U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories	**Date:** DRAFT **Initiated By:** AAS-100	**AC No:** 150/5345-42K **Change:**

1 Purpose.

This advisory circular (AC) contains the specifications for airport light bases, transformer housings, junction boxes, accessories, and elevated light fixture covers and stakes. This AC is not intended to be a compilation of currently available product designs. This AC provides standards for critical dimensions and performance requirements.

2 Effective Date.

Effective six months after the issue date of this AC, only equipment qualified per this specification will be listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program.*

3 Cancellation.

This AC cancels AC 150/5345-42J, *Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories,* dated September 12, 2019.

4 Applicability.

The Federal Aviation Administration (FAA) recommends the standards and guidelines in this AC for use regarding airport light bases, transformer housings, junction boxes, accessories, elevated light covers and stakes. This AC does not constitute a regulation and is not legally binding. It will not be relied upon as a separate basis by the FAA for affirmative enforcement action or other administrative penalty. Conformity with this AC is voluntary, and nonconformity will not affect rights and obligations under existing statutes and regulations, except for the projects described in subparagraphs 3 and 4 below:

1. The standards and guidelines contained in this AC are practices the FAA recommends establishing an acceptable level of safety, performance and operation of lighting fixtures used to support visual guidance.
2. This AC provides one, but not the only, acceptable means of meeting the requirements of Title 14 of the Code of Federal Regulations (CFR) Part 139, *Certification of Airports*.

3. Use of these standards and guidelines is mandatory for projects funded under Federal grant assistance programs, including the Airport Improvement Program (AIP). See Grant Assurance #34.
4. This AC is mandatory, as required by regulation, for projects funded by the Passenger Facility Charge (PFC) program. See PFC Assurance #9.

5 Principal Changes.

The AC incorporates the following principal changes:

1. Combined paragraphs 3.2.6, 3.2.7 and 3.2.8 into paragraphs 3.1.3.4 and 3.1.3.6 for clarity.
2. Consolidated bolt requirements into the Accessories section under paragraph 3.1.3.
3. Provided clarifications in paragraph 3.1.3.6 for grounding connections.
4. Added corrosion prevention considerations in paragraph 3.2 Protective Coating.
5. Added new requirements to paragraph 4.2.1 load tests.
6. Reformatted figures for readability.
7. Updated Figure 5-1, Figure 5-7, Figure 5-8, and Figure 5-9.
8. Changed “E Chord” dimension from 11.125 in to 10.750 in Figure 5-3a and Figure 5-3b.
9. Deleted Appendix A (10-inch (254 mm) Light Base).

6 Metric Units.

This AC includes both English and metric dimensions. The metric conversions may not be exact equivalents, and until there is an official changeover to the metric system, the English dimensions will govern.

7 Copies of this AC.

This AC is available at www.faa.gov/airports/resources/advisory_circulars/

8 Feedback on this AC.

If you have suggestions for improving this AC, you may use the Advisory Circular Feedback form at the end of this AC.

John R. Dermody
Director of Airport Safety and Standards

58 **CONTENTS**

59 **Paragraph** **Page**

86

FIGURES

Number **Page**

TABLES

Number **Page**

CHAPTER 1. Scope

This specification sets forth the requirements for light bases, transformer housings, junction boxes, and related accessories.

1.1 Type.

The Federal Aviation Administration (FAA) Type designation of the light bases, extensions, elevated light covers, and elevated light stake mounting are as follows.

Table 1-1. Type Designations

Type	Purpose
Type L-867	Bases and extensions for applications subject to occasional light vehicular loading but no aircraft or other heavy vehicular loading.
Type L-868	Bases and extensions for applications subject to aircraft and other heavy vehicular loading.
Type L-894	Elevated light cover – non-load bearing and mounts on an L-867 light base.
Type L-895	Elevated light stake mounting.

1.2 Class.

The following class designations apply to Type L-867, L-868, and L-894.

Table 1-2. Class Designations

Class	Purpose
IA	Bases, extensions and elevated light covers that are fabricated from metal in exact conformance to the critical dimensions and requirements necessary for standardization between parts specified herein.
IB	Bases, extensions and elevated light covers that are fabricated from metal in exact conformance to the critical dimensions and requirements necessary for standardization between parts specified herein and which have been subjected to corrosion testing and found resistant to deicing fluids containing potassium acetate.

Class	Purpose
IIA	Bases, extensions and elevated light covers that are fabricated from non-metallic materials in exact conformance to the critical dimensions and requirements necessary for standardization between parts specified herein.
IIB	Bases, extensions and elevated light covers that are fabricated from non-metallic materials in exact conformance to the critical dimensions and requirements necessary for standardization between parts specified herein and which have been subjected to corrosion testing and found resistant to deicing fluids containing potassium acetate.

Note 1: Bases, extensions and elevated light covers that meet the Class IB or Class IIB requirements are also considered to meet Class IA or Class IIA requirements, respectively.

Note 2: Bases, extensions and elevated light cover plates that are fabricated as either Class IA or Class IB are to perform the same function. The only difference between the two classes of bases and extensions is the possible difference in metal or metal surface treatment required to meet the Class IB level of testing.

Note 3: Bases, extensions and elevated light covers that are fabricated as either Class IIA or Class IIB are to perform the same function. The only difference between the two bases and extensions is the possible difference in material or material surface treatment required to meet the Class IIB level of testing.

Note 4: Type L-895 elevated light base stakes are Class IA only.

1.3 **Size.**

Five base size designations are assigned. The size refers to the nominal diameter of the light base and associated Type L-894 elevated light cover plates. Sizes and applicable types are as follow:

Note: Example: For a 12-inch Type L-868 light base, the designation would be Type L-868B.

Table 1-3. Base Size Designations

Size	Type
Size A - 8 inch (203 mm)	Type L-868
Size B - 12 inch (305 mm)	Type L-867, Type L-868, Type L-894
Size C - 15 inch (381 mm)	Type L-868
Size D - 16 inch (406 mm)	Type L-867, Type L-894
Size E - 24 inch (610 mm)	Type L-867

CHAPTER 2. Applicable Documents

The following documents are referenced or complement the information presented in this AC.

2.1 FAA ACs and Engineering Briefs (EB).

The FAA documents listed below contain information pertinent to this specification. Copies of the current revision of the ACs may be obtained from www.faa.gov/airports/resources/advisory_circulars/.

- AC 150/5220-23, *Frangible Connections*
- AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*
- AC 150/5345-26, *FAA Specification for L-823 Plug and Receptacle Cable Connectors*
- AC 150/5345-46, *Specification for Runway and Taxiway Light Fixtures*

Copies of the EB may be obtained from www.faa.gov/airports/engineering/engineering_briefs/.

- EB 83A, *In-pavement Light Fixture Bolts*

2.2 Military Standard and Specification.

The following Military Standard and Specification (in effect on the date of application for qualification) form a part of this specification and are applicable to the extent specified herein. Copies of military standards and specifications may be obtained from quicksearch.dla.mil/.

2.2.1 Military Standard.

- MIL-STD-810, *Environmental Engineering Considerations and Laboratory Tests*

2.2.2 Military Specification.

- MIL-PRF-26915, *Primer Coating, for Steel Surfaces*
- MIL-DTL-13924, *Detail Specification Coating, Oxide, Black, for Ferrous Metals*

2.3 ASTM International Specifications, Test Methods, Standard Practices, and Recommended Practices.

The following specifications, test methods, standard practices, and recommended practices (in effect on the date of application for qualification) form a part of this specification and are applicable to the extent specified herein. Copies of ASTM specifications, test methods, and recommended practices may be obtained from www.astm.org/.

- A36, *Standard Specification for Carbon Structural Steel*

- D769, *Standard Specification for Black Synthetic Iron Oxide*
- A123/A123M, *Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products*
- A153, *Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware*
- A385/A385M, *Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip)*
- B633, *Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel*
- C109/C109M, *Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens*
- C617, *Standard Practice for Capping Cylindrical Concrete Specimens*
- C827/C827M, *Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures*
- D2240, *Standard Test Method for Rubber Property-Durometer Hardness*
- E23, *Standard Test Methods for Notched Bar Impact Testing of Metallic Materials*

2.4 **American Society of Mechanical Engineers (ASME).**

The following standard (in effect on the date of application for qualification) forms a part of this specification and is applicable to the extent specified herein. Copies of ASME standards may be obtained from www.asme.org/.

- B46.1, *Surface Texture, Surface Roughness, Waviness and Lay*

2.5 **American Society for Quality Control (ASQC).**

The following standard (in effect on the date of application for qualification) forms a part of this specification and is applicable to the extent specified herein. Copies of ASQC standards may be obtained from https://asq.org/.

- ANSI/ASQ Z1.4 and Z1.9, *Sampling Procedures and Tables*

2.6 **SAE International.**

Copies of SAE standards may be obtained from www.sae.org/.

- AMS 2485, *Coating, Black Oxide*

2.7 **Miscellaneous Documents.**

The Design, Installation and Maintenance of In-Pavement Airport Lighting, by Arthur S. Schai, F.I.E.S. Library of Congress Catalog Card Number 86-81865. This document does not form a part of this specification but is listed as valuable resource material on

the design and installation of light bases. (Reference AC 150/5340-30 for installation details and options.) Download at:
https://www.faa.gov/sites/faa.gov/files/airports/engineering/airport_lighting/schai-airport-lighting.pdf

216 Page Intentionally Blank.

CHAPTER 3. Requirements

3.1 General Description and Intended Use.

Note: The modification of standard certified components renders them non-standard and voids their certification. The only exception to this is the cutting of additional conduit holes during installation and the installation of threaded inserts in the light base upper flange because they do not adversely affect the structural integrity. In such cases, the methods and materials (e.g., dissimilar metals) used must still adequately inhibit corrosion. Coatings may be affective against corrosion only when the surface is unbroken. During the installation process, do NOT allow light bases to have holes cut into them for conduit or other insertions unless the cutting is supervised. See paragraph 3.2 for corrosion control considerations when modifying any galvanized light base.

3.1.1 Type L-867 Bases.

Type L-867 is used as a mounting base for airport light fixtures, as a transformer housing and as an electrical junction box. The Type L-867 base must be designed to withstand occasional light vehicular loads (typically with a gross vehicle weight rating (GVWR) less than or equal to 10,000 pounds). It is subject to direct earth burial with and without concrete backfill.

3.1.2 Type L-868 Bases.

3.1.2.1 Type L-868 is used as a mounting base for in-pavement airport light fixtures, as a housing for series circuit transformers, and as an electrical junction box. It must be designed to withstand aircraft and other heavy vehicular loadings. The design must allow the installation of any in-pavement fixture certified to AC 150/5345-46.

3.1.2.2 The Type L-868 top flange and base must be designed to meet the dimensional requirements and performance requirements, as detailed in this document, to assure proper coupling between the base and an in-pavement light fixture.

3.1.3 General Accessories.

Accessories are used to make corrections and adjustments to Type L-867 and Type L-868 bases, and to facilitate proper performance of the lighting fixture that the base supports. Examples of accessories are listed below, and when used in conjunction with a base specified in this AC, must not reduce the performance capabilities of that base.

3.1.3.1 **Spacer Rings.**

Spacer rings are available in various designs depending on the application and are available in various thicknesses and diameters and are generally installed between the base flange and the light fixture or other accessory.

- See Figure 5-3b and Figure 5-8b for minimum and maximum height.

- To preserve the base integrity and proper bolt torque, **a maximum of three rings may be stacked together.** A ring is defined as a spacer ring, a bevel ring, a flange ring, adapter ring, etc. However, a bevel ring kit consisting of two ring items that work together is considered one ring. Stacked spacer ring height should not exceed 2.25 inches. If so, then extensions are recommended.
- When interfacing with the fixture housing, each Type L-868 spacer ring, may be provided with a protective dam that encircles the spacer ring.
- The protective dam is 1/8-inch shorter than the light fixture housing it protects and has an inner diameter (ID) that is a maximum 1/4-inch greater than the outer diameter (OD) of the fixture housing. The OD of the protective dam must not exceed the OD of the light base top flange ring.
- The various types of spacer rings are noted in paragraphs 3.1.3.1.1 through 3.1.3.1.4.

Note: The protective dam prevents grout, sealant, or another pavement material from sealing the light fixture in place.

Note: On field adjustable bases and extensions, the protective dam may be integral to the base or extension top flange ring if the requirements noted above and the base or extension top flange ring dimensions comply with the dimensional requirements of this AC.

3.1.3.1.1 Flat Spacer Ring.

A flat spacer ring is used to provide height adjustment for Type L-867 or Type L-868 bases. Flat spacer ring dimensions are shown in Figure 5-3b and Figure 5-8b.

3.1.3.1.2 Grooved Spacer Ring.

A grooved spacer ring and "O" ring gasket, is used to provide a seal between the in-pavement fixture and spacer ring for minimizing the entrance of surface water and other liquids into the Type L-868 base. Grooved spacer ring dimensions are shown in Figure 5-3b.

3.1.3.1.3 Beveled Spacer Ring.

Beveled spacer rings are used to provide level and/or height correction for out-of-level Type L-868 and L-867 bases.

3.1.3.1.4 Azimuth Correction Spacer Ring.

Azimuth correction spacer rings are used to correct the alignment of light fixtures attached to misaligned Type L-868 bases. Azimuth Correction spacer ring dimensions are shown in Figure 5-9c.

3.1.3.1.5 Adapter Rings.

Adapter rings are used for converting the bolt circle of an existing base to that of a fixture having a different bolt circle or to that of a threaded adaptor ring for adjustable threaded extensions. No modification of the existing base should be required. All fixture mounting bolts must have at least 1/2 inch (13 mm) of thread engagement into the ring. Adapter ring dimensions are shown in Figure 5-9d and Figure 5-9e.

3.1.3.2 **Conduit Connections.**

Conduit connections permit connection of underground conduit to the bases. Conduit connections (number, type, size, and location) are provided as specified and must meet the environmental requirements of the Class base with which they are utilized. Conduit connections may include hubs, grommets, or other devices suited for the application.

3.1.3.3 **Base Extensions, Fixed and Adjustable.**

3.1.3.3.1 Base extensions are used to provide height adjustments to both Type L-867 and Type L-868 bases. They are used with bases when the required new elevation exceeds the capability of spacer rings to obtain it.

- Base extension capability can be achieved by installing either a fixed extension or a field adjustable extension that interfaces to the top flange of an existing type light base and has the same dimensional top flange and fixture clearance as the existing base.
- Ensure that the proper Class of extension is utilized. Extensions are equal to or greater than 1-3/4 inches (44 mm) for Type L-867 and 2-1/4 inches (63.5 mm) for Type L-868.
- Extensions and spacers will be dimensioned per Figure 5-3 and Figure 5-8. Note that fixed extensions are shown for dimensional purposes only.
- Various methods of providing adjustable heights are possible (including proprietary stainless steel adjustable threaded extensions), but all must meet the applicable dimensions in Figure 5-3 and Figure 5-8.

3.1.3.3.2 Type L-867 bases with provisions for height adjustment may be specified to meet local conditions. The base extensions rely on the top flange and the embedment material to support the load and are not suitable for direct earth burial. If the adjustable height base is intended to support the load without top flange and embedment assistance, it is suitable for direct earth burial and must be capable of withstanding the full load test requirement at its maximum extension.

3.1.3.3.3 All Type L-868 bases utilizing height adjustment integral to the base or extension intended for field adjustment must be subjected to a torque test

to ensure there will be no top flange rotation under normal operating conditions during qualification testing. Reference paragraph 4.4.10.

3.1.3.4 **Bolts**

3.1.3.4.1 Bolts suitable for use in threaded holes, as shown in Figure 5-1 and Figure 5-2, must be supplied with each base and extension assembly. The bolts must conform to the dimensions specified in the notes in Figure 5-1, Figure 5-2, and Figure 5-3. Bolts suitable for use in the threaded holes per Figure 5-5, Figure 5-6, and Figure 5-7 must be supplied with each spacer ring.

3.1.3.4.2 The bolts must be of sufficient length to provide a full thread connection with the light base flange when the spacer ring is inserted between the light fixture and the light base flange.

3.1.3.4.3 If bases or extensions are ordered without spacer rings, bolts conforming to the dimensions specified in the notes in Figure 5-5, Figure 5-6, and Figure 5-7 must be supplied.

3.1.3.4.4 All bolts must be fully threaded (also known as a tap bolt), fabricated from 18-8 stainless steel, coated at a minimum Grade 5 (tensile strengths between 105,000 and 120,000 psi) (or material meeting the requirements defined in EB 83A, as applicable) and be of a unique color not currently used on the airport and supplied with two-part stainless steel locking washers. The bolt manufacturer must provide a clear description of the coating on the bolt, its lubricity, and corrosion protection ability.

3.1.3.4.5 Anti-seize material is recommended to be furnished and utilized by the installing contractor when installing stainless steel bolts (Reference AC 150/5340-30).

3.1.3.4.6 Anti-seize material is not supplied by the light base manufacturer. No anti-seize material is required for coated fasteners per EB 83A.

3.1.3.4.7 Coated steel fasteners per EB 83A may also be used. All finished bolt sizes must be the same as stainless steel bolts.

3.1.3.5 **Covers.**

Various covers are available to facilitate the proper installation of bases. All covers must utilize manufacturer furnished fully threaded (tap bolts) 18-8 stainless steel, hex head 3/8” bolts (or coated bolts per EB 83A) sufficiently long to provide full thread engagement into the mounting surface.

3.1.3.5.1 Blank Covers.

Blank covers are used to provide a cover for bases when no light fixture is to be installed.

- Blank covers must be metallic and meet the applicable dimensional requirements of the type base to which they are attached. For Type L-868 load bearing bases, the cover must be equal in thickness to the light fixture. See Figure 5-4, Figure 5-9a, and Figure 5-9b for reference.
- For Type L-867B and Type L-867D non-load bearing bases, the cover must be a minimum of 3/8 inches (10 mm). For Type L-867E bases, the cover must be a minimum of 1/2 inch (13 mm).
- Covers weighing more than 30 pounds (13.6 kilograms) must have (2) opposite holes of the (6) 7/16 inch (11 mm) through holes tapped 1/2"-13 to affix a lifting eye bolt for ease of removal.
- All cover plates 1/2 inch (13 mm) or thicker must have all bolt holes counter-bored 1-1/8 inches × 3/8 inches (29 mm × 10 mm) deep.

3.1.3.5.2 Elevated Light Covers.

Elevated light covers are used to mount elevated lights on an L-867 light base.

- Elevated light covers must be fabricated of metal and meet the dimensional requirements so that they may be attached to an L-867 light base.
- Elevated light covers must meet the load and bending requirements in paragraph 3.3.3.1.4. See paragraph 3.3.3.1, Type L-894 Elevated Light Covers (Baseplates). See Figure 5-4 for reference.

3.1.3.5.3 Mud Covers.

Mud covers may stand alone or may be used in conjunction with plywood covers on Type L-867 and Type L-868 bases to protect the base flange during construction, and to include surface marking to facilitate locating the center of the base when coring out to locate the base after pavement overlay. Mud covers are appropriately sized for the specific bases they are to protect. See Figure 5-9f for reference.

3.1.3.5.4 Shipping Covers.

Plywood covers are used to protect bases during shipping and installation and are to be installed on all base or base extension shipments.

- For all galvanized bases, a 3 mil (0.003 inch) polyethylene shipping gasket may be installed between the base and plywood cover or, as an alternative, the plywood cover should be waxed on the bottom surface to eliminate the bonding action of the plywood and zinc.

- The Type L-868 plywood cover should also be waxed on the OD edge to facilitate easy removal from any surrounding embedment material.
- Plywood should be exterior grade 1/2 inch (13 mm) thick BB/CC grade plywood (classified as non-structural plywood). This grade plywood uses a bond glue (exterior phenol-formaldehyde resin). Can be exposed to heat, cold or wet conditions without deterioration. For other materials of equal strength and weather resistance (reference Figure 5-9a) for Type L-867 light bases.
- For Type L-868B light bases, the plywood must be equal to the thickness of the light fixture 3/4 inch (19 mm) or 1-1/4 inch (31.75 mm) for L-868C.
- When shipped with a mud cover on top, the total thickness of mud cover and plywood cover must equal the thickness of the light fixture.

Note: The thickness of the light fixture is the height of fixture flange at the OD of the fixture. See Figure 5-4, Figure 5-9a, and Figure 5-9b for reference.

3.1.3.6 **Grounding Connections.**

3.1.3.6.1 To provide maintenance personnel electrical safety, the manufacturer must install an internal and external ground strap to each base. The ground strap connects to a ground lug that is connected to an earth ground or a safety ground conductor. The ground lug is used to bond the fixture to the light base.

3.1.3.6.2 For Class I bases, a metallic ground connector or strap must be welded to the interior and exterior wall of each base before applying surface protection. The details and location of the ground straps are shown in Figure 5-2 and Figure 5-6.

3.1.3.6.3 The location of the connector may be varied to meet specific conditions. Apply the base surface protection and then fasten a bronze or copper ground connector to the ground connector or strap.

3.1.3.6.4 For Class II bases, the ground connector or strap must provide a positive ground connection path to a light fixture.

Note: Under no circumstances should an exothermic weld be used to attach a ground or counterpoise connection to a galvanized light base because of potential heat damage to the galvanized coating. Under field conditions, repairs to the zinc coating after an exothermic weld are usually ineffective. If the galvanized coating is compromised, the corrosion of exposed light base steel will accelerate.

3.1.3.6.5 Grounding Connections using Exothermic Welds.

Exothermic welds are the preferred connection method of connection. If exothermic welds are not possible, ensure that all connector materials are UL listed for direct earth burial and/or installation in concrete. See "Galvanized Light Base Exception" in AC 150/5340-30 for guidance in preventing damage to the light base body zinc coating during exothermic welding. For light bases that will use exothermically welded ground connections, the manufacturer may offer a light base with a 304 stainless steel ground rod that is 0.75 inch (19 millimeters (mm)) outside diameter by 3.00 inches (76.2 mm) long. The rod must be welded to the light base before applying any form of surface protection. The rod must be welded to the exterior of the light base at the same locations as a ground strap per Figure 5-2 and Figure 5-6.

3.1.3.7 **Drains.**

If specified, a drain should be provided in the bottom of the base prior to applying surface protection. If not specified, the drain should be 3/4 inch (19 mm) in diameter. The conduit/base system should have drains installed in the bases at low points in the system to provide for drainage of water and deicing fluids away from the base and conduit system. If water and deicing fluids pool for long periods of time in the light base, they can accelerate corrosion of the conduit and base system.

3.2 Protective Coating.

3.2.1 After fabrication all burrs and sharp edges must be removed.

3.2.2 All ferrous metal parts must be treated for corrosion protection.

Note: When dissimilar metals are in contact with one another and exposed to a common electrolyte, one of the metals may exhibit accelerated corrosion while the metal remains serviceable. This accelerated corrosion may result in galvanic corrosion.

Consider the following to mitigate galvanic corrosion:

- Select materials with similar corrosion potentials.
- Apply corrosion preventive coatings to both materials.
- Ensure the cathode coating is in good condition.
- Breaking the electrical connection by insulating the two metals from each other.
- Separate the two materials by inserting a suitably sized spacer.
- Utilization of a sacrificial anode that is anodic to both metals.
- Add a corrosion inhibitor to the environment.

3.2.3 Prior to tapping operations, all parts of Class I bases, extensions, and spacer rings more than l/4 inch (6.35 mm) in thickness must be hot-dip galvanized per ASTM A123/A123M applied per ASTM A385.

3.2.4 All parts of L-895 elevated light base stakes must be hot dip galvanized per ASTM A123/A123M that is applied per ASTM A385. Other coatings may be used if the same level of corrosion protection is demonstrated.

3.2.5 Flanges, covers, and rings must be wiped smooth to a flatness of ±0.010 inch (0.254 mm).

3.2.6 Plates and rings l/4 inch (6.35 mm) or less in thickness, grooved extensions, and grooved spacer rings when made of ferrous metal must be plated with zinc per the requirements of ASTM B633, Type II, Class I or hot dip galvanized per ASTM A123/A123M.

3.2.7 Tapped holes for conduit must be protected with a polyurethane varnish or equivalent.

3.2.8 A zinc dust primer meeting per MIL-PRF-26915 is permitted for touchup.

3.2.9 The area covered by zinc dust primer must not exceed 10 percent of the total treated area.

3.2.10 Any cast iron may be coated with a minimum of 2.0 mils of oxyplast powder in lieu of galvanizing.

3.2.11 Class IA base extensions and spacer rings must utilize surface protection that meets testing requirements per paragraph 4.5.

3.2.12 If a protective plastic coating is used over a galvanized coating or metal plating, do not cover the light base threaded holes with the coating.

3.3 **Fabrication and Materials.**

Bases and related accessories, designed to function as light bases, transformer housings, and junction boxes, must be fabricated of suitable material to meet the following standards. Appropriate separation material must be used between dissimilar metals to prevent galvanic action between flange rings, spacer rings etc. Copper ground components and stainless steel bolts are exempted. This separation material must not deform at 450 psi (a load equivalent to the L-868 load test) to prevent compression and subsequent loosening of bolts.

3.3.1 Type L-867 Class IA and Class IB Bases and Extensions.

- Type L-867 Class IA bases, extensions, and Type L-894 elevated light covers must be fabricated from an appropriate metal using fabrication techniques that will produce units meeting the testing requirements in paragraph 4.2.

- Class IB bases must be fabricated from metal using fabrication techniques that will produce units meeting the appropriate testing requirements of paragraph 4.3.
- All bases and extensions (excluding spacers and covers) must be labeled using a suitable long-lasting contrasting color ink stamp with either the letter A or B to indicate the Class suffix under which the certification has been obtained.
- The stamp must be a minimum of one inch (25 mm) in height and placed on the exterior and interior walls of the light base, no more than 6 inches (152 mm) below the base flange. All components described in this paragraph must be manufactured such that their use does not require existing bases, extensions or any existing components installed in the ground to be cut or modified in any manner.

3.3.1.1 **Flange.**

The dimensions of the flange must be as shown in Figure 5-1. The flat surface of the flange must be installed at an angle of 90 ±0.25 degrees to the axis of the cylindrical body. The flange must be continuously attached to the body to provide a watertight seal.

3.3.1.2 **Body.**

The body, including the sides and bottom, must be fabricated from one or more pieces. The dimensions of the body must be as shown in Figure 5-2.

- Two conduit entrances must be provided and installed near the bottom of the base. The location and size, per Figure 5-2, is considered standard. However, the location, number, type, and size can be altered to meet project requirements.
- Any sharp edges formed on the inside of the body must be removed to prevent cutting or chafing the cable insulation.
- The length of the body section as shown in Figure 5-2 is considered standard, but the length may be varied to meet special conditions.

3.3.1.3 **Extensions.**

The dimensions of the extensions and spacer rings must be per Figure 5-3. Extensions for Type L-867 bases must be ordered to length with a minimum length of 1-3/4 inches (44.5 mm) and a tolerance of ±l/16 inch (1.5 mm). Flat spacer rings are utilized for height adjustments from l/16-inch (1.5 mm) through l-11/16 inches (42.86 mm) in l/16 inch (1.5 mm) increments. Flat spacer ring dimensions are shown in Figure 5-8b.

3.3.1.4 **Adjustable Height Type L-867 Class IA and Class IB Bases and Extensions.**

Adjustable height Type L-867, Class IA and IB bases and extensions must have a provision for adjusting the height of the top flange.

- Various methods of providing height adjustment are possible (including proprietary stainless steel adjustable threaded extensions).

The top flange must have the identical dimensions as the top flange of the standard base.

- For adjustable bases, the body must also have the identical dimensions as the standard base. For adjustable extensions, the top flange and body of the extension must also be compatible with light fixtures and with existing parts in the ground without field modifications to certified parts. The adjustable top flange and supporting wall may mate into the base body either externally or internally of the base supporting wall.
- If the adjustable base is designed for installation in earth (no embedment support required), the base must be load tested fully extended in free space.
- If the base requires Portland cement concrete (PCC) embedment to meet the load requirements, it may be tested as directed by the testing laboratory with supporting PCC embedment to simulate an actual installation. The manufacturer must indicate by the suffix "PCC" to the catalog number that the base does not meet the load requirements of Type L-867, unless the top base flange is embedded and supported by PCC.
- The light bases must be dimensioned per Figure 5-2 regarding light fixture interface and critical dimensions.

3.3.2 Type L-867 Class IIA and Class IIB Bases and Extensions.

Type L-867 bases and extensions, Class IIA and IIB, must be fabricated from suitable materials and dimensioned to produce units meeting the appropriate testing requirements per paragraph 4.3.

- All bases and extensions (excluding spacers and covers) must be labeled using a suitable long-lasting contrasting color ink stamp with either the letter A or B to indicate the Class suffix under which the certification has been obtained.
- The stamp must be a minimum of one inch (25.4 mm) in height and placed on the exterior and interior walls of the light base, no more than 6 inches (152 mm) below the base flange.
- All components described in this paragraph must be manufactured such that their use does not require existing light bases, extensions, or any existing components installed in the ground to be cut or modified in any manner.

3.3.2.1 **Flange.**

The flange must be fabricated from suitable materials and must meet the same critical lighting fixture interface dimensions specified for Class I in Figure 5-1. Flange thickness and material should be sufficient to pass the load test specified in paragraph 4.2.1. The flange must be continuously attached to the body to provide a watertight seal.

3.3.2.2 **Body.**

The body, sides, and bottom may be fabricated from one or more pieces. The sides and bottom must be fabricated from suitable materials sufficient to pass the load test described in paragraph 4.3.1. Two conduit entrances must be installed near the bottom of the base. The location and size, as shown in Figure 5-2, must be considered standard. However, the location, number, type, and size may be altered to meet project requirements. Any sharp edges formed on the inside of the body must be removed to prevent cutting or chafing of the cable insulation. The length of the body section as shown in Figure 5-2 must be considered standard, but the length may be varied to meet special conditions.

3.3.2.3 **Extensions.**

The dimensions of the extensions and spacer rings must be per Figure 5-3. Extensions must be fabricated of the same materials and dimensions specified in paragraphs 3.3.2.1 and 3.3.2.2. Extensions must be ordered to length with a minimum length of l-3/4 inches (44.5 mm) and a tolerance of ±l/16 inch (1.5 mm). Flat spacer rings are utilized for height adjustments from l/16-inch (1.5 mm) through l-11/16 inches (42.86 mm) in l/16-inch (1.5 mm) increments. Flat spacer ring dimensions are shown in Figure 5-8b.

3.3.2.4 **Adjustable Height Type L-867 Class IIA and Class IIB Bases and Extensions.**

- Adjustable height Type L-867 bases and extensions must have a provision for adjusting the height of the top flange. Various methods of providing height adjustment are possible (including proprietary stainless steel adjustable threaded extensions).
- The top flange must have the identical dimensions as the top flange of the standard base.
- For adjustable bases, the body must also have the identical dimensions as the standard base.
- For adjustable extensions, the top flange and body of the extension must also be compatible with lighting fixtures and with existing parts in the ground without field modifications to certified parts.
- The adjustable top flange and supporting wall may mate into the base body either externally or internally of the base supporting wall.
- If the adjustable base is designed for installation in earth (no embedment support required) the base must be load tested fully extended in free space.
- If the base requires PCC embedment to meet the loading requirements, it may be tested with supporting PCC embedment to simulate actual installation as directed by the testing laboratory.

- The manufacturer must indicate by the suffix "PCC" to the catalog number that the base does not meet the load requirements of Type L-867 unless the top base flange is embedded and supported by PCC.
- The light bases must be dimensioned per Figure 5-2 with regard to fixture light interface and critical dimensions.

3.3.3 Type L-867 Accessories.

Various accessories are necessary to facilitate construction involving Type L-867 bases or to make corrections or adjustments to Type L-867 bases. These accessories are detailed in Figure 5-4.

3.3.3.1 **Type L-894 Elevated Light Covers (Baseplates).**

A baseplate is a cover plate that is used to mount elevated aeronautical ground lighting (AGL) equipment to the Type L-867 light base.

- The L-894 baseplate must have a diameter and bolt-hole circle that corresponds to the L-867 light base sizes listed in this AC.
- The L-894 baseplates are made to interface with a male-threaded frangible device. The elevated light cover must allow a frangible connection to fully and sufficiently thread into the cover.
- The height to the frangible device breakpoint, once threaded into the baseplate, must be no higher than 3 inches above the surrounding grade per AC 150/5300-13, paragraph 3.16.5.1(7).
- The L-894 baseplate will be flat or sloped to facilitate drainage.
- The maximum height of the hub complies with AC 150/5345-46, AC 150/5220-23, and any other associated frangibility requirements.

3.3.3.1.1 Type L-894 Elevated Light Cover Thread Sizes.

Thread sizes for elevated light Standard covers are specified by the light fixture manufacturer. Standard thread sizes are: 1-1/2 inch × 12 Unified National Fine (UNF) and 2-inch × 11.5 American Standard Taper Pipe Thread (NPT) or American Standard Straight Pipe Thread (NPS-National Pipe Straight). Sufficient threading will be allowed for proper frangible coupling connections.

3.3.3.1.2 Type L-894 Elevated Light Cover Gasket.

A neoprene gasket (or equivalent) must be provided with the cover plate to form a watertight seal between the cover plate and the L-867 light base. The gasket must have a nominal thickness of 1/8 inch (3.16 mm) and fit the bolt circle of the L-867 light base flange.

3.3.3.1.3 Type L-894 Receptacle Leads.

The mounting system for an elevated light cover must firmly position the isolating transformer receptacle (typically an L-823, Class A, Type II, Class 8 receptacle – see AC 150/5345-26, *FAA Specification for L-823 Plug and Receptacle Cable Connectors*) so its mating face is at the yield point and so it will not be dislodged by separation from the plug. Drainage must be provided below the yield point so that no water builds up above the mating surface of the connector.

3.3.3.1.4 Type L-894 Elevated Light Cover Load and Bending Moments.

When the elevated light cover is bolted to an L-867 light base, it must withstand an evenly distributed static compressive load of 2,500 pounds (1134 kg) and a bending moment of 2,500 foot-pounds (3,390 N·m) for the L-804 and 700 foot-pounds (949 N·m) for all other applications without damage or permanent deformation.

3.3.3.1.5 Type L-894 Elevated Light Cover Ground Connections.

Elevated light covers must furnish a ground lug or bolt to facilitate a ground connection. The ground connection must accommodate a minimum of a #6 American Wire Gauge (AWG) stranded wire or ground braid. See AC 150/5340-30 for additional information about grounds and ground connections.

3.3.3.1.6 Type L-894 Elevated Light Cover Color and Finish.

For non-optical surfaces, the exterior must be painted with one prime, one body, and one finish coat of paint. The prime coat must be appropriate for the metal being painted. The finish coat must match color FED-STD-595, Appendix 4, Color Number 13538, DOT Highway Yellow, ANA506 unless otherwise specified. Powder coatings may be used provided that the performance of the coating is equivalent to or better than a painted coating.

3.3.3.2 **L-895 Elevated Light Stake Mounting.**

When not installed on a light base, the elevated light fixture must be mated with a stake made of 2 × 2 × 3/16-inch (50.8 × 50.80 × 4.8 mm) L-type steel angle stock. See AC 150/5340-30 for a drawing of an elevated light stake mounting.

3.3.3.2.1 Type L-895 Elevated Light Stake Fitting.

The stake must have a fitting attached at the top to receive the frangible coupling.

3.3.3.2.2 Type L-895 Elevated Light Stake Receptacle Leads.

The mounting system for an elevated light mounting stake must position the isolating transformer receptacle (typically an L-823, Class A, Type II, Class 8 receptacle – see AC 150/5345-26) so its mating face is at the yield

point and so it will not be dislodged by separation from the plug. Drainage must be provided around the receptacle retainer to prevent water buildup around the yield point.

3.3.3.2.3 Type L-895 Elevated Light Stake Standard Length.

The standard overall length of the mounting is 30 inches (762 mm). Longer mounting stakes may be manufactured if there are special conditions for soil or frost line.

3.3.3.2.4 Type L-895 Elevated Light Mounting Stake Ground Clamps.

A grounding clamp must be supplied by the manufacturer if specified by the customer. The grounding clamp must accommodate a minimum of a #6 AWG copper conductor.

3.3.3.2.5 Type L-895 Elevated Light Mounting Stake Protective Coatings.

All protective coatings must be per paragraph 3.2.

3.3.3.2.6 Type L-895 Alternate Mounting Stakes.

Alternate staking methods may be used if it can be demonstrated that equal support and durability are provided.

3.3.3.2.7 Type L-804 Light Fixtures.

L-804 light fixtures must not be stake mounted.

3.3.4 Type L-868 Class IA and Class IB Bases and Extensions.

3.3.4.1 Type L-868, Class IA bases and extensions, must be fabricated from an appropriate metal (see note below) and constructed in such a manner to meet the appropriate testing requirements per paragraph 4.4. Class IB bases and extensions must be fabricated from an appropriate metal (see note below) and constructed in such a manner as to meet the appropriate testing requirements specified in paragraph 4.4.

Note: If a material other than ASTM A36 steel is used for a major load bearing structural component, the material must meet the mechanical property yield and tensile values of A36 steel. A material with yield and tensile stress values lower than the minimum specified values of A36 steel may be used if the manufacturer can demonstrate conformance to the requirements set forth in Chapter 4.

3.3.4.2 All bases and extensions (excluding spacers and covers) must be labeled using a suitable long-lasting contrasting color ink stamp with either the letter A or B to indicate the Class suffix under which the certification has been obtained. The stamp must be a minimum 1 inch (25 mm) in height and placed on the exterior and interior wall of the base, no more than 6 inches (152 mm) below the base flange.

3.3.4.3 All components described in this paragraph must be manufactured such that their use does not require existing bases, extensions or any existing components installed in the ground to be cut or modified in any manner. The modification of standard, certified components render them non-standard and voids their certification. The only exception to this is the cutting of additional conduit holes during installation and the installation of threaded inserts in the flange as these do not affect the structural integrity of a standard unit.

3.3.4.3.1 Flange.

The dimensions of the flange must be as shown in Figure 5-5.

- The flat surface of the flange must be installed at an angle of 90 degrees, ±0.125 degree, to the axis of the cylindrical body of the base. The flange must be continuously attached to the body to provide a watertight seal.
- The flange faces, outside and inside diameter, must be finished per ASME B 46.1.
- The bolt hole size and placement must be as shown in Figure 5-5.
- The bolt hole may be integral to the flange or contained in metal insert located in the flange.
- A bolt installed in the flange bolt hole must be capable of accepting a bolt torque test per paragraph 4.4.4. As part of the base testing, any insert or remedial device used for correcting threads damaged while in service must be tested in the base flange as part of the base in which it is intended for service.

3.3.4.3.2 Body.

The body section, sides and bottom, may be formed from one or more pieces.

- One-piece body sections must have an anchor ring (mid-ring) attached to the body by a continuous weld applied to the upper side and lower side of the ring per Figure 5-6.
- The length of the one-piece body section shown in Figure 5-6 must be considered a standard, but the overall length may vary to meet specific conditions.
- Two 2-inch (51 mm) conduit entrances must be provided near the bottom of the body. The location, number, and size of conduit entrances shown in Figure 5-6 must be considered standard, but the size, location, and number of connections may be varied to meet specific conditions. Any sharp edges at the conduit entrances must be removed to prevent cutting or chafing of the cable insulation.

- When sectional bases are specified, the sections must be dimensioned per Figure 5-7.

3.3.4.3.3 Extensions.

- Extensions must be fabricated from the appropriate metal for either Class IA or Class IB bases.
- The dimensions of extensions must be per Figure 5-8.
- The minimum extension length must be 2-1/4 inches (51 mm).
- Flat spacer rings must be used for height corrections of l/16-inch (1.6 mm) to 2-3/16 inches (62 mm) in l/16-inch (1.6 mm) increments. Flat spacer ring dimensions are shown in Figure 5-8a.
- If specified, grooved spacer rings may be used for height corrections of l/4-inch (3.2 mm) to 2-7/16 inches (62 mm) in l/16-inch (1.6 mm) increments.
- **To avoid problems with bolt tension, a maximum of three rings may be stacked together.** A ring is defined as a spacer ring, a bevel ring, a flange ring, etc. However, a bevel ring kit consisting of two ring items that work together is considered one ring.

3.3.4.3.4 Adjustable Height Type L-868, Class IA and Class IB Bases and Extensions.

Adjustable height Type L-868, Class IA and IB bases and extensions must have a provision for adjusting the height of the top flange.

- Various methods of providing height adjustment are possible (including proprietary stainless steel adjustable threaded extensions).
- The top flange must have the identical dimensions as the top flange of the standard base.
- For adjustable bases, the body must also have the identical dimensions as the standard base.
- For adjustable extensions, the top flange and body of the extension must also be compatible with light fixtures and with existing parts in the ground without field modifications to certified parts.
- The adjustable top flange and supporting wall may mate into the base body either externally or internally of the base supporting wall.

3.3.5 Type L-868 Accessories.

Various accessories are necessary to facilitate construction involving Type L-868 bases or make corrections or adjustments to Type L-868 bases. These accessories are detailed in Figure 5-9.

CHAPTER 4. Quality Assurance Provisions

4.1 Background.

Equipment produced under this specification may be eligible for funding for installation at airports under Federal grant assistance programs for airports.

4.1.1 To be eligible for installation under Federal grant assistance programs, manufacturers of the types of equipment specified herein are required to certify or furnish proof to the airport sponsor, or the sponsor's representative, that the equipment is certified by an FAA-approved Third Party Certification Body to meet the following test specimen, and production provisions established in paragraphs 4.2, 4.3, and 4.4 Certification Testing.

4.1.2 Certification testing is intended to assure that the materials and fabrication methods are adequate to provide acceptable in-service performance of light bases, transformer housings, junction boxes, accessories, elevated light covers and stakes for elevated light mounting.

4.1.3 Certification testing is required for each type, class, and size of light base, transformer housing, junction box, accessory, elevated light covers and stakes for elevated light mounting produced.

4.1.4 The third-party certification body must make a permanent record (for up to seven years beyond the life of the certification) of the exact material and fabrication process used for the prototype submitted for certification.

4.1.5 Any change in the product material or fabrication process requires the certification of the resultant product as a new product initially submitted for certification.

4.1.6 After testing and qualification are complete, the prototype accepted for qualification must function as the dimensional and workmanship model for all subsequent production units.

4.2 Type L-867 Class IA and Class IB Certification Testing.

Type L-867, Class IA and Class IB bases and extensions fabricated in accordance with the materials and dimensions specified herein must be capable of passing the following tests:

4.2.1 Type L-867 Class IA and Class IB Load Test.

Sample bases, extensions, adapters and covers must be subject to the load test described below. All load tests must be done with the thinnest cover plate specified in the applicable figure.

4.2.1.1 The base and cover assembly or assemblies including spacer rings, extensions, and multi-section bodies must be bolted together and placed on a flat steel plate mounted in a standard testing machine. The light base

manufacturer will specify the correct torque and bolts to be employed for proper assembly.

4.2.1.2 The test section must be a unit in height deemed to be the maximum height to be furnished by the manufacturer with four 2-inch (51 mm) conduit entrances located in the body section, located at 90-degree increments, 2-l/2 inches (64 mm) from the bottom of the base.

4.2.1.3 A load must be applied to the top part of the base through a block of rubber 1.50 inches (38 mm) (± 0.25 inches (6.35 mm)) thick, with a diameter equal to the cover plate, and having a durometer hardness of 55 to 70. A load of 250 psi (1724 kPa) must be applied uniformly over the area of the rubber block at a rate not to exceed 10,000 pounds (4536 kg) per minute.

4.2.1.4 The light base or any of its components will be considered unsatisfactory if there is any permanent deformation or cracking of material or coating.

4.2.1.5 The test will be repeated three times.

4.2.1.6 After each loading, the bolts must be checked for loss of tension.

4.2.1.7 The bolts must be torqued to the manufacturer's recommended service torque after the first two loadings.

4.2.1.8 The base and/or assembly will be considered unsatisfactory if there is any loss of torque in the bolts or permanent deformation of the flange or coating after the third loading.

4.2.1.9 Load testing is to be performed on free standing units.

4.2.2 Type L-867 Class IA and Class IB Load Test, Adjustable Height Bases and Extensions.

If the adjustable base or extension is designed for installation in earth (no embedment support required), the base or extension must be tested fully extended in free space and must be subject to the load test in paragraph 4.2.1. If the base or extension requires PCC embedment to meet the loading requirements, it must be tested to the requirements in paragraph 4.2.1 with supporting PCC embedment to simulate actual installation as directed by the testing laboratory.

4.2.3 Type L-867 Class IA and Class IB Weld Integrity Test.

This test must be performed after each assembly has undergone the load test described in paragraph 4.2.1.

4.2.3.1 An internal air or hydraulic pressure of 12 psi, ±2 psi, (83 kPa, ±14 kPa) must be maintained within the assembly using pressure fittings.

4.2.3.2 The conduit entrances must include a sample of the conduit interfaces (hub, grommet etc.) that are offered by the manufacturer for interfacing to

the conduit. The conduit entrances must include conduit stubs suitably plugged during the conducting of the test.

4.2.3.3 A high foam soap or detergent solution of low surface tension must be brushed on welds, seams, and joints to detect leakage. Alternatively, the assembly may be submerged in a tank of water while pressurized to detect any air leakage.

4.2.3.4 The assembly will be considered unsatisfactory if leakage is evident. The conduit entrances must be placed at least 24 inches (0.6 m) below the water surface. Any leakage of water into the assembly will be cause for rejection.

Note: This test is also to be performed on bases designed to be field height adjustable, but the extension does not have to be in place.

4.2.4 Type L-867 Class IA and Class IB Dimensional Tests.

Specimens must be measured for conformance to the dimensions specified in Figure 5-1, Figure 5-2, Figure 5-3, and Figure 5-4. Should any new product be introduced that does not exactly conform to the fixed products shown, the applicable dimensions necessary to ensure compatibility with certified light fixtures and bases must be applied.

4.2.5 Type L-867 Class IA and Class IB Protective Coating Thickness Test.

When utilized, the thickness of protective coatings must equal or exceed those specified herein. The weight of hot-dip galvanizing must be tested according to the method described in ASTM A 153. Zinc plating thickness must be tested by a method described in ASTM B 633.

4.2.6 Type L-867 Class IA and Class IB Visual Inspection.

Each unit must be visually inspected for quality of workmanship and materials. The specified Class marking must be inspected for correctness. Particular attention must be given to smoothness and continuity of welds and seams, flatness and smoothness of the flange surface, complete and uniform application of the protective coating, freedom from excess zinc when applicable, and absence of burrs, sharp edges, cracks, voids, penetrations or any other imperfection that could potentially affect the structural integrity or performance of the product.

4.2.7 Type L-867 Class IB Potassium Acetate Test.

Light bases and extensions certified to Type L-867 Class IB requirements must be subjected to testing to determine if they are resistant to corrosion or deterioration caused by deicing fluids containing potassium acetate.

4.2.7.1 The test consists of taking a test light base and filling it half full with a potassium acetate deicing fluid composed of 50 percent potassium acetate and 50 percent water, by weight.

4.2.7.2 The test light base will have conduit connecting devices identical to that to be furnished with the base with conduit stubs plugged and the top of the base must be covered with an appropriate blank cover and gasket.

4.2.7.3 The test light base must remain for 21 days at an elevated temperature of 194°F (90°C).

4.2.7.4 After the test period, the light base and spacer ring must be inspected. Any evidence of corrosion, leakage, or deterioration (peeling delamination, blistering) of coatings must be cause for rejection.

4.3 Type L-867 Class IIA and Class IIB Certification Testing.

Type L-867, Class IIA and Class IIB bases and extensions fabricated from materials to dimensions as specified herein must be capable of passing the following tests.

4.3.1 Type L-867 Class IIA and Class IIB Load Test.

Sample bases and extensions must be subjected to the load test described in paragraph 4.2.1.

4.3.2 Type L-867 Class IIA and Class IIB Weld Integrity Test.

Sample bases and extensions must be subjected to the leakage test described in paragraph 4.2.2.

Note: This test is also to be performed on bases designed to be field height adjustable, but the extension does not have to be in place.

4.3.3 Type L-867 Class IIA and Class IIB Temperature Shock Test.

Temperature shock test requirements apply only to Class II, non-metallic, Type L-867 bases.

4.3.3.1 A temperature shock test must be conducted on a completed non-metallic base assembly.

4.3.3.2 The test must be performed according to MIL-STD-810, Method No. 503.2, Paragraph II, Procedure I.

4.3.3.3 The high test temperature must be conducted at +130°F (+54°C) and the low test temperature must be conducted at -65°F (-54°C).

4.3.3.4 This test must be conducted on the assembly after the load test described in paragraph 4.2.1 has been concluded.

4.3.3.5 Any cracking or joint separation of the materials making up the base assembly will be cause for rejection.

4.3.4 Type L-867 Class IIA and Class IIB Dimensional Tests.

Specimens must be measured for conformance to the dimensions specified in Figure 5-1, Figure 5-2, Figure 5-3, and Figure 5-4, as applicable.

4.3.4.1 Mounting flange and base wall thicknesses must be measured and must be equal to or greater than those required to pass the load test and torque test described in paragraph 4.2.1.

4.3.4.2 Should any new product be introduced that does not exactly conform to the fixed products shown, the applicable dimensions necessary to ensure compatibility with certified light fixtures and bases must be applied.

4.3.5 Type L-867 Class IIA and Class IIB Protective Coating Thickness Test.

For components of the base or assembly requiring protective coatings, the thickness of protective coatings must be tested in accordance with paragraph 4.2.5.

4.3.6 Type L-867 Class IIA and Class IIB Visual Inspection.

Bases must be visually inspected in accordance with paragraph 4.2.6.

4.3.7 Type L-867 Class IIB Potassium Acetate Test.

Those bases and extensions certified to Type L-867 Class IIB requirements must be subjected to testing to determine if they are resistant to corrosion caused by deicing fluids containing potassium acetate. The test must be conducted in accordance with paragraph 4.2.7.

4.3.8 Type L-894 Elevated Light Cover Load and Bending Moment Test.

A static load and bending moment test must be performed on an elevated light cover mated to an L-867 light base (or equivalent).

4.3.8.1 **Type L-894 Test Load Application Method.**

The test load must be applied to the top part of the test assembly through a rubber block of a diameter at least 1 inch (25.4 mm) less than the outside diameter of the light assembly. The rubber block must be 1.5 inches thick, ± 0.25 inch thick and have a “Shore A” hardness of 55-70.

4.3.8.2 **Type L-894 Test Load Application.**

For elevated light covers, the load must be 2,500 pounds (1,134 kg). The load must be applied uniformly over the rubber block in paragraph 4.3.8.1 at a rate not greater than 10,000 pounds (4,536 kg) per minute. Full load must be applied for at least 1 minute.

4.3.8.3 **Type L-894 Bending Moment.**

When the elevated light cover is bolted to an L-867 light base, it must withstand a bending moment of 2,500-foot pounds (3,390 N·m) for the L-804- and 700-foot pounds (949 N·m) for all other applications.

997 4.3.8.4 **Type L-894 Test Results.**
998 The test is considered as unsatisfactory if there any permanent
999 deformation, cracking of material or finish, breaking, or damage to the
1000 light, and/or elevated light cover.

1001 4.3.9 Type L-895 Elevated Light Mounting Stake Dimensional Tests.
1002 Verify that the dimensions of the mounting stake are per paragraphs 3.3.3.2 and
1003 3.3.3.2.3.

1004 4.3.9.1 **Type L-895 Elevated Light Mounting Stake Protective Coatings.**
1005 Verify that all protective coatings are per paragraph 3.2.

1006 4.4 **Type L-868 Class IA and Class IB Certification Testing.**
1007 Type L-868, Class I bases and extensions fabricated with the materials and dimensions
1008 specified herein must pass the following tests.

1009 4.4.1 Type L-868 Class IA and Class IB Load Test.
1010 Sample bases and extensions must be subject to the load test described in paragraph
1011 4.2.1 with the following exception. A load of 450 psi (3,103 kPa) must be applied
1012 uniformly over the area of the rubber block at a rate not to exceed 10,000 pounds (4,536
1013 kg) per minute. The test section must be a unit in height deemed to be the maximum
1014 height, to be furnished by the manufacturer. For 8-inch (203 mm) Type L-868, one-
1015 inch (25 mm) conduit entrances must be used.

1016 4.4.2 Type L-868 Class IA and Class IB Fatigue Test.
1017 If a material other than ASTM A36 steel is used for a major load-bearing structural
1018 component, the material must have a fatigue limit or endurance limit no less than 27 ksi
1019 (186 MPa). Specimens from the proposed material must be able to withstand a
1020 minimum of 5×10^7 cycles at 27 ksi (186 MPa) by a standard R.R. Moore rotating
1021 beam fatigue test using polished specimens. No less than three tests must be conducted
1022 to validate the material's fatigue properties.

1023 4.4.3 Type L-868 Class IA and Class IB Impact Test.
1024 If a material other than ASTM A36 steel is used for a major load-bearing structural
1025 component, the material must have an impact toughness equal to or greater than 15 ft-lb
1026 (20 J) at 20°F (-7°C), per the Charpy V-notch test specified in ASTM E23. No less than
1027 three tests must be conducted to validate the material's impact properties.

1028 4.4.4 Type L-868 Class IA and Class IB Flange Bolt Torque Test.

1029 4.4.4.1 Flanges must be tested by inserting dry 3/8 inch × 16 threads per inch 18-8
1030 stainless steel tap (fully threaded) bolts meeting EB 83A used to mount a
1031 typical in-pavement light fixture in all 6 bolt holes and torqueing all bolts
1032 to failure.

Note: Check with a light fixture manufacturer for a typical bolt length used to mount in-pavement light fixtures.

4.4.4.2 Any cracking or permanent deformation of the flange material will be cause for rejection. Any rotation or distortion of installed remedial devices or replaceable inserts will also be cause for rejection.

4.4.5 Type L-868 Class IA and Class IB Weld Integrity Test.

Sample bases and extensions must be subjected to the leakage test described in paragraph 4.2.2.

Note: This test is also to be performed on bases designed to be field height adjustable, but the extension does not have to be in place.

4.4.6 Type L-868 Class IA and Class IB Dimensional Tests.

Specimens must be measured for conformance to the dimensions per Figure 5-5 through Figure 5-9. Should any new product be introduced that does not exactly conform to the certified products per this AC, the applicable dimensions necessary to ensure compatibility with currently certified light fixtures and bases must be applied.

4.4.7 Type L-868 Class IA and Class IB Protective Coating Thickness Test.

For components of the base or assembly requiring protective coatings, the thickness of protective coatings must be tested in accordance with paragraph 4.2.5.

4.4.8 Type L-868 Class IA and Class IB Visual Inspection.

Specimens must be subject to visual inspection as described in paragraph 4.2.6.

4.4.9 Type L-868 Class IB Potassium Acetate Test.

Bases and Extensions must be subjected to testing to determine if they are resistant to corrosion caused by deicing fluids containing potassium acetate. The test must be conducted in accordance with paragraph 4.2.7.

4.4.10 Type L-868 Torque Test for Adjustable Height Bases and Extensions.

Two different torque tests are specified depending on the intended application for Class IA and IB bases.

4.4.10.1 **Base Anchored into the Surrounding Pavement.**

4.4.10.1.1 The torque test must be performed on a specimen properly assembled and constructed that closely simulates actual installation in a pavement.

4.4.10.1.2 Prior to test, reference “tick” marks must be made on the mounting flange and surrounding pavement material.

4.4.10.1.3 A torque of 100,000 in-lbs (11,300 N m) must be applied perpendicular to the vertical axis of the container through a steel cover plate. The maximum torque must be achieved within 60 seconds of the start of test.

4.4.10.1.4 The torque load must be applied three times.

4.4.10.1.5 Upon completion of the third torque loading, the reference "tick" marks will be measured to determine if the support ring has been displaced in azimuth. An azimuth displacement of 0.25 degree or greater must be cause for rejection.

4.4.10.2 **Base Anchored into Embedment Material.**

After completion of load testing, specimens must be subjected to torque testing as described in paragraph 4.4.10.1 to ensure adequate material thicknesses, attachment, and assembly techniques. An azimuth displacement of 0.25 degree or greater must be cause for rejection. Separation of the flange or bottom of the container from the body sidewalls, as well as buckling and/or permanent deformation of the body sidewalls must also be cause for rejection.

4.5 Production Testing.

4.5.1 Lot Size.

The lot size must be equal to the daily production rate.

4.5.2 Sample Size and Acceptance Criteria.

Production testing must be based on the procedures given in ANSI/ASQC Z1.4. Sample size and acceptance criteria must be based on Table 1 (Sample Size Code Letters), General Inspection Level I, Table II-A (Single Sampling Plans for Normal Inspection), and an Acceptable Quality Level (AQL) of 2.5. Note that normal inspection may be switched to reduced inspection provided the conditions set forth in ANSI/ASQC Z1.4 are met.

4.5.3 Retesting.

If the lot is rejected, the remainder of the lot may be tested and inspected on an individual basis. As an alternative to individual testing and inspection, the remainder of the lot may be tested using criteria in ANSI/ASQC Z1.4 for multiple sampling. Table IVB, Multiple Sampling Plans for Tightened Inspection, using the appropriate sample size and an AQL of 2.5, must be used. Should the lot fail under the multiple sampling plan criteria, all units must be inspected and tested individually and repaired as necessary. Any samples that fail under any of the above criteria must be repaired prior to shipment.

4.5.4 Type L-867, Class IA and Class IB.

4.5.4.1 **Dimensional Tests.**

Random samples from each lot must be subjected to dimensional tests as described in paragraph 4.2.4.

4.5.4.2 **Visual Inspection.**

Random samples from each lot must be subjected to visual inspection as described in paragraph 4.2.6.

4.5.4.3 **Weld Integrity Test.**

Random samples from each lot must be subjected to the leakage test described in paragraph 4.2.3, except that load testing of production samples is not required.

4.5.5 Type L-867 Class IIA and Class IIB.

4.5.5.1 **Dimensional Tests.**

Random samples from each lot must be tested in accordance with paragraph 4.2.4.

4.5.5.2 **Visual Inspection.**

Random samples from each lot must be visually inspected in accordance with paragraph 4.2.6.

4.5.5.3 **Weld Integrity Test.**

Random samples from each lot must be subjected to the leakage test described in paragraph 4.2.3, except that load testing of production samples is not required.

4.5.6 Type L-868 Class IA and Class IB.

4.5.6.1 **Dimensional Test.**

Random samples from each lot must be tested for conformance to the dimensional test described in paragraph 4.4.6.

4.5.6.2 **Visual Inspection.**

Random samples from each lot must be inspected for conformance to the requirements in paragraph 4.4.8.

4.5.6.3 **Weld Integrity Test.**

Random samples from each lot must be subjected to the leakage test described in paragraph 4.2.3, except that load testing of production samples is not required.

1134 Page Intentionally Blank.

CHAPTER 5. Preparation for Delivery

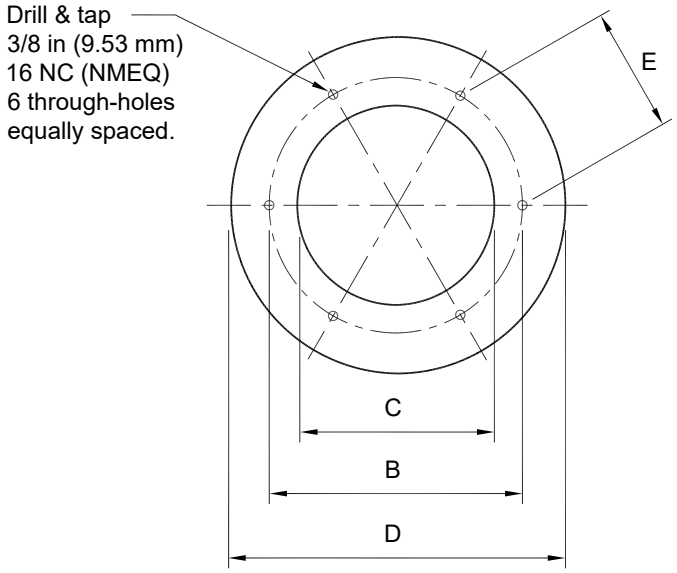
5.1 Packing.

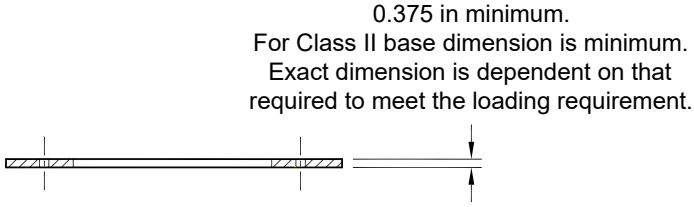
Equipment must be carefully packaged for shipment and delivery to avoid damage and/or corrosion. Protective covers must be installed on all bases. (See paragraph 3.1.3.5.3 and 3.1.3.5.4.)

5.2 Marking.

Equipment must be marked for shipment with the consignee's name and address, and other pertinent information as needed by the installer. Marking must include the following statement, "Installer: These products have been packed and shipped per FAA recommendations. Products are to be handled carefully so no damage to the structure or finish will occur during the installation process."

Figure 5-1. Flange, Type L-867, Class IA, Class IB, Class IIA, Class IIB

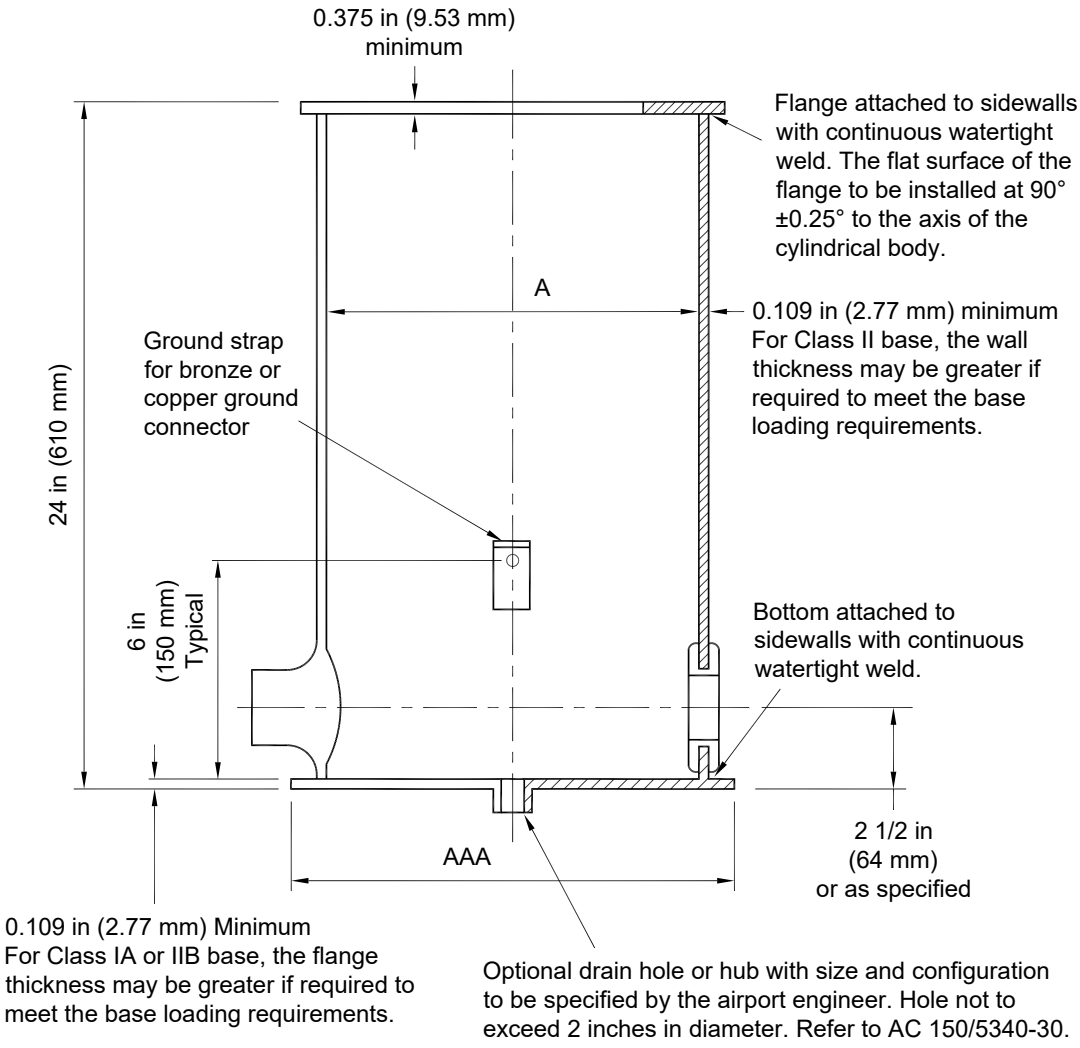




	Sizes		
	B	D	E
Nominal Diameter	12	16	24
D, Outside Dia	13.500	17.375	24.000
Tolerances, D	+0.100 -0.000	+0.100 -0.000	+0.100 -0.000
B, Bolt Circle	10.250	14.250	21.500
Tolerances, B	±0.010	±0.010	±0.010
C, Inside Dia	9.250	12.375	20.000
Tolerances, C	+0.060 -0.000	+0.060 -0.000	+0.060 -0.000
E, Chord	5.125	7.125	10.750
Tolerances, E	±0.005	±0.005	±0.005

Note 1: All dimensions are shown in inches. To convert from inch to mm, multiply by 25.4.
Note 2: "nmeq" means no metric equivalent.

Figure 5-2. Body, Type L-867, Class IA, Class IB, Class IIA, Class IIB



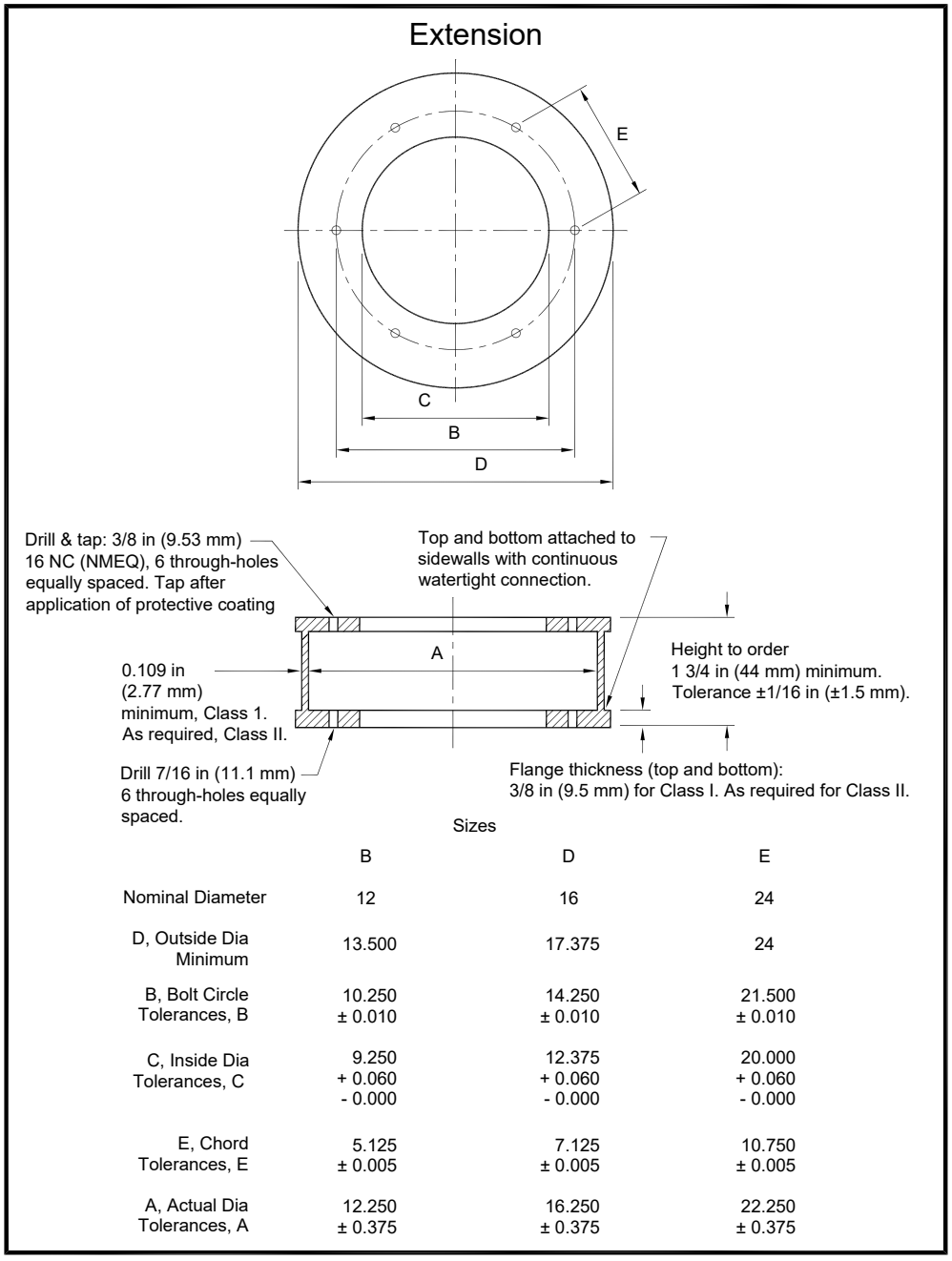
	Sizes		
Nominal Diameter	12	16	24
A, Inside Dia	12.250	16.250	22.500
Tolerances, A	±0.375	±0.375	±0.375
AAA, Max Bottom Dia	13.000	17.375	24.000
Tolerances, AAA	±0.100	±0.100	±0.100

Note 1: Provide conduit entrances. The angular tolerance of the bolt hole axis for the flange is ±1°.

Note 2: Supply six 18-8 stainless steel (or coated steel bolts per EB 83A) hex head 3/8 in (9.53 mm) 16 UNC-2 (nmeq) fully threaded bolts 1 inch (25 mm) long with each container.

Note 3: Dimensions shown are in inches. To convert from inch to mm, multiply by 25.4. "nmeq" means no metric equivalent.

Figure 5-3a. Extensions, Type L-867, Class IA, Class IB, Class IIA, Class IIB



Sizes

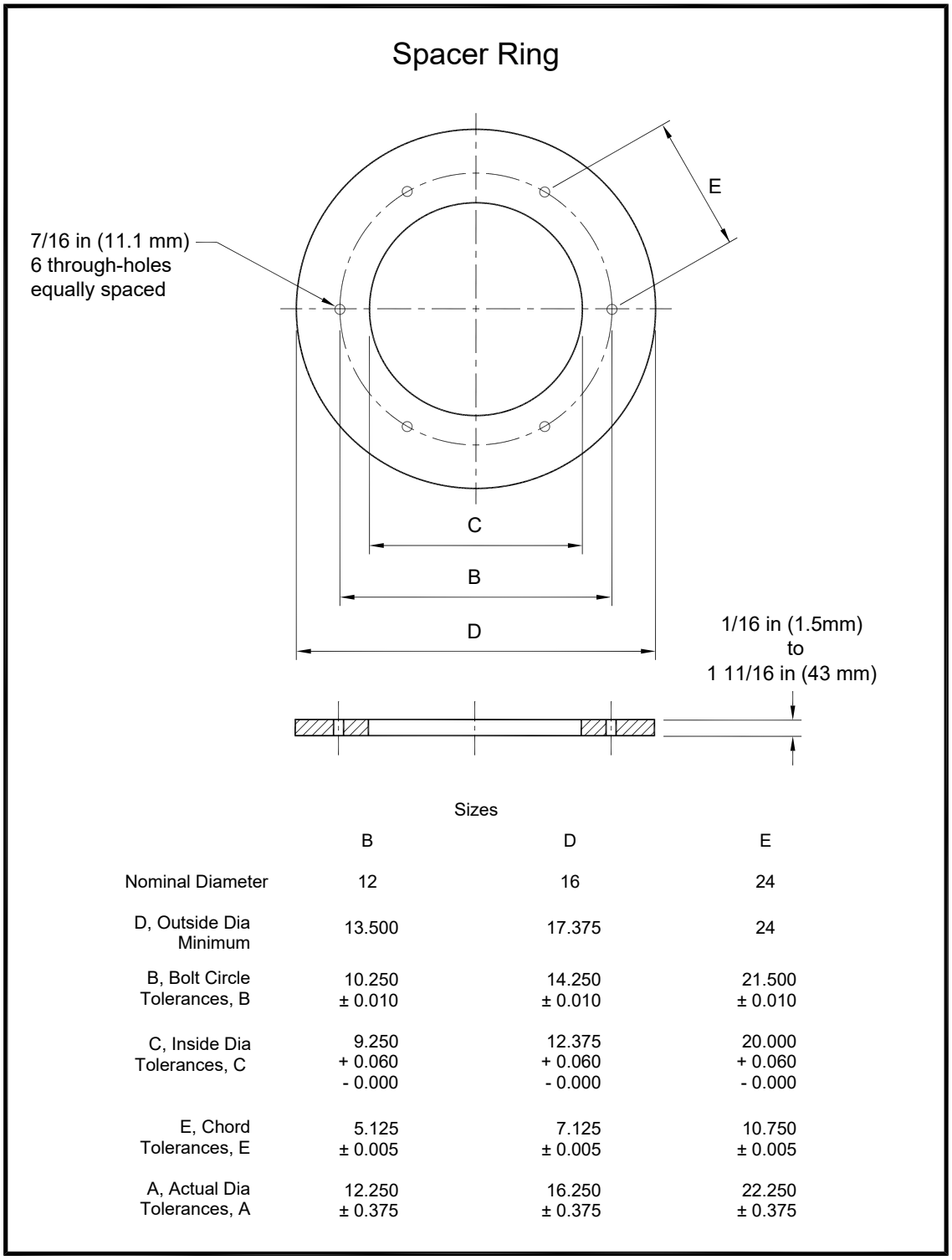
	B	D	E
Nominal Diameter	12	16	24
D, Outside Dia Minimum	13.500	17.375	24
B, Bolt Circle Tolerances, B	10.250 ± 0.010	14.250 ± 0.010	21.500 ± 0.010
C, Inside Dia Tolerances, C	9.250 + 0.060 - 0.000	12.375 + 0.060 - 0.000	20.000 + 0.060 - 0.000
E, Chord Tolerances, E	5.125 ± 0.005	7.125 ± 0.005	10.750 ± 0.005
A, Actual Dia Tolerances, A	12.250 ± 0.375	16.250 ± 0.375	22.250 ± 0.375

Note 1: Aligned the holes in the top and bottom of extensions.

Note 2: For extension top flange - Provide (6) stainless steel 18-8 hex head 3/8-inch (9.53 mm) 16 UNC (nmeq) bolts with each extension sufficiently long to provide minimum 1/2-inch (13 mm) thread engagement. Tabulated dimensions are in inches. To convert from inch to mm multiply by 25.4. "nmeq" means no metric equivalent.

Note 3: For base container - Provide (6) stainless steel 18-8 hex head 3/8-inch (9.53 mm) 16 UNC (nmeq) bolts with each extension sufficiently long enough to provide a minimum 1/2-inch (13 mm) thread engagement. Coated steel bolts per EB 83A may be used in lieu of stainless steel bolts.

1167 **Figure 5-3b. Extension Spacer Ring, Type L-867, Class IA, Class IB, Class IIA,**
1168 **Class IIB**

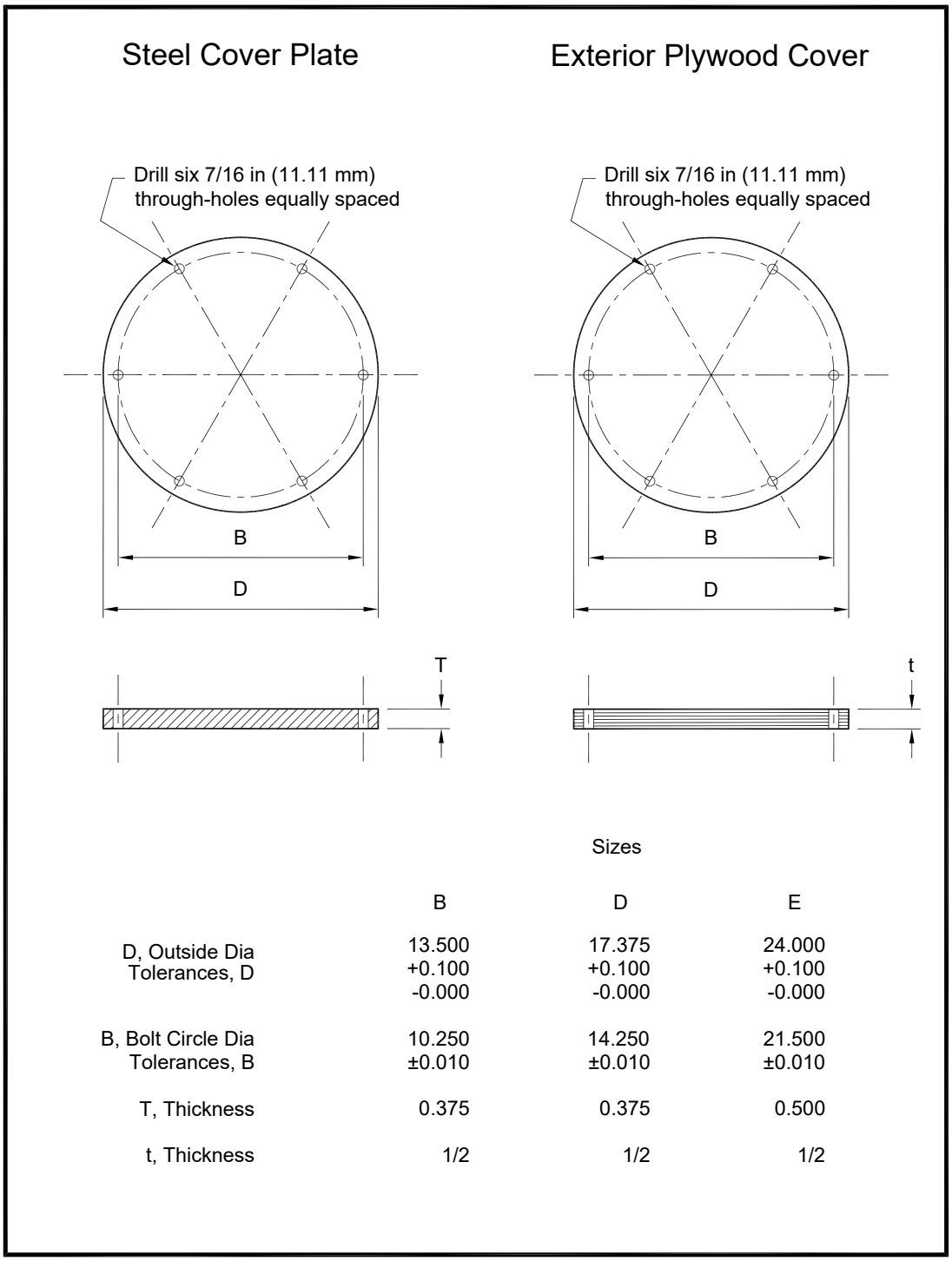


Sizes

	B	D	E
Nominal Diameter	12	16	24
D, Outside Dia Minimum	13.500	17.375	24
B, Bolt Circle Tolerances, B	10.250 ± 0.010	14.250 ± 0.010	21.500 ± 0.010
C, Inside Dia Tolerances, C	9.250 + 0.060 - 0.000	12.375 + 0.060 - 0.000	20.000 + 0.060 - 0.000
E, Chord Tolerances, E	5.125 ± 0.005	7.125 ± 0.005	10.750 ± 0.005
A, Actual Dia Tolerances, A	12.250 ± 0.375	16.250 ± 0.375	22.250 ± 0.375

1169

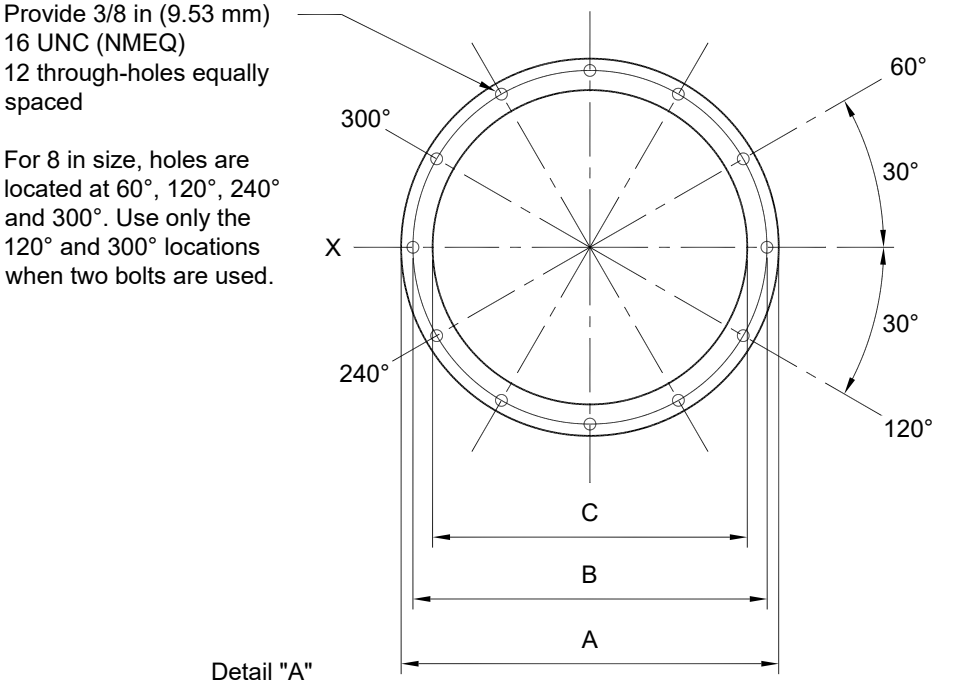
1170 **Figure 5-4. Accessories, Type L-867**



	Sizes		
	B	D	E
D, Outside Dia Tolerances, D	13.500 +0.100 -0.000	17.375 +0.100 -0.000	24.000 +0.100 -0.000
B, Bolt Circle Dia Tolerances, B	10.250 ±0.010	14.250 ±0.010	21.500 ±0.010
T, Thickness	0.375	0.375	0.500
t, Thickness	1/2	1/2	1/2

1171
1172 **Note 1:** Supply 18-8 stainless steel hex head 3/8 (9.53 mm) UNC 16 (nmeq) bolts of sufficient length to
1173 provide full thread engagement with flange.
1174 **Note 2:** Dimensions tabulated above are in inches. To convert from inch to mm, multiply by 25.4. “nmeq”
1175 means no metric equivalent.

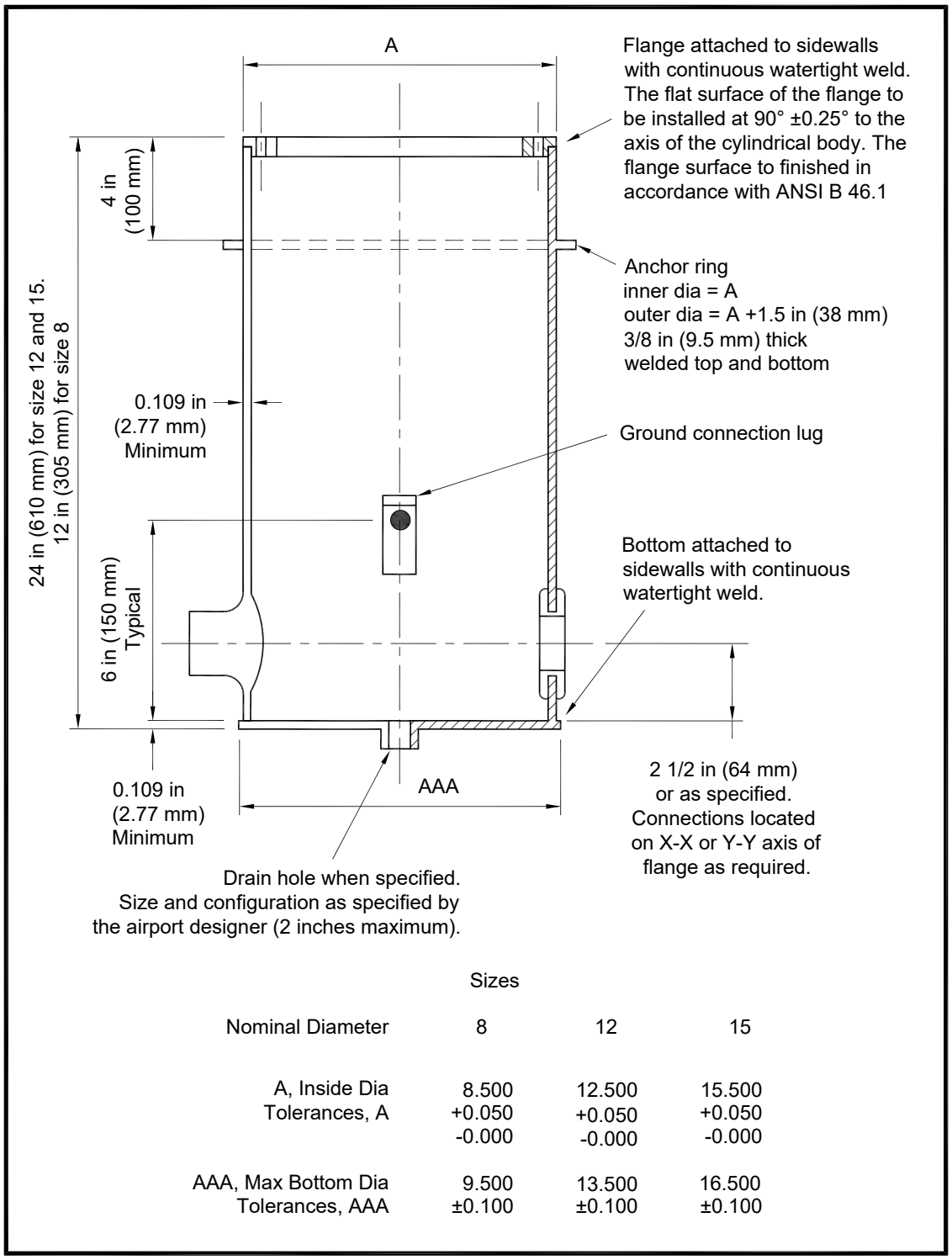
1176 **Figure 5-5. Flange, Type L-868, Class IA, Class IB**



	Sizes		
	A	B	C
Nominal Diameter	8	12	15
A, Outside Dia	8.500	12.500	15.500
Tolerances, A	+0.050 -0.000	+0.050 -0.000	+0.050 -0.000
B, Bolt Circle	7.250	11.250	14.250
Tolerances, B	±0.010	±0.010	±0.010
C, Inside Dia	6.500	10.000	13.000
Tolerances, C	+0.015 -0.000	+0.015 -0.000	+0.015 -0.000

1177
1178 **Note 1:** Dimensions tabulated above are in inches. To convert from inch to mm, multiply by 25.4. “nmeq”
1179 means no metric equivalent.

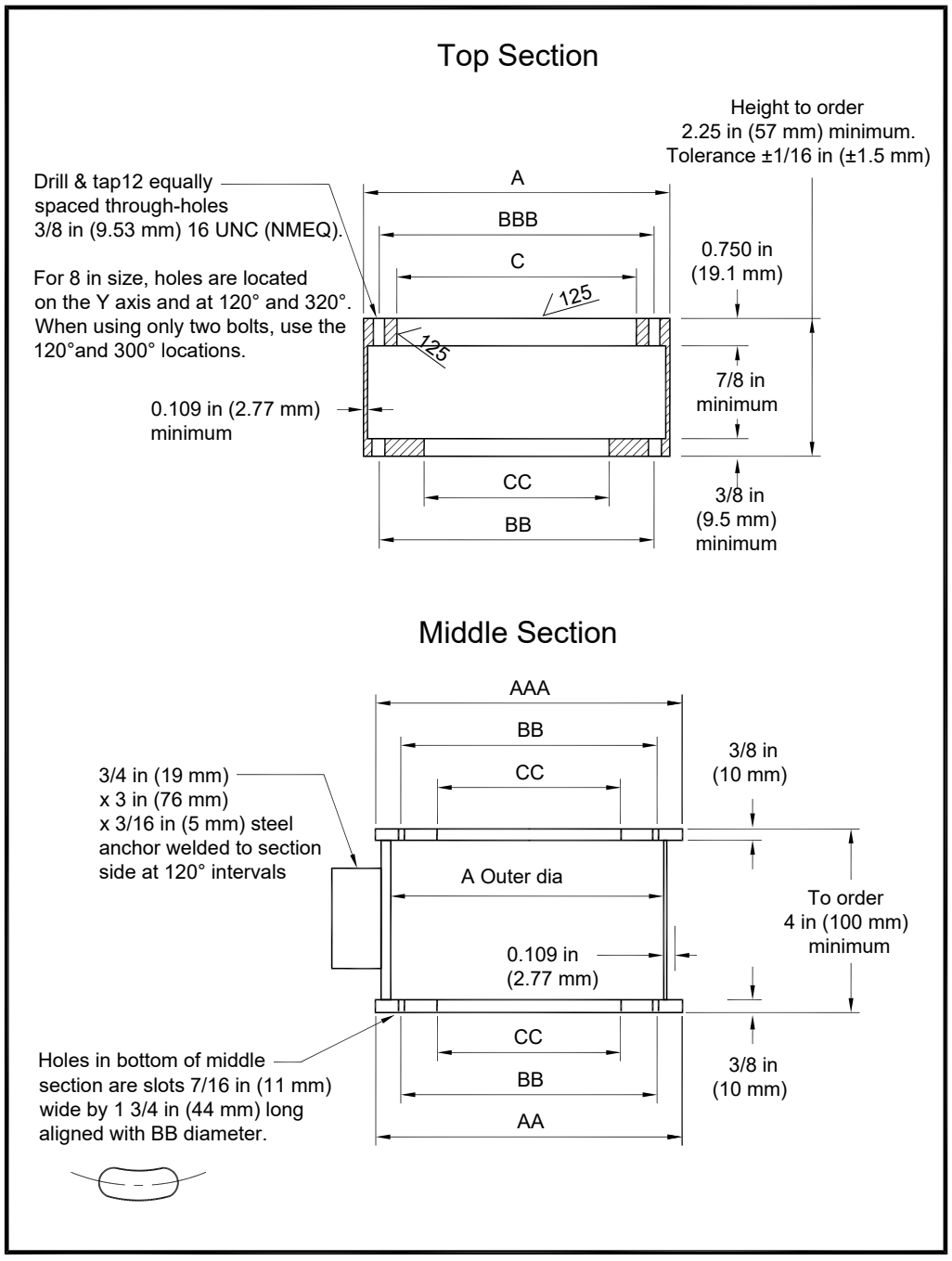
Figure 5-6. Body, Type L-868, Class IA, Class IB



	Sizes		
Nominal Diameter	8	12	15
A, Inside Dia	8.500	12.500	15.500
Tolerances, A	+0.050 -0.000	+0.050 -0.000	+0.050 -0.000
AAA, Max Bottom Dia	9.500	13.500	16.500
Tolerances, AAA	±0.100	±0.100	±0.100

Note 1: Dimensions tabulated above are shown in inches. To convert from inch to mm, multiply by 25.4. "nmeq" means no metric equivalent.

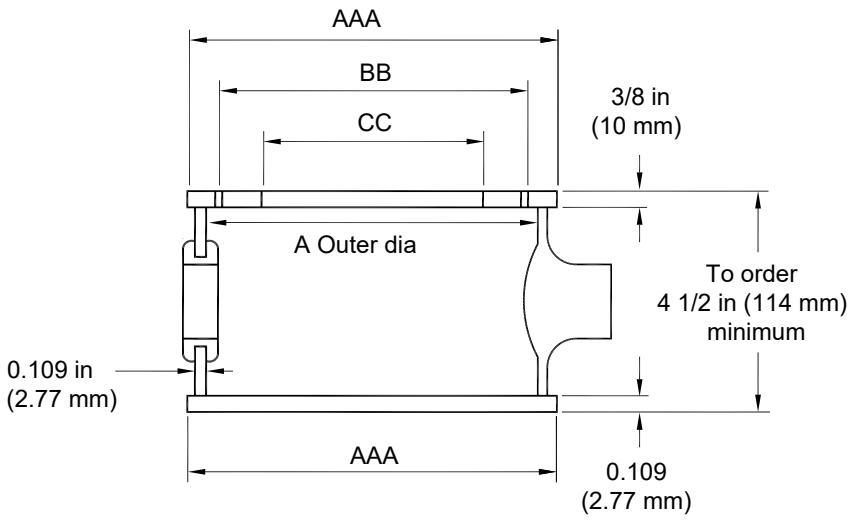
Figure 5-7a. Sectional Body, Type L-868, Class IA, Class IB, Top and Middle Section



Note 1: Tops and bottoms attached to sidewalls with continuous watertight welds.
Note 2: Align holes in tops and bottoms.
Note 3: Supply six 18-8 stainless steel hex head 3/8 in (9.53 mm) fully threaded 16 UNC-2 (nmeq) bolts, 7/8 in (22 mm) long with each multiple section.
Note 4: Dimensions shown are in inches. To convert from inch to mm, multiply by 25.4. "nmeq" means no metric equivalent.
Note 5: Align conduit connections with bolt hole axis in bottom section.
Note 6: See Figure 5-7b for Sizes Table.

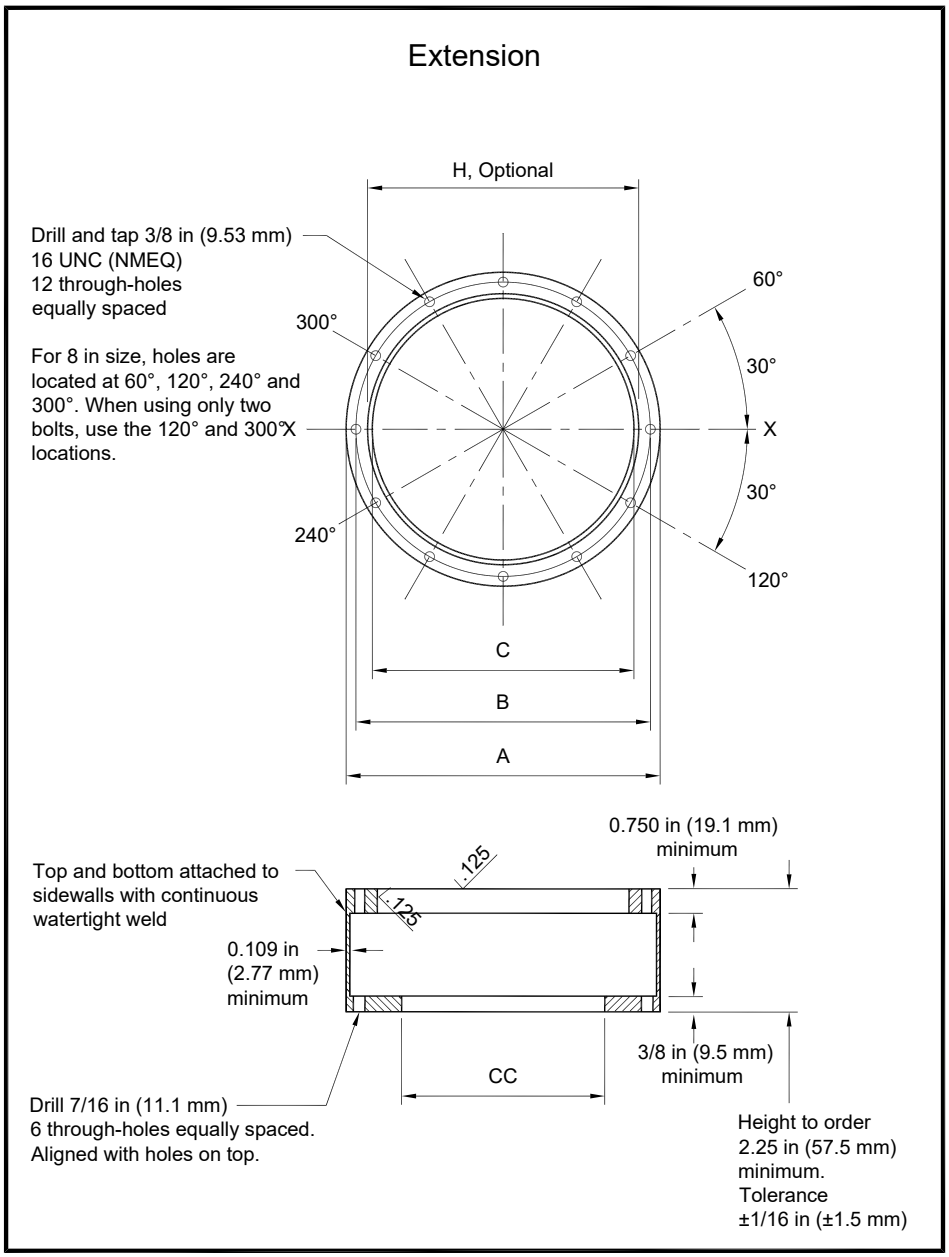
Figure 5-7b. Sectional Body, Type L-868, Class IA, Class IB, Bottom Section and Sizes Table

Bottom Section



	Sizes		
	A	B	C
Nominal Diameter	8	12	15
A, Actual Dia. Tolerances, A	8.500 +0.050	12.500 ±0.050	15.500 +0.050
AAA Tolerances, AAA	9.500 ±0.100	13.500 ±0.100	16.500 ±0.100
BB, Bolt Circle Tolerances, BB	6.250 ±0.010	10.250 ±0.010	13.250 ±0.010
BBB, Bolt Circle Tolerances, BBB	7.250 ±0.010	11.250 ±0.010	14.250 ±0.010
C, Inside Dia.	6.500	10.000	13.000
CC Tolerances, CC	5.250 +0.015	9.250 ±0.015	12.375 +0.015

Figure 5-8a. Extensions, Type L-868 Class IA, Class IB



Note 1: Supply six 18-8 stainless steel (or coated steel bolts per EB 83A) hex head 3/8 inch (9.53 mm) fully threaded UNC 16 (nmeq) bolts of a length required for minimum 1/2 in (13 mm) thread engagement in top flange of L-868 container with each spacer ring. For extensions, supply twelve bolts meeting the same requirements.

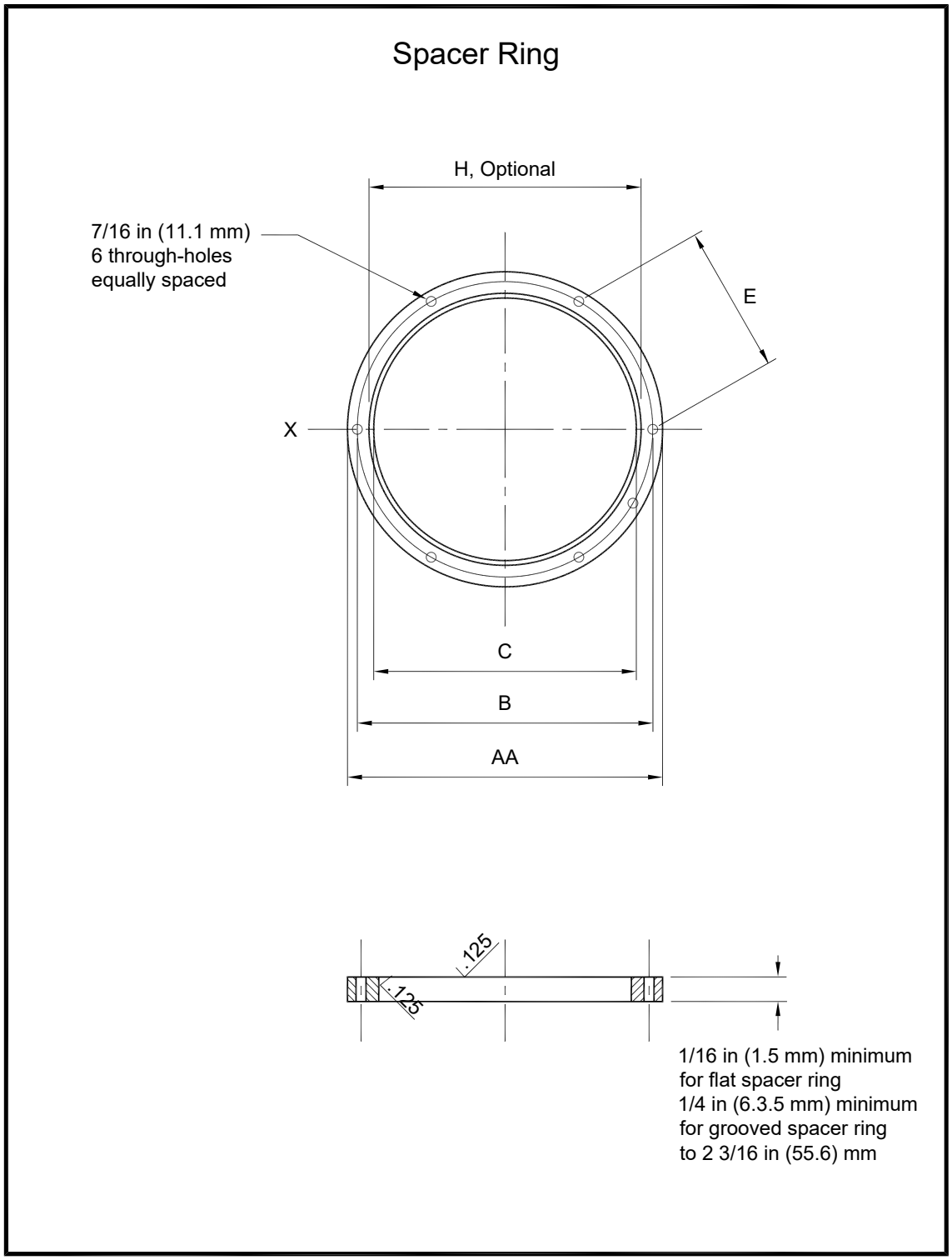
Note 2: Tabulated dimensions shown above are in inches. To convert inch to mm, multiply by 25.4. "nmeq" means no metric equivalent.

Note 3: Type C* dimensions are applicable for extensions or spacers used to raise currently installed 17-inch fixtures.

Note 4: See paragraph 3.1.3.1 for protective dam dimensional information.

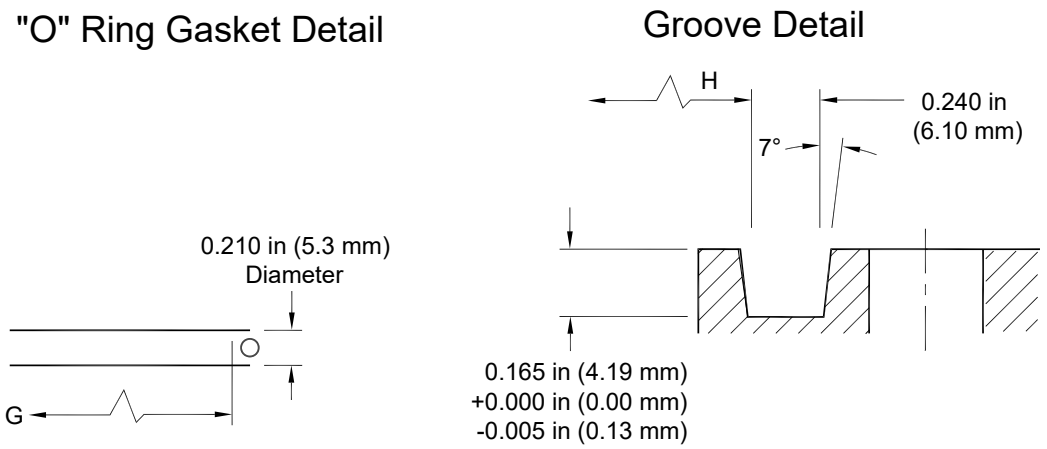
Note 5: See Figure 5-8c for Sizes Table.

1210 **Figure 5-8b. Extensions, Type L-868 Class IA, Class IB Spacer Ring**



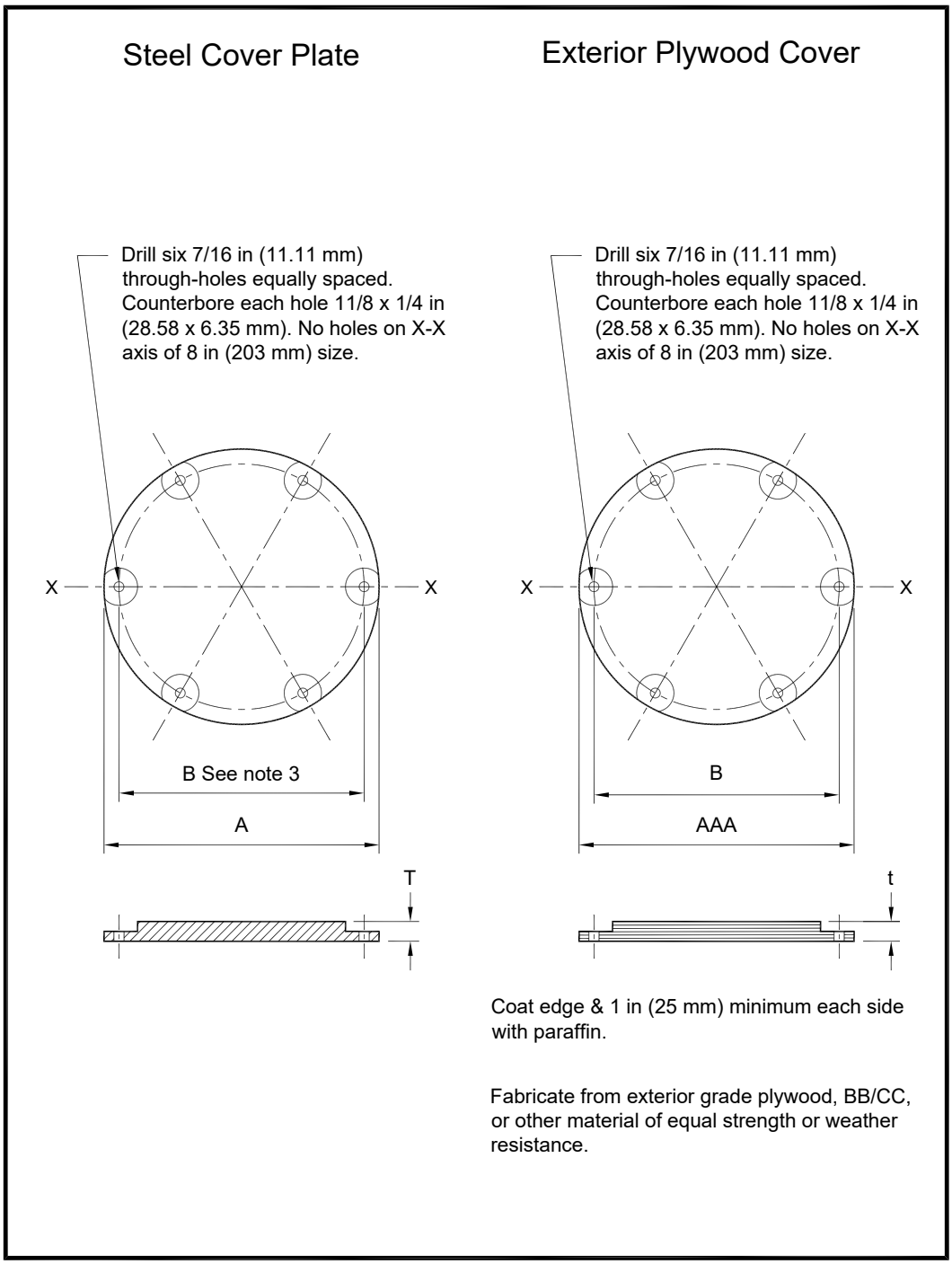
1211
1212 **Note 1:** See Figure 5-8c for Sizes Table.

Figure 5-8c. Extensions, Type L-868 Class IA, Class IB "O" Ring Gasket, Groove Details, and Sizes Table



	Sizes		
	A	B	C
Nominal Diameter	8	12	15
A, Ext. Outside Dia Tolerances, A	8.500 +0.050 -0.000	12.500 +0.050 -0.000	15.500 +0.050 -0.000
AA, Ext. Outside Dia Tolerances, AA	8.000 +0.050 -0.000	12.000 +0.050 -0.000	15.000 +0.050 -0.000
B, Bolt Circle Tolerances, B	7.250 ±0.010	11.250 ±0.010	14.250 ±0.010
H, Groove Dia Tolerances, H	6.145 ±0.008	10.145 ±0.008	13.145 ±0.008
C, Inside Dia Tolerances, C	6.500 +0.015 -0.000	10.000 +0.015 -0.000	13.000 +0.015 -0.000
CC, Inside Dia Tolerances, CC	6.500 ±0.015	10.00 ±0.015	13.000 ±0.015
E, Chord Tolerances, E	3.625 ±0.005	5.625 ±0.005	7.125 ±0.005
G, Gasket Dia Tolerances, G	6.160 ±0.008	10.160 ±0.008	13.160 ±0.008

Figure 5-9a. Accessories, Type L-868 Steel Cover Plate and Exterior Plywood Cover



Note 1: Supply six 18-8 stainless steel (or coated steel bolts per EB 83A) hex head 3/8 in (9.53 mm) fully threaded 16 UNC (nmeq) bolts of a length required for minimum 1/2 in (13 mm) thread engagement in the top flange of a Type L-868.

Note 2: See Figure 5-9b for Sizes Table.

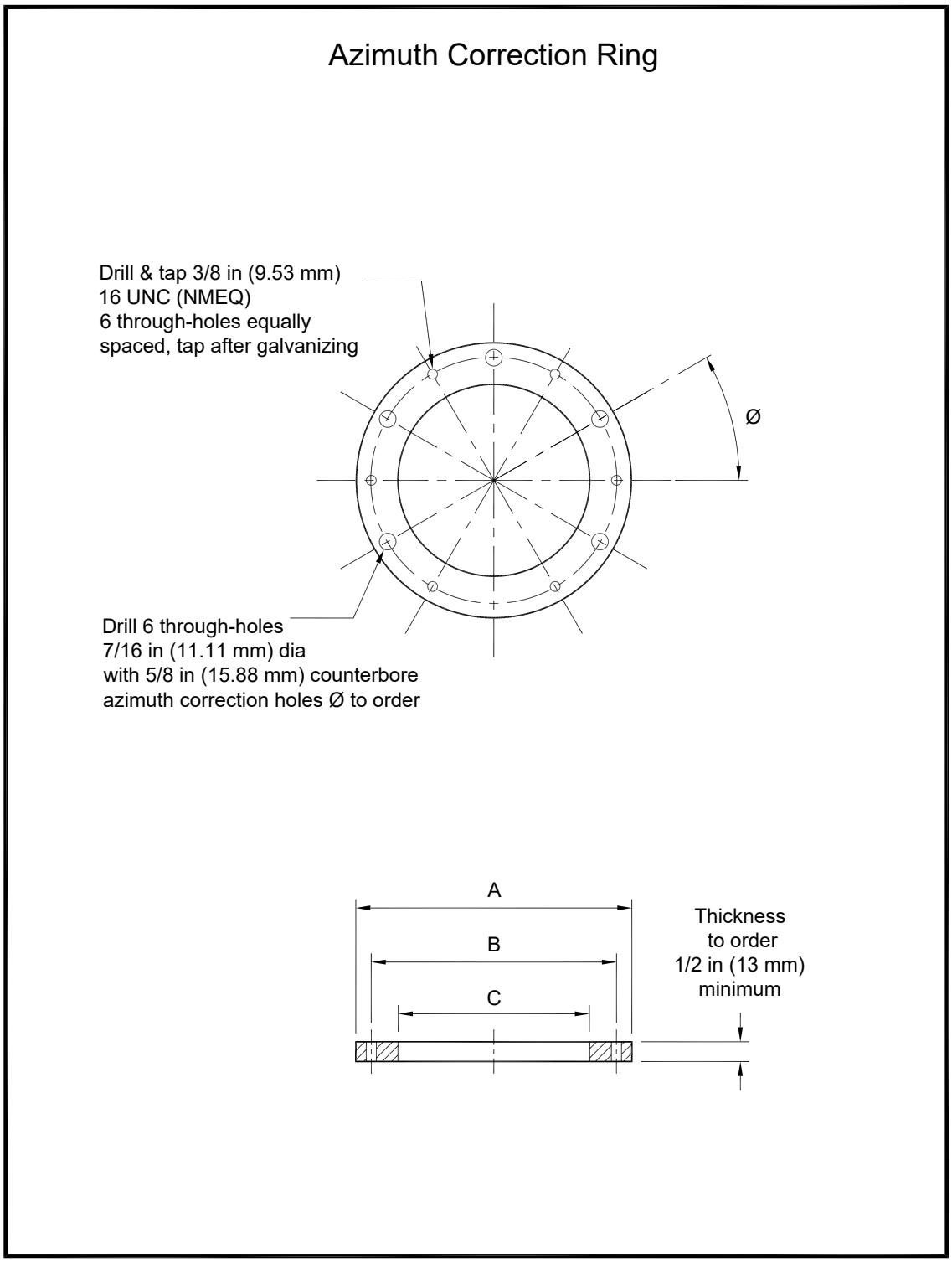
1223

Figure 5-9b. Accessories, Type L-868 Sizes Table

	Sizes			Typical Adapter Ring	
	A	B	C	8" to 12"	12" to 15"
A,Outside Dia Tolerances, A	8.000 + 0.050 - 0.000	12.000 + 0.050 - 0.000	15.000 + 0.050 - 0.000	11.938" +0.100 -0.000	14.938"/17.250" +0.100 -0.000
AA,Outside Dia Tolerances, AA				9.938" +0.000 -0.030	
AAA,Outside Dia Tolerances, AAA	8.50 + 0.050 - 0.000	12.50 + 0.050 - 0.000	15.50 + 0.050 - 0.000		
B, Bolt Circle Tolerances, B	7.250 ± 0.010	11.250 ± 0.010	14.250 ± 0.010	11.250 ± 0.010	14.250 ± 0.010
BB, Bolt Circle Tolerances, BB				7.250 ± 0.010	11.250 ± 0.010
C, Inside Dia Tolerances, C	6.500 + 0.015 - 0.000	10.000 + 0.015 - 0.000	13.000 + 0.015 - 0.000	8.125* + 0.015 - 0.000	12.250* + 0.015 - 0.000
CC, Inside Dia Tolerances, CC				6.500 + 0.015 - 0.000	10.000 + 0.015 - 0.000
T, Thickness (steel)	0.750	0.750	1.250	1.250"	1.250"
t, Thickness (plywood)	3/4 w/o Mud Plate 5/8 w/ Mud Plate	3/4 w/o Mud Plate 5/8 w/ Mud Plate	1-1/4		

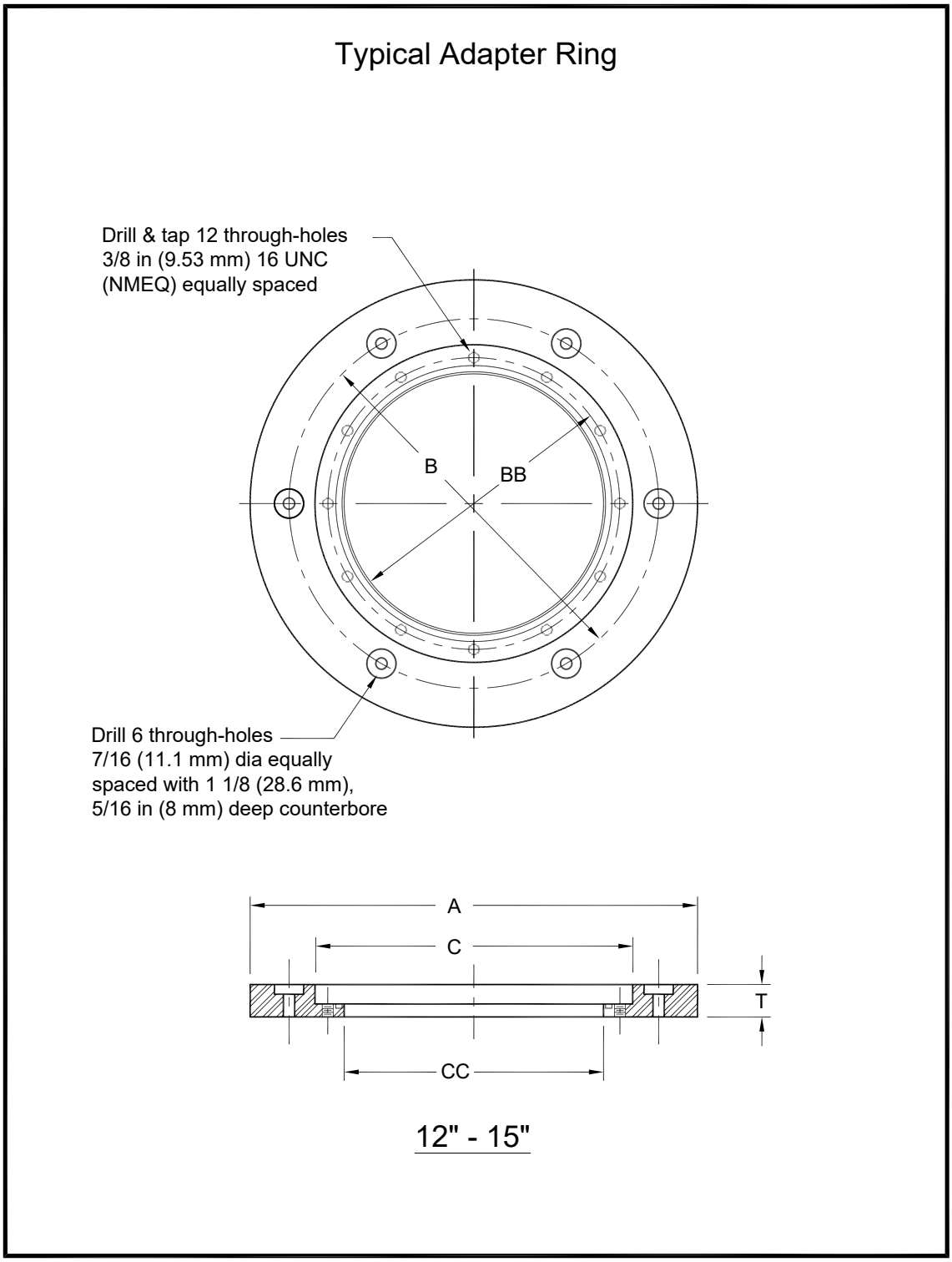
1224

1225 **Figure 5-9c. Accessories, Type L-868 Azimuth Correction Ring**



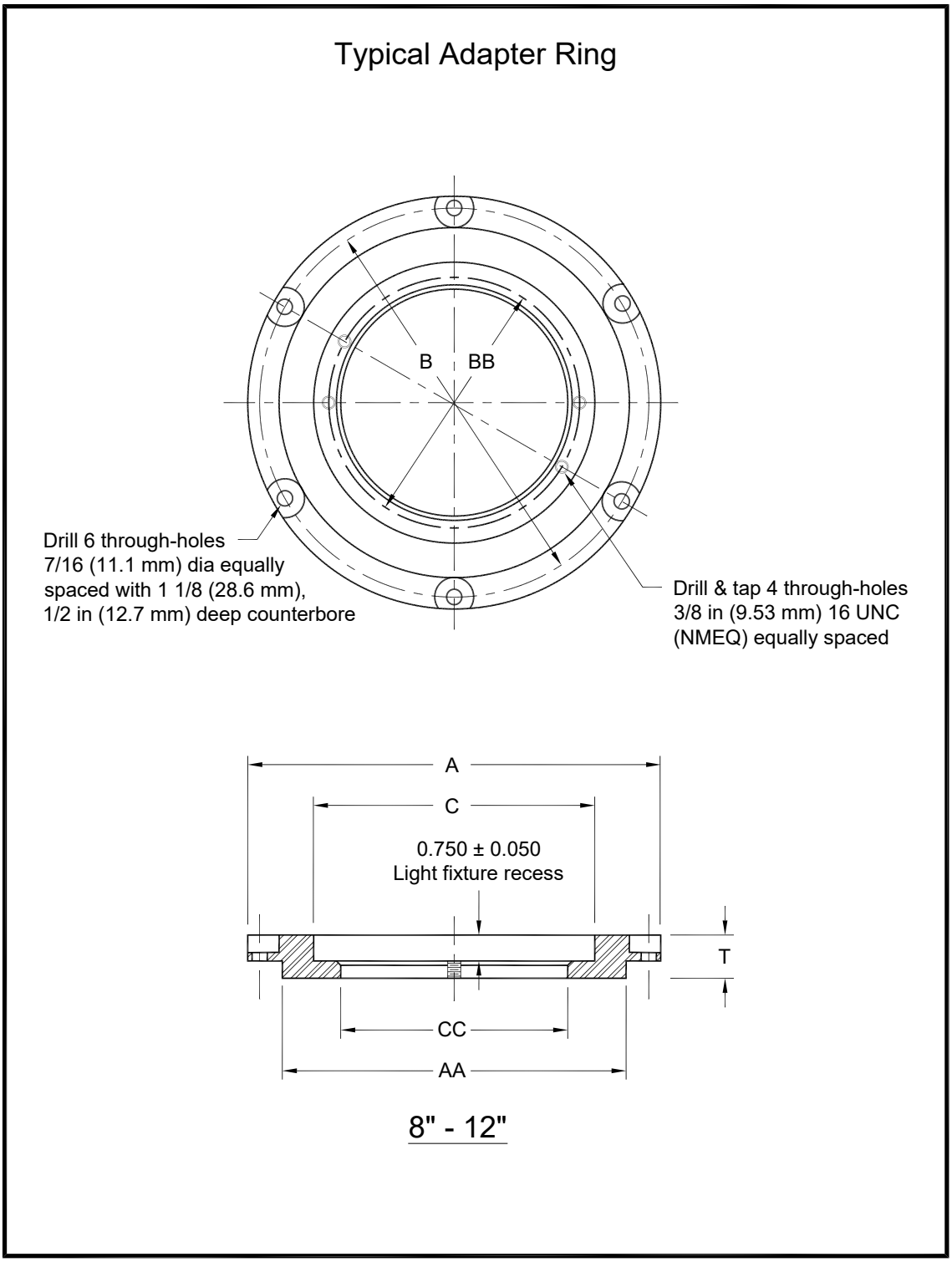
1226
1227 **Note 1:** See Figure 5-9b for Sizes Table.

1228 **Figure 5-9d. Accessories, Type L-868 Typical 12-15 Inch Adapter Ring**



1229
1230 **Note 1:** See Figure 5-9b for Sizes Table.

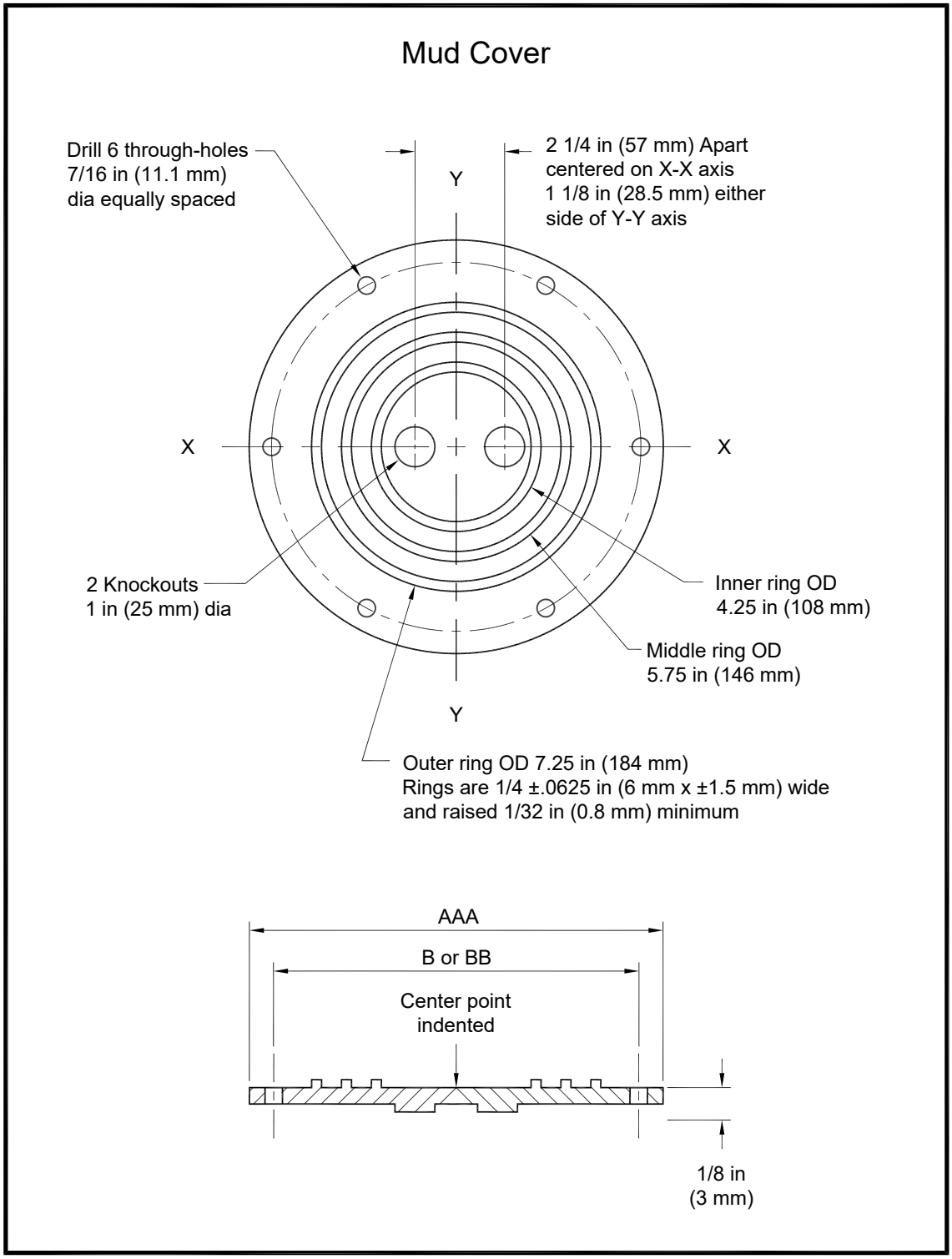
Figure 5-9e. Accessories, Type L-868 Typical 8-12 Inch Adapter Ring



Note 1: See Figure 5-9b for Sizes Table.

1234

Figure 5-9f. Accessories, Type L-868 Mud Cover



1235
1236

Note 1: See Figure 5-9b for Sizes Table.

Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-100, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Subject: AC 150/5345-42K Date: _____

Please check all appropriate line items:

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:

_____
_____
_____

☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

_____
_____
_____

☐ Other comments:

_____
_____
_____

☐ I would like to discuss the above. Please contact me at (phone number, email address).

_____
_____
_____

Submitted by: _____ Date: _____