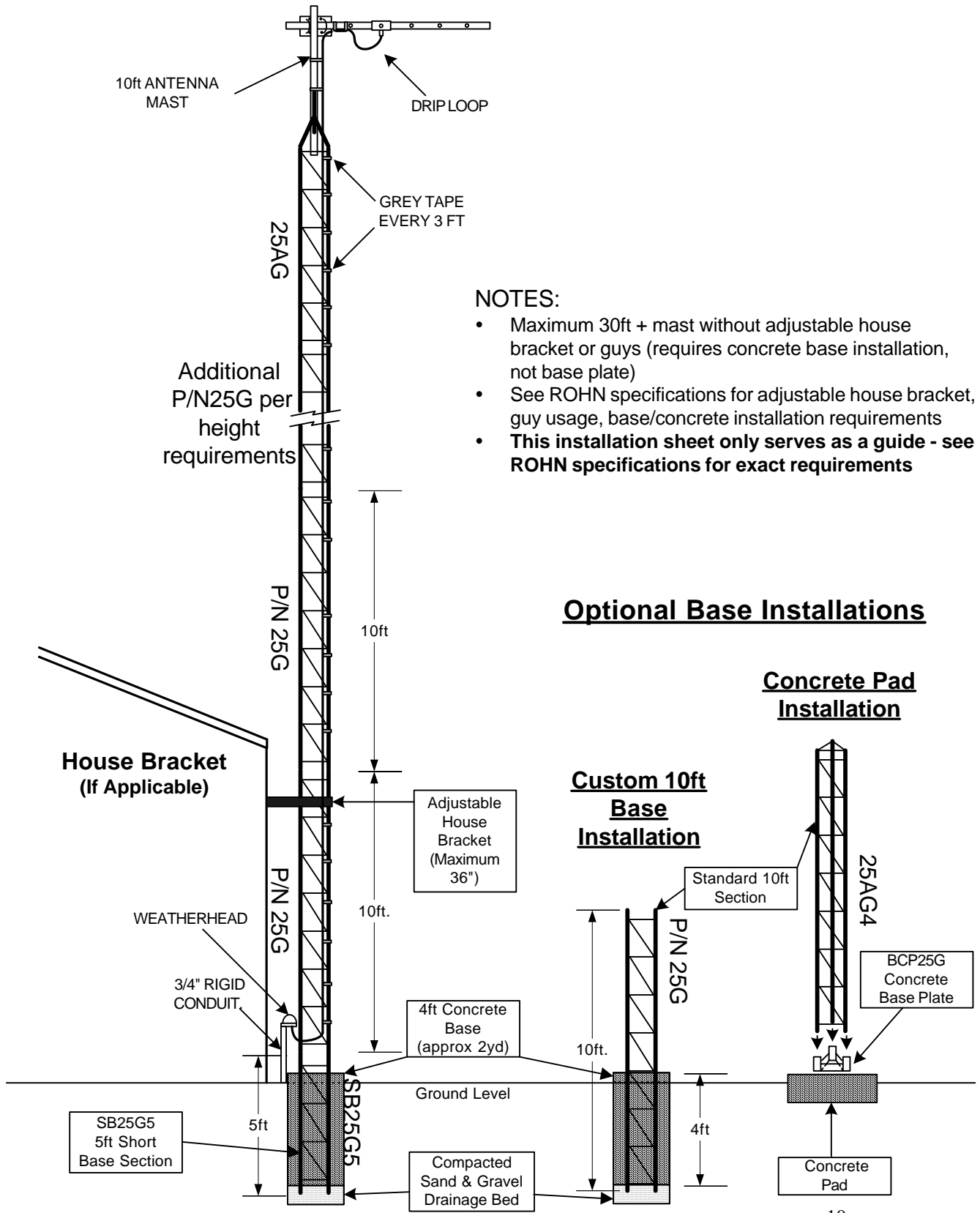
Antenna Installation

Power Poles



Antenna Installation

Antenna with Rohn tower/ Rohn tower install



NOTES:

- Maximum 30ft + mast without adjustable house bracket or guys (requires concrete base installation, not base plate)
- See ROHN specifications for adjustable house bracket, guy usage, base/concrete installation requirements
- **This installation sheet only serves as a guide - see ROHN specifications for exact requirements**

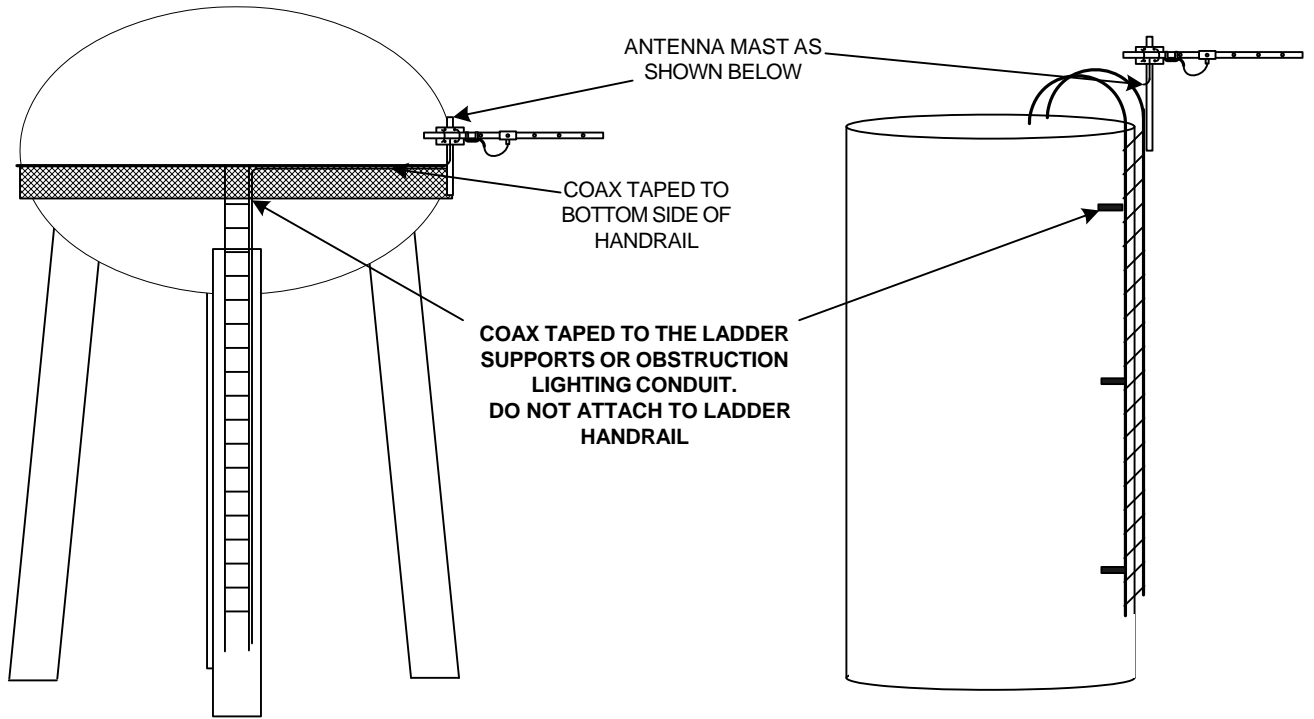
Optional Base Installations

Concrete Pad Installation

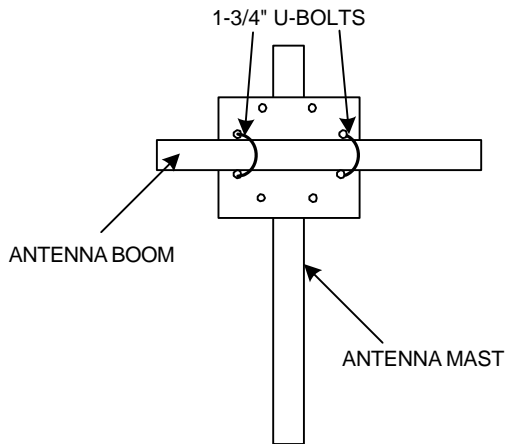
Custom 10ft Base Installation

Antenna Installation

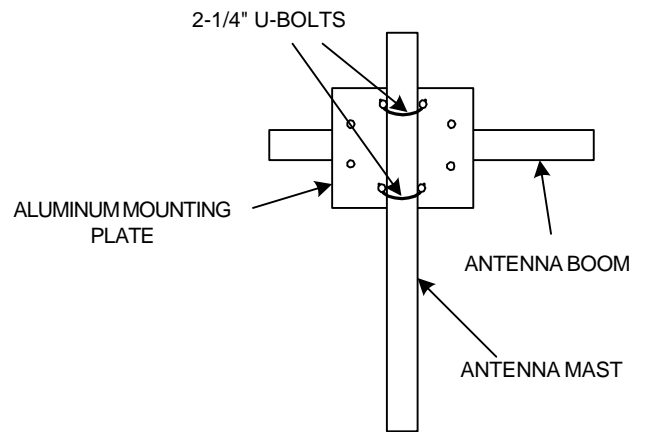
Water Towers



FRONT VIEW



REAR VIEW

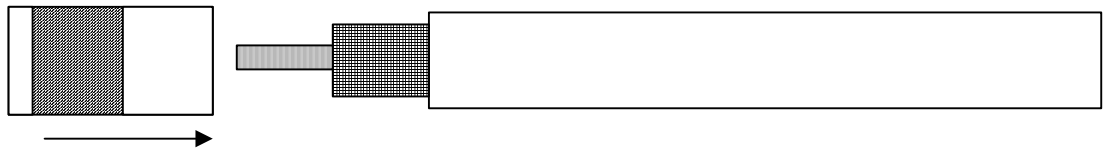


PL259 Connector Installation Drawing

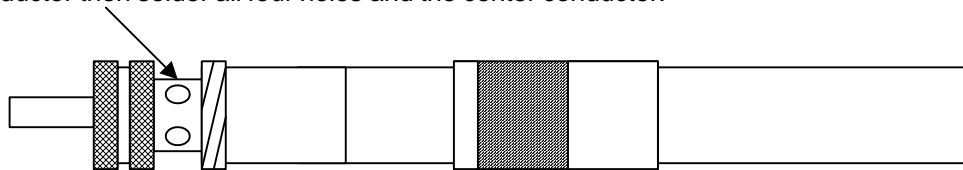
1) Strip coax back as shown below, be careful to not scar center conductor.



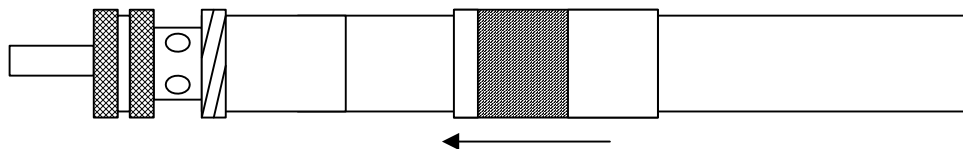
2) Slide the threaded connector cover onto coax.



3) Screw the PL259 connector onto the coax until snug. Use pliers if necessary to make sure the PL259 is completely seated. Once the connector is in place, use an ohm meter to check and make sure that no short exists between the center pin and the outer conductor then solder all four holes and the center conductor.

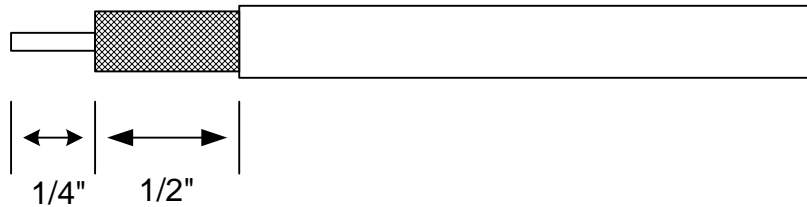


4) Once the connector has cooled, again use an ohm meter to check and make sure that no short exists between the center pin and the outer conductor. Once the connector cools, screw the connector cover into place

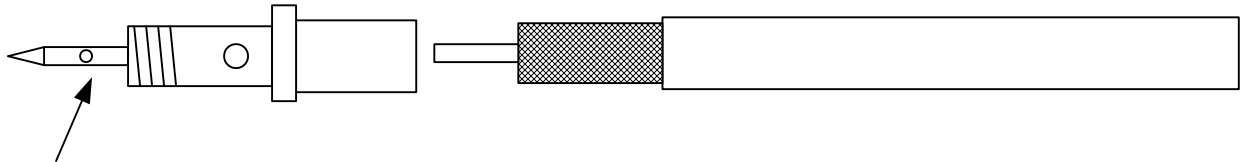


Antenna Type N Connector Installation Drawing

1) Strip coax back as shown below, be careful to not scar center conductor.



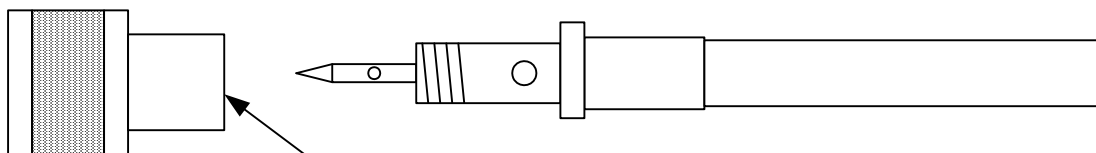
2) Screw type N connector onto coax until snug. Pliers can be used to tighten the connector but be sure that the center pin is not pushed out from over tightening the connector.



Center pin will push out and cause the connector not to work if over tightened.

3) Check to see that the center conductor is past the small hole in the center pin, and make sure the shield is visible in the two holes in the side of the Type N connector. Then, without getting things too hot, solder the center pin and the two holes in the side.

4) Once the connector has cooled, use an ohm meter to check and make sure that no short exists between the center pin and the outer conductor. Then screw the out side piece onto the type N connector. This piece contains an o-ring that will melt if the connector is screwed on before the connector has cooled.



O-ring will melt if screwed onto connector before connector has cooled

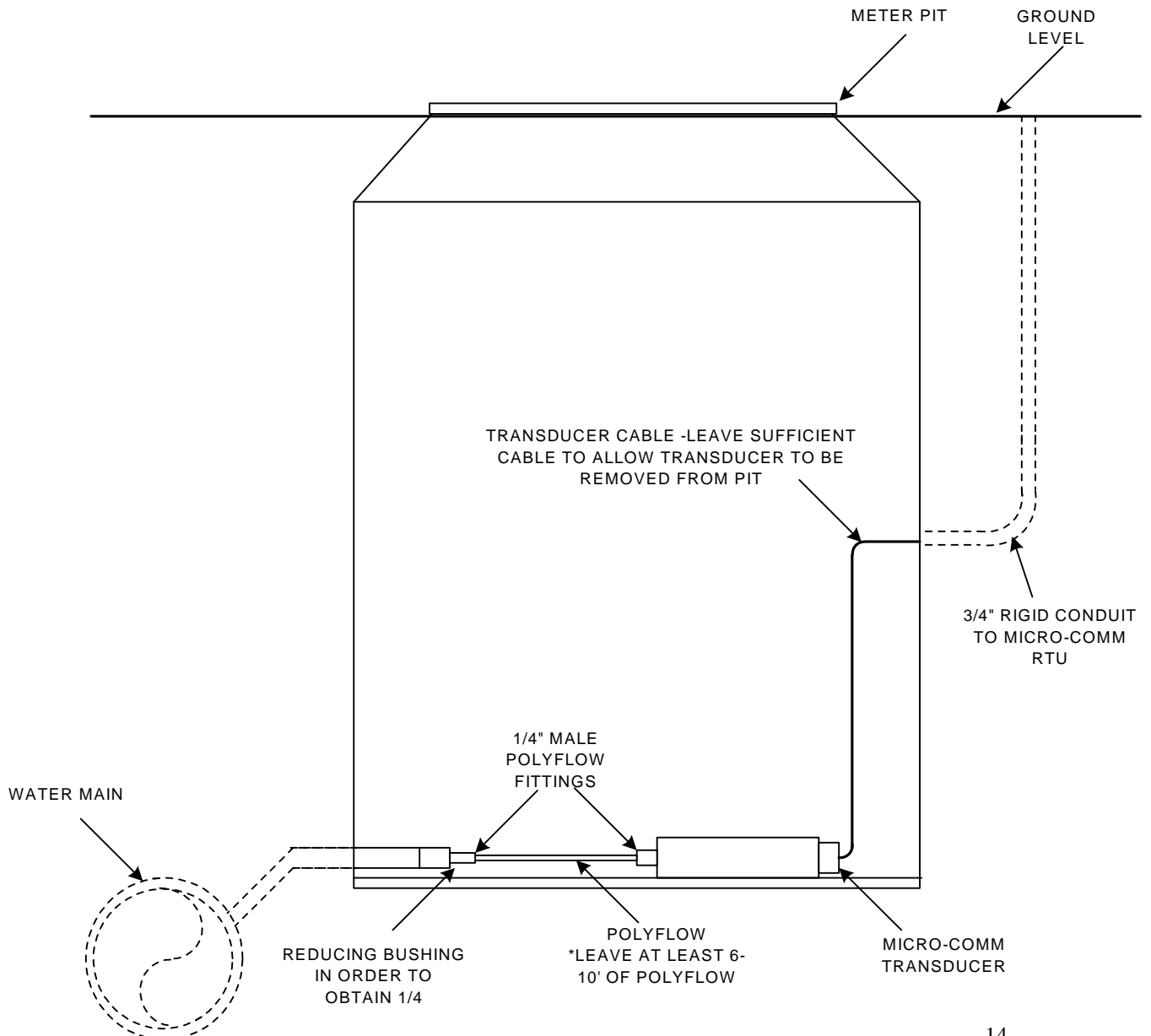
Mounting the Transducer

Typical Outdoor Installation for Water Towers and Pressure Stations

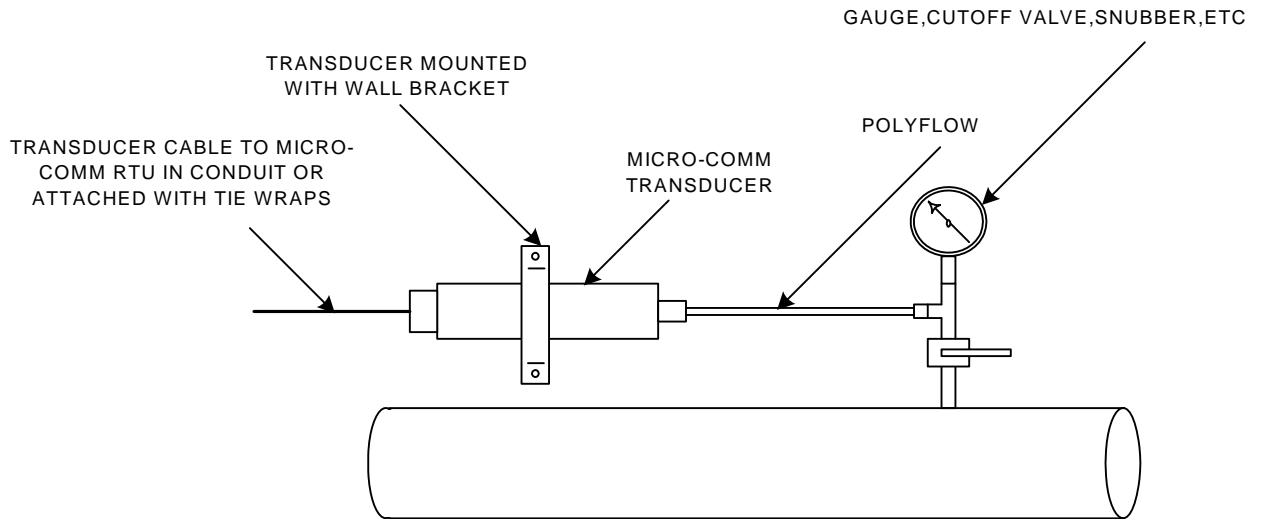
The transducer must be located between the water tank and any altitude/control valve. The transducer must be able to sense the static pressure of the water. The transducer tap should be at least 45 degrees off the top center of the water main. A 3/4-inch corp. stop is typically used to tap the main, which is followed by a 3/4 inch to 1/4-inch female brass bushing. Micro-Comm will supply a 1/4-inch male polyflow fitting.

The transducer is connected to the fitting using 6-10' of poly tubing. The transducer tubing must be bled of air before final connection. Do not rest the transducer on any metal pipe surface in the meter pit. The pre-cabled transducer shall be located in an underground meter service vault, which is connected via 3/4-inch rigid conduit to the telemetry remote panel.

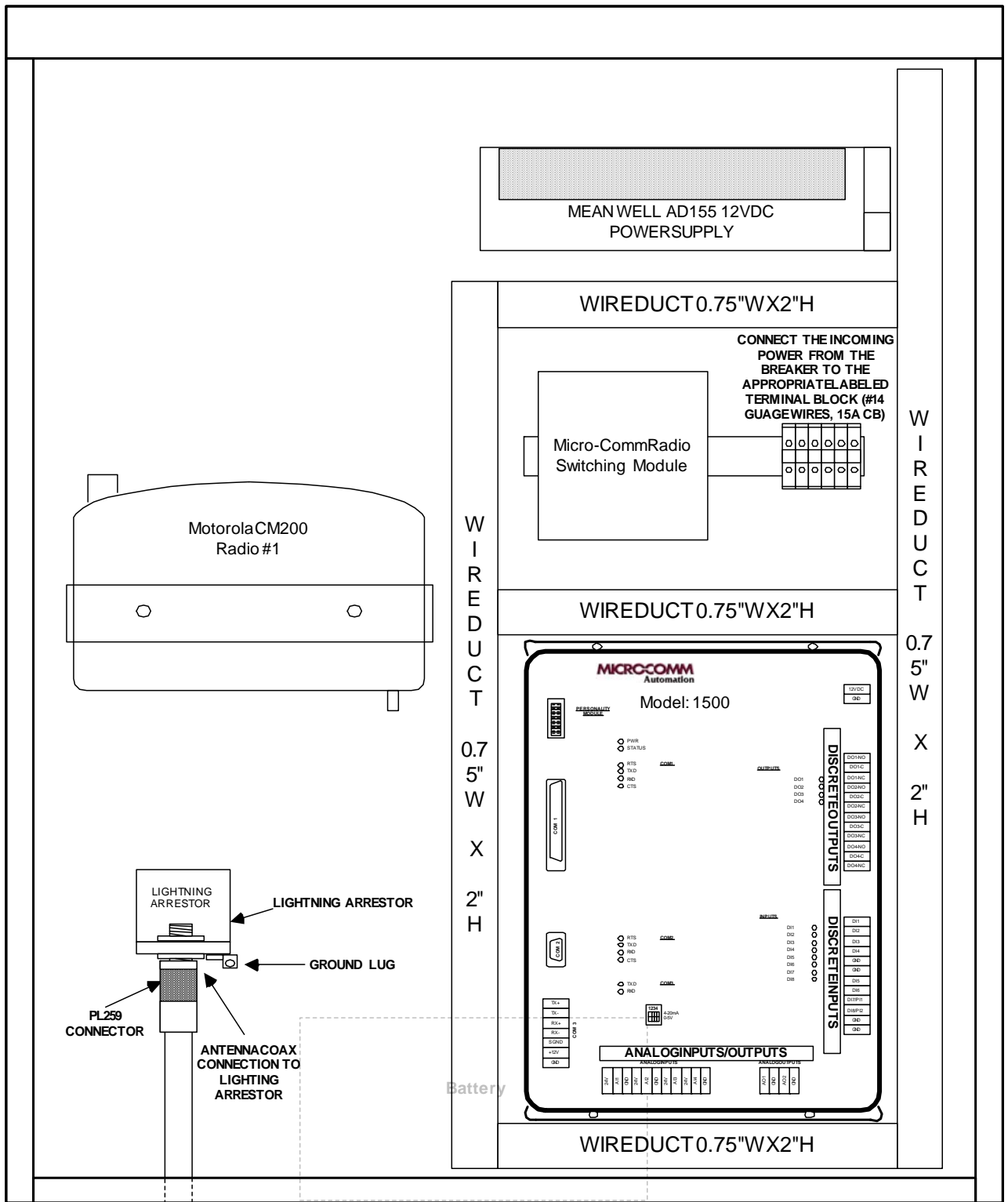
NOTE: Transducer **MUST** be **below** the FROST LINE and air space should be packed with insulation (inside a trash bag) to prevent freezing.



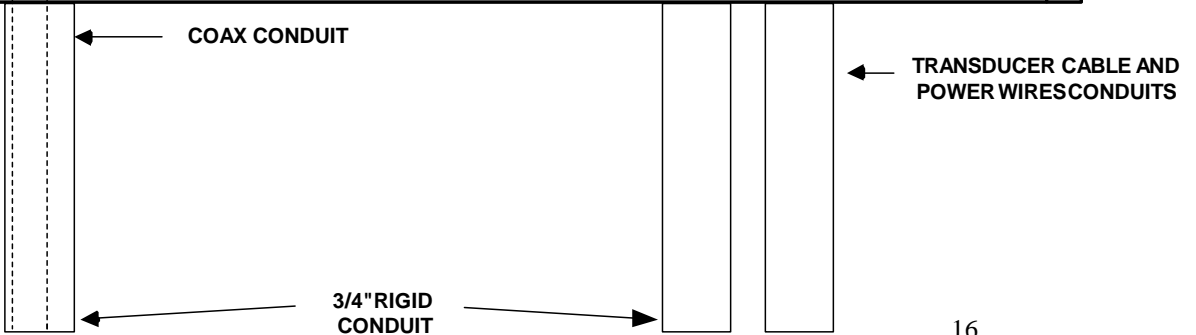
Typical Installation of Transducer in a Pump Station



Typical Tower RTU Connections



* Conduit Hubs utilized shall be consistent with Enclosure Type Rating.



Typical Pump Station RTU Connections

