

AA3233-003 Subway Antenna without Check Tag Installation Guide

**TransCore
8600 Jefferson Street NE
Albuquerque, New Mexico 87113**

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For further product information, contact:

TransCore
3410 Midcourt Road, Suite 102
Carrollton, Texas 75006 USA

Phone: (214) 461-4031
Fax: (214) 461-6478

Technical Support
Web: transcore.com/rfidsupport
Phone: (505) 856-8007

For comments or questions about this document, e-mail tech.pubs@transcore.com.

WARNING TO USERS IN THE UNITED STATES

FCC RADIO FREQUENCY INTERFERENCE STATEMENT
47 CFR §15.105(a)

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency (RF) energy and may cause harmful interference to radio communications if not installed and used in accordance with the instruction manual. Operating this equipment in a residential area is likely to cause harmful interference, in which case, depending on the regulations in effect, the users may be required to correct the interference at their own expense.

NO UNAUTHORIZED MODIFICATIONS
47 CFR §15.21

CAUTION: This equipment may not be modified, altered, or changed in any way without permission from TransCore, LP. Unauthorized modification may void the equipment authorization from the FCC and will void the TransCore warranty.

USE OF SHIELDED CABLES IS REQUIRED
47 CFR §15.27(a)

NOTE: Shielded cables must be used with this equipment to comply with FCC regulations.

TransCore, LP
USA

Contents

Contents

1 Introduction

Accessory Kit 1-3

Required Tools and Supplies 1-3

2 Installation Procedures

Preparing the Antenna Site 2-3

Securing the Antenna Hardware Connections 2-6

Fastening the Antenna to the Track Bed 2-8

List of Figures

<i>Figure 2-1. Antenna configuration showing correct placement and orientation between rails</i>	<i>2-4</i>
<i>Figure 2-2. Test measurements used to determine if track bed is sufficiently level for antenna installation</i>	<i>2-5</i>
<i>Figure 2-3. Antenna hardware connections</i>	<i>2-6</i>
<i>Figure 2-4. Underside of antenna showing antenna components and footblocks with isolators</i>	<i>2-7</i>
<i>Figure 2-5. Nut should be tightened so that it is just below head of stud anchor</i>	<i>2-8</i>

Chapter 1

Introduction

This section lists the accessories, required tools, and supplies for the installation procedures for the AA3233-003 antenna without check tag.

Note: Read all directions before installing the antenna. Make sure that all parts are present and all tools and materials are available.

Accessory Kit

The accessory kit contains the following items:

Accessory Kit Item	Quantity (each)
10-32 x .188 SL, shoulder screw	12
3/8-16 x 3-in stainless steel stud anchors	6
Connector enclosure gasket	1
Connector enclosure cover	1
Subway antenna template	1
Clear tubing bag, 12 x 12 inches (in)	1
Sealing conduit locknut	1
Sealed conduit connector	1

Required Tools and Supplies

Use the following tools and supplies to install the antenna:

- Power drill (hammer drill recommended)
- 3-in long x 3/8-in diameter masonry bit
- Soft-jaw pliers for type N connector
- Torque wrench with in-lb resolution
- Torque wrench with ft-lb resolution
- Liquid thread locker
- Slotted screwdriver with in-lb torque wrench adapter
- 9/16-in open-end wrench with ft-lb torque wrench adapter
- 20-in (50-cm) straight edge
- UL-listed, liquid-tight, flexible, metallic-lined electrical conduit (adequate length)

AA3233-003 Subway Antenna without Check Tag Installation Guide

to connect antenna to reader)

- Grout (if needed)
- Test tag and reader to verify antenna operation

Chapter 2

Installation Procedures

This section provides procedures for the following tasks:

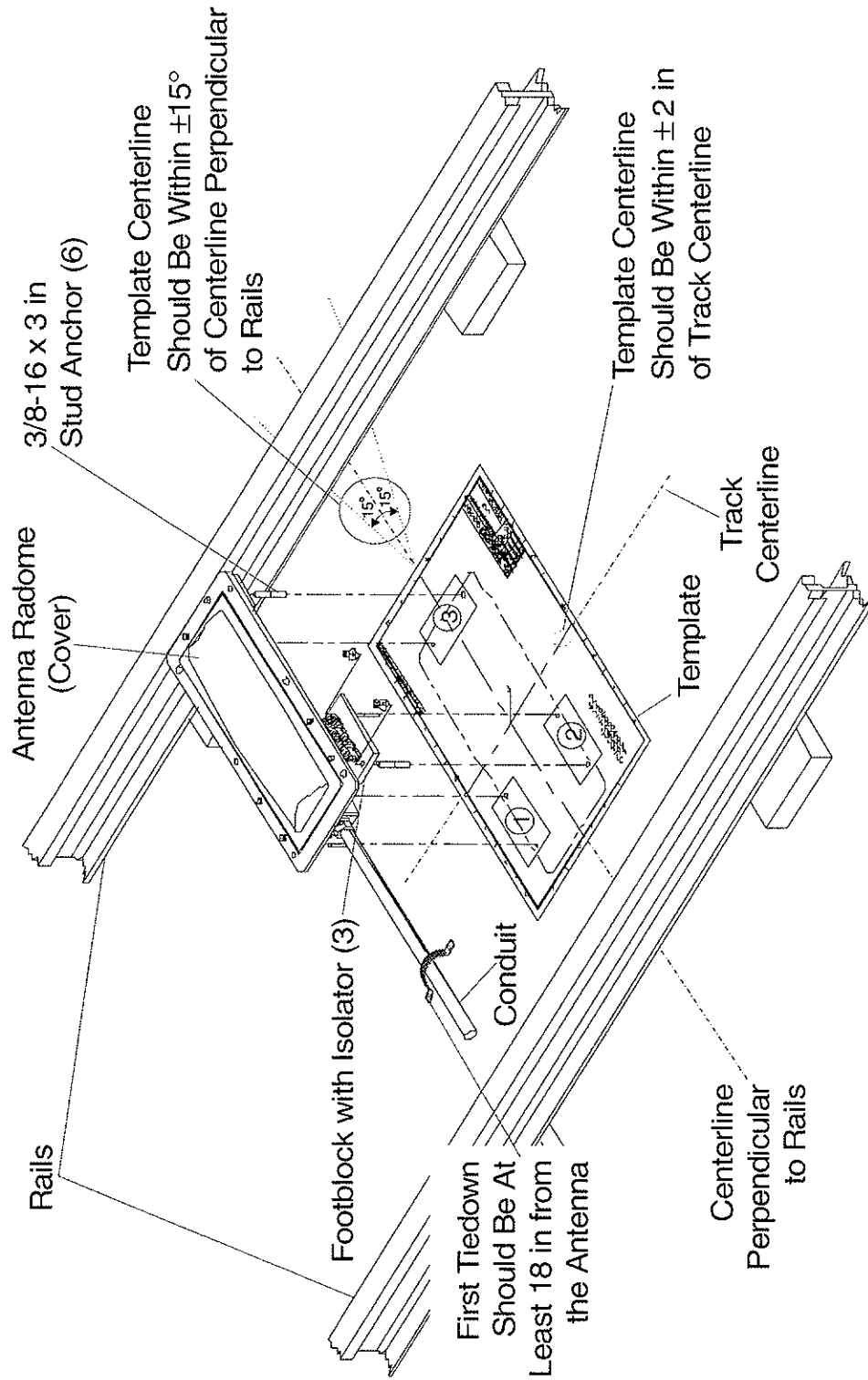
- Preparing the antenna site
- Securing the antenna hardware connections
- Fastening the antenna to the track bed

To install the AA3233 antenna correctly, perform these procedures in the order in which they are presented.

Preparing the Antenna Site

Before you install the antenna, you must prepare the site where the antenna is to be installed.

1. Identify the approximate antenna location on the track bed. The location should be centered between the rails. Mark parallel and perpendicular centerlines on the track bed (see Figure 2-1).



Note: Remove template from concrete base before installing antenna

Figure 2-1. Antenna configuration showing correct placement and orientation between rails

2. Check that the track bed is sufficiently level by laying a 20-in (50-cm) straight edge on the track bed perpendicular to the rails. This straight edge should align with the centerline of the two isolators (see Figure 1 for location of isolator) located near the connector and the centerline of the end isolator. Measure the distance from the track bed to the bottom of the straight edge. The track bed should not dip more than 1.75 in (4.42 cm) below the straight edge at a distance of 5.0 in (12.7 cm) from the centerline of footblock #3. Additionally, the track bed surface should be smooth (within 0.5 in) over the lengths of the 15-in (38.1-cm) and 5-in (12.7-cm) segments (see Figure 2-2).
3. Place the template on top of the intersecting centerlines. Center the antenna template — within 2 in (5.08 centimeters [cm]) of track centerline — on the line that is parallel to the rails, then align it with the line drawn perpendicular to the rails (within 15 degrees).

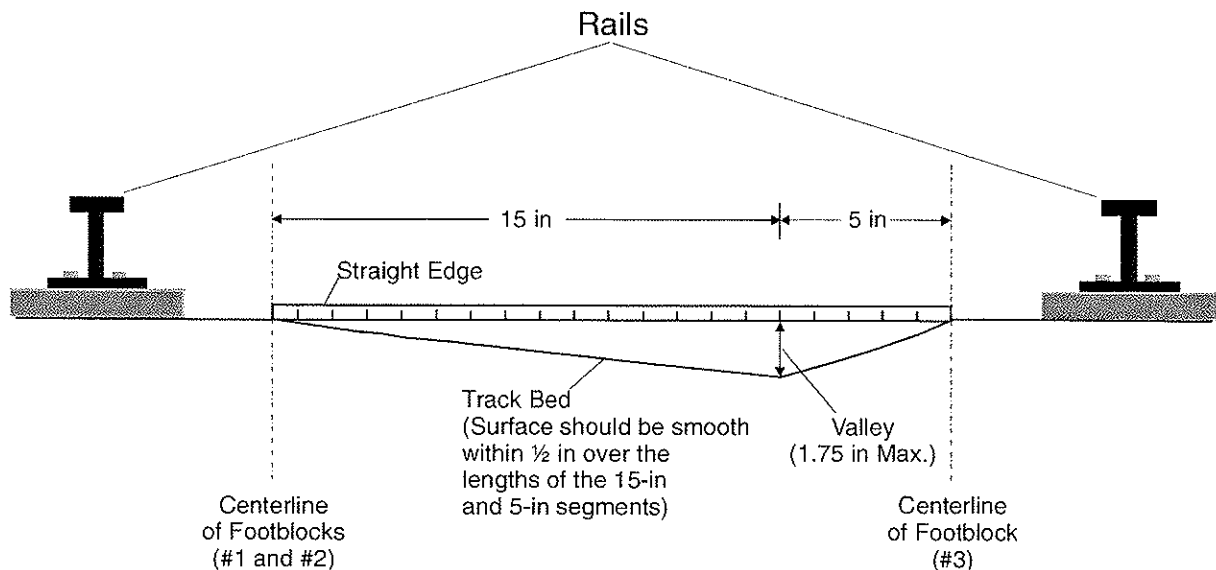


Figure 2-2. Test measurements used to determine if track bed is sufficiently level for antenna installation

4. If the track bed is out of specification from the measurements provided in step 3 of this section, grout the track bed base with up to 0.5 in (1.3 cm) of grout replacement to bring it to specification. Allow sufficient time for the grout to cure before proceeding to the next step. Redraw the track bed centerlines if necessary.

Note: If track bed cannot be brought into the specification stated in step 2, change antenna location or contact Amtech Response Center at the telephone and fax numbers listed on page iii.

5. When the track bed base is within the requirements of step 2, stretch the template across any “valley” (as shown in Figure 2-2) to get the proper center-to-center

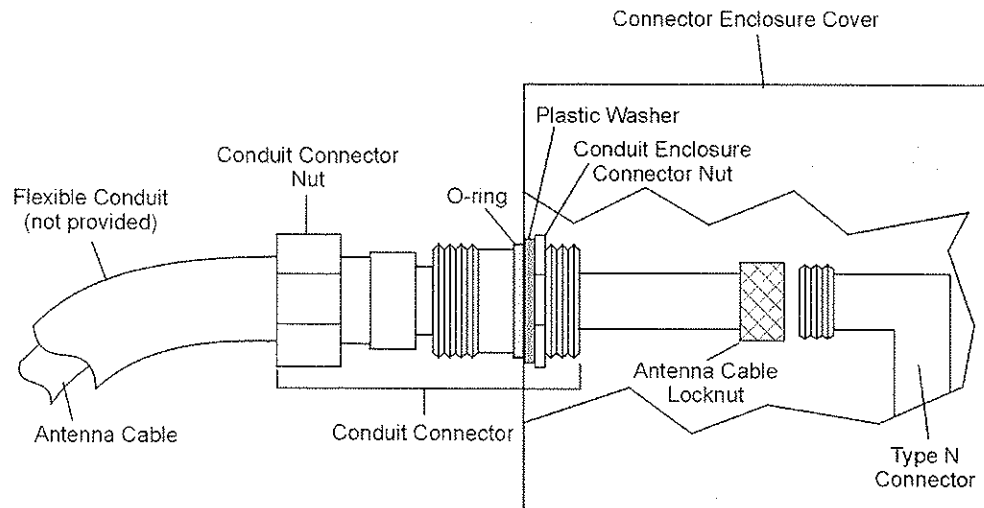
spacing between the footblocks. Use the template to mark and drill six 0.375-in (0.95-cm) wide x 3-in (7.6-cm) deep holes in the concrete. Check that the template centerlines are aligned with the track bed centerlines (see step 2 of this section).

6. Clear all concrete dust from the holes.

Securing the Antenna Hardware Connections

After you have prepared the site as specified in the previous section, follow the steps below to secure the hardware connections:

1. Place the antenna upside down on its cover (radome facing down) on top of the template to protect the cover from being scratched.
2. Remove the locking nut and plastic washer from the conduit connector. Insert connector through the 1-in conduit connector onto the end of the connector enclosure cover. Replace the washer and nut and tighten the conduit enclosure connector nut to torque of 28 ft-lb (Figure 2-3).



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Figure 2-3. Antenna hardware connections

3. Insert the flexible conduit into the 1-in conduit connector, and tighten the conduit connector nut to torque of 12 ft-lb (Figure 2-3). The flexible conduit is now secured to the connector enclosure cover.
4. Insert the antenna cable from the reader into the flexible conduit. Slide the antenna cable through the flexible conduit (Figure 2-3).
5. Pull the antenna cable through the hole in the connector enclosure cover and out of the connector enclosure cover until the cable end extends approximately 1 ft (30.5 cm) beyond the cover.

6. Attach the cable to the type N connector located on the antenna baseplate by first tightening the conduit locknut securely by hand and then using the soft-jaw pliers to tighten the locknut an additional one-half turn (Figure 2-3). Attach the cable to the reader.
7. Place the antenna in the rightside up (radome facing up) on the template, and test by reading a tag held about 18 in (45 cm) over the antenna.
8. When you determine that the antenna is functioning properly, turn the antenna upside down on top of the template to protect the cover from being scratched. Attach the connector enclosure cover to the connector baseplate using twelve 10-32 x .188 shoulder screws (see Figure 2-4). Apply liquid thread locker to all screw threads. Tighten the each screw until its shoulder bottoms out against the baseplate and secure to torque of 20 in-lb.

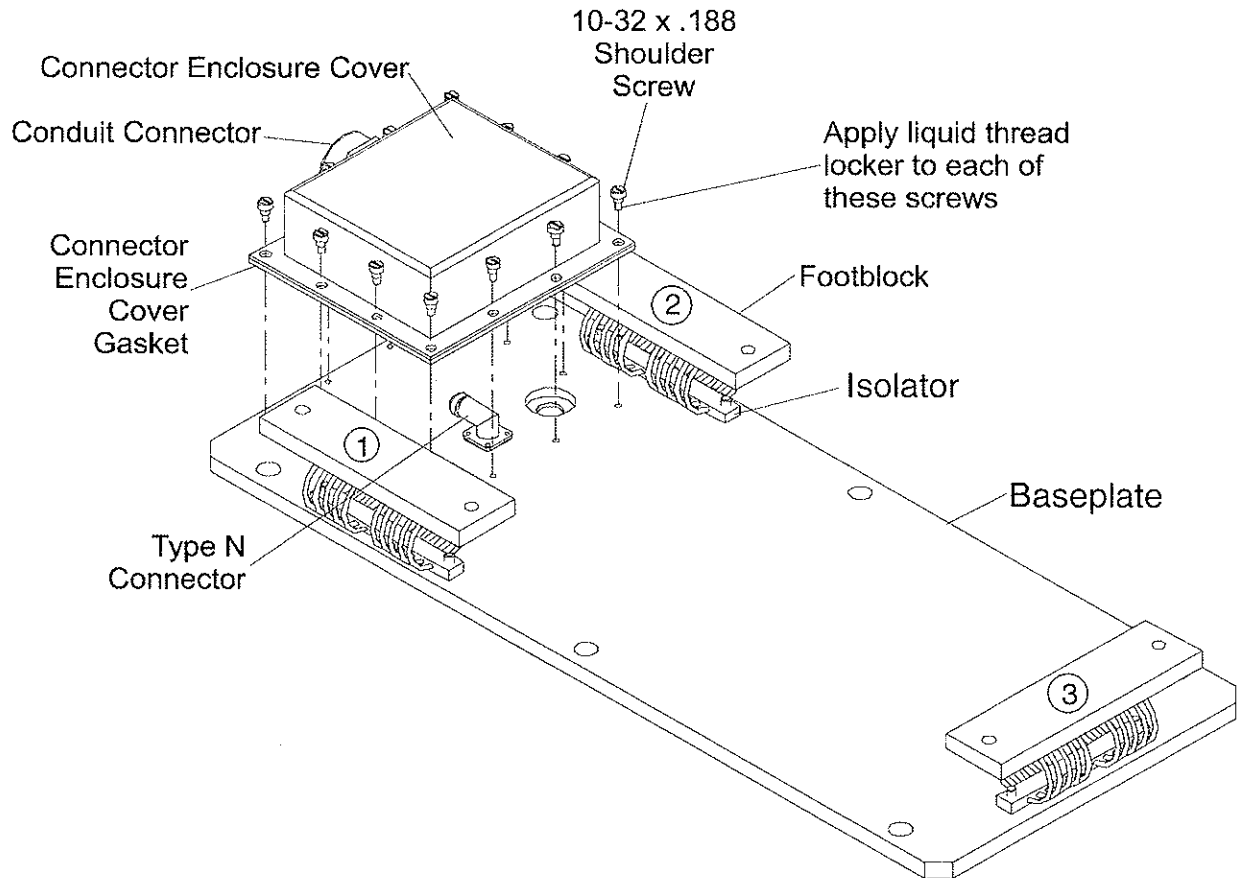
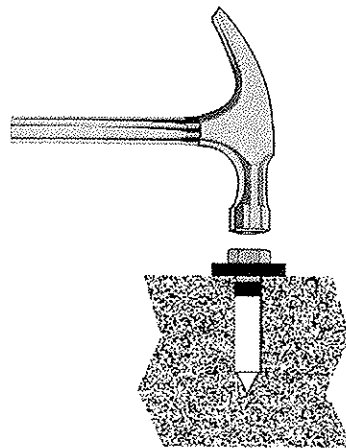


Figure 2-4. Underside of antenna showing antenna components and footblocks with isolators

Fastening the Antenna to the Track Bed

After you have secured the antenna connections as specified in the previous section, follow the steps below to fasten the antenna to the track bed:

1. Lift the antenna from on top of the template.
2. Remove the template from the antenna location and place antenna rightside up (radome facing up) on template.
3. Assemble the washer and nut on the anchor so that the nut rests below the chamfered head.
4. Place anchor in hole. Strike top sharply with a hammer to drive down the anchor into the hole (Figure 2-5). Tighten nut to torque of 25 ft-lb.



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Figure 2-5. Nut should be tightened so that it is just below head of stud anchor



Caution

The stud anchors must not protrude more than 0.5 in (1.3 cm) through the footblock holes, that is, not more than 1 in (2.5 cm) above the concrete surface.

5. Remove nuts and washers from stud anchors.
6. Place the antenna over the stud anchors.
7. Replace the nuts and washers on the anchor studs, apply liquid thread locker to threads, and tighten nuts until they are seated.
8. Secure the nuts to torque of 25 ft-lb.
9. Check that the antenna is anchored firmly to the concrete.
10. If the 1/4-20 set screws or locknuts have been removed or loosened from the isolators or baseplate, replace them and secure to torque of 40 in-lb.

11. Fasten the radio frequency coaxial cable to reader.
12. Fasten conduit to track bed using tiedowns. The first tiedown should be located at least 18 in (45 cm) from the antenna (see Figure 2-1) to allow the isolators to move freely.

Installation is complete.

AA3233-003 Subway Antenna without Check Tag Installation Guide