



**WEAVER GENERAL CONSTRUCTION COMPANY**  
 3679 S. Huron St., Suite 404  
 Englewood, CO 80110  
 Phone: (303) 789-4111 FAX: (303) 789-4310

**SUBMITTAL TRANSMITTAL**

December 16, 2011  
**WGC Submittal No: 13100-002**

**PROJECT:** **Harold Thompson Regional WRF**  
 Birdsall Rd.  
 Fountain, CO 80817  
 Job No. 2908

**ENGINEER:** **GMS, Inc.**  
 611 No. Weber St., #300  
 Colorado Springs, CO 80903  
 719-475-2935 Roger Sams

**OWNER:** **Lower Fountain Metropolitan  
 Sewage Disposal District**  
 901 S. Santa Fe Ave.  
 Fountain, CO 80817  
 719-382-5303 James Heckman

**CONTRACTOR:** **McDade Woodcock, Inc.**  
 7222 Commerce Center Drive, #245  
 Colorado Springs, CO 80909  
 719-264-1236

**SUBJECT:** Lightning Protection for the Secondary Clarifier Complex

**SPEC SECTION:** 13100

**PREVIOUS SUBMISSION DATES:**

**DEVIATIONS FROM SPEC:** \_\_\_ YES  X  NO

**CONTRACTOR'S STAMP:** This submittal has been reviewed by Weaver General Construction and approved with respect to the means, methods, techniques, & safety precautions & programs incidental thereto. Weaver General Construction also warrants that this submittal complies with contracted documents and comprises on deviations thereto:

|   |                                 |
|---|---------------------------------|
| <p><b>Contractor's Stamp:</b></p> <p>Date: 12/16/11<br/>         Reviewed by: H.C. Myers<br/>         ( X ) Reviewed Without Comments<br/>         ( ) Reviewed With Comments</p> <p><b>ENGINEER'S<br/>         COMMENTS:</b> _____</p> | <p><b>Engineer's Stamp:</b></p> |
|---|---------------------------------|

# McDade-Woodcock, Inc.

**TRANSMITTAL**

**No. 00014**

7222 Commerce Center Dr. Suite 245  
Colorado Springs, CO 80919

**Phone:** 719-264-1236  
**Fax:** 719-264-1450

**PROJECT:** Harold D. Thompson WRF

**DATE:** 12/14/2011

**TO:** Weaver General Construction

**REF:** Electrical Submittal  
13100B-001  
Lightning Protection (Secondary Clarifier)


**ATTN:** Wes Weaver

| WE ARE SENDING:                                   | SUBMITTED FOR:   | ACTION TAKEN:  |
|---|--|--|
| <input checked="" type="checkbox"/> Shop Drawings | <input checked="" type="checkbox"/> Approval           | <input type="checkbox"/> Approved as Submitted         |
| <input type="checkbox"/> Letter                   | <input type="checkbox"/> Your Use                      | <input type="checkbox"/> Approved as Noted             |
| <input type="checkbox"/> Prints                   | <input type="checkbox"/> As Requested                  | <input type="checkbox"/> Returned After Loan           |
| <input type="checkbox"/> Change Order             | <input checked="" type="checkbox"/> Review and Comment | <input type="checkbox"/> Resubmit                      |
| <input type="checkbox"/> Plans                    |  | <input checked="" type="checkbox"/> Submit             |
| <input type="checkbox"/> Samples                  | <b>SENT VIA:</b>                                       | <input type="checkbox"/> Returned                      |
| <input type="checkbox"/> Specifications           | <input checked="" type="checkbox"/> Attached           | <input type="checkbox"/> Returned for Corrections      |
| <input type="checkbox"/> Other:                   | <input type="checkbox"/> Separate Cover Via            | <input checked="" type="checkbox"/> Due Date: 1/4/2012 |

| ITEM | PACKAGE | SUBMITTAL | DRAWING | REV. | ITEM NO. | COPIES | DATE       | DESCRIPTION   | STATUS |
|------|---------|-----------|---------|------|----------|--------|------------|---|--------|
|      |         |           |         |      | 001      | 1      | 12/14/2011 | Electrical Submittal<br>13100B-001<br>Lightning Protection<br>(Secondary Clarifier Complex) | OUT    |

**Remarks:** Electrical Submittal for Review and Approval  
Via Email Only

**CC:**

**Signed:**   
Janelle L. Smith



McDADE-WOODCOCK, INC.

**HAROLD D. THOMPSON RWRF**  
**HEADWORKS BUILDING**

**McDADE-WOODCOCK INC.**  
**PROJECT NUMBER - 1402**

**ELECTRICAL SUBMITTAL**

**LIGHTNING PROTECTION**

**SECONDARY CLARIFIER COMPLEX**

**13100B-001**

**CORPORATE**

2404 Claremont Ave. NE  
Albuquerque, NM 87107

Mailing Address  
P.O. Box 11592  
Albuquerque, NM 87192

Ph 505-884-0155  
Fax 505-884-6073

**DENVER**

10700 E. Geddes Avenue  
Suite 170  
Englewood CO 80112

Ph 303-803-1809  
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**COLORADO SPRINGS**

7222 Commerce Center Drive  
Suite 245  
Colorado Springs, CO 80919

Mailing Address  
P.O. Box 7349  
Colorado Springs, CO 80933

Ph 719-264-1236  
Fax 719-264-1450

**Owner:**

**Lower Fountain Metropolitan  
Sewage District  
901 S. Santa Fe Avenue  
Fountain, CO 80817**

**General Contractor:**

**Weaver General Construction Co.  
3679 S. Huron St. – Suite 404  
Englewood, CO 80110**

**Electrical Contractor:**

**McDade-Woodcock, Inc.  
7222 Commerce Center Dr.  
#245  
Colorado Springs, CO 80919**

**Engineer:**

**GMS Inc.  
611 N. Weber St., Suite 300  
Colorado Springs, CO 80903**



McDADE-WOODCOCK, INC.

**HAROLD D. THOMPSON RWRF**  
**HEADWORKS BUILDING**

**McDADE-WOODCOCK INC.**  
**PROJECT NUMBER - 1402**

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**13100B-001**

**TABLE OF CONTENTS**

**TAB 1: Technical Data**

**CORPORATE**

2404 Claremont Ave. NE  
Albuquerque, NM 87107

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P.O. Box 11592  
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Colorado Springs, CO 80919

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Colorado Springs, CO 80933

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Fax 719-264-1450





3788 INTERPARK DRIVE  
COLORADO SPRINGS, CO 80907  
(719) 488-2315 • (303) 762-0282  
FAX: (719) 488-3612  
WWW.MRLIGHTNING.COM  
EMAIL: INFO@MRLIGHTNING.COM

## PROJECT

*SECONDARY CLARIFIER COMPLEX  
HAROLD D. THOMPSON RWRF  
FOUNTAIN, COLORADO*

## SUBMITTAL

*SPECIFICATION SECTION 13100  
"LIGHTNING PROTECTION"*

## CONTRACTOR

*MCDADE WOODCOCK  
7222 COMMERCE CENTER DRIVE, #245  
COLORADO SPRINGS, CO 80919  
(719) 264-1236  
ATTN: PATRICK DANENBERG*

## LIGHTNING PROTECTION CONTRACTOR

*MR. LIGHTNING  
3788 INTERPARK DRIVE  
COLORADO SPRINGS, CO 80907  
(719) 488-2315  
ATTN: ALLEN SCOTT COREY*

STANDARD OF EXCELLENCE



## Certification of Lightning Protection Equipment Conformance

East Coast Lightning Equipment, Inc. has been listed with Underwriters Laboratories (UL) as a manufacturer of lightning protection equipment, including lightning conductors, air terminals and fittings since January of 1984. All of the products we sell comply with UL requirements. All products are designed for incorporation into UL Master Labeled lightning protection installations. Our file number with UL is E93753. Our Manufacturer listing mark is 50MO.

East Coast Lightning Equipment, Inc. is a Manufacturer Member of the Lightning Protection Institute (LPI). We are represented on their Board of Directors. We have on staff a certified LPI Master Installer and Systems Designer. All of our products comply with LPI's materials requirements.

Similarly, our products comply with the lightning protection requirements of the National Fire Protection Association as established by NFPA Standard 780.

Through our seats on the Underwriters Laboratory's Industrial Advisory Committee for Lightning Protection and the NFPA's Technical Committee for Lightning Protection Systems we maintain compliance with current code requirements.

## Certification of Warranty

East Coast Lightning Equipment, Inc. warrants that our components meet product testing and inspection for quality of workmanship prior to being shipped from our facility. Our components are guaranteed against defects in material and/or workmanship for one year.

Our lightning protection equipment, including lightning conductors, air terminals and fittings are inspected by UL quarterly. Thus assuring compliance with the most current material requirements of the Underwriters Laboratory's (UL), the Lightning Protection Institute (LPI), and the National Fire Protection Association (NFPA).



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**EAST COAST LIGHTNING EQUIPMENT**

## 7 Materials

7.1 A lightning protection system shall be made of materials that are resistant to corrosion or shall be acceptably protected against corrosion as specified in the Standard for Lightning Protection Components, UL 96.

7.2 Metals shall not be used in combinations that form electrolytic corrosion (metals that are not galvanically compatible) that accelerates their degradation (corrosion or oxidation) in the presence of moisture. This requirement is applicable to lightning protection system components as well as the surface material on which they are mounted. For example, a combination of copper and aluminum shall not be used. See 7.5 – 7.8. Some examples of metals acceptable for use with copper and aluminum are as follows:

a) Metals acceptable for use with copper:

Nickel  
Brass  
Tin  
Lead  
Stainless Steel  
Monel

b) Metals acceptable for use with aluminum:

Magnesium  
Zinc  
Galvanized Steel  
Stainless Steel  
Lead  
Wrought Iron  
Galvalume

7.2 revised October 4, 2010

7.3 Deleted October 4, 2010



7.4 Lightning conductors subject to mechanical damage or displacement shall be protected with molding or tubing. Metal pipe or tubing used around a conductor shall be bonded to the conductor at both ends of the pipe or tubing. A downspout shall not be used as a protector. See 9.3.5.

7.5 A copper lightning protection component shall not be installed directly on aluminum surfaces or external galvanized steel surfaces. See 7.2.

7.6 An aluminum lightning protection component shall not be installed directly on copper roofing material or other copper surface or below the run off from a copper surface. See 7.2.

7.7 Aluminum components shall not be used where they come into direct contact with earth. Bimetallic fittings shall be used for the connection of aluminum down conductors to copper or copper-clad conductors. Where so used, bimetallic fittings shall not be installed less than 18 inches (460 mm) above earth level. See 7.2.

7.8 Bimetallic fittings shall be used when joining metals that are not galvanically compatible. See 7.2.

7.9 Aluminum conductors and components shall not be:

- a) Embedded in concrete or masonry;
- b) In direct contact with a surface coated with an alkaline base paint; or
- c) Installed in wet locations, for example inside eave troughs or downspouts.

## 8 Strike Termination Devices

### 8.1 General

8.1.1 A metal body that is 3/16 inch (4.8 mm) thick or greater that is subject to a direct lightning strike may serve as a strike termination device and shall be connected to the lightning protection system. The connections shall be main-size and provide a two-way path to ground as is required for air terminals.

8.1.2 Strike termination devices shall be installed to provide a zone of protection in accordance with Section 8.2 for each part of a structure that is exposed to direct lightning strikes.

8.1.3 Air terminals are not required for parts of a structure located within a zone of protection.

8.1.4 Strike termination devices that are a permanent part of the structure and that are 3/16 inch (4.8 mm) thick or more shall be connected to the lightning protection system using main-size conductors and a main size bonding plate/connector as described 12.10 and shall have a two-way path to ground as is required for air terminals.

8.1.4 revised October 4, 2010

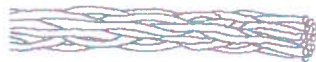
8.1.5 An air terminal shall be placed not more than 2 feet (610 mm) from the ends of each ridge, edge, or outside corner of roofs. See Figure 8.2.

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## Aluminum Conductor

1

A11



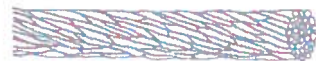
11 strands of 14 gauge (1.63mm) secondary bonding aluminum cable.  
45 pounds per thousand feet (67 grams/meter).  
45,107 circular mils (23mm<sup>2</sup>) of conductivity.

A24



24 strands of 14 gauge (1.63mm) basket weave aluminum cable.  
102 pounds per thousand feet (152 grams/meter).  
98,640 circular mils (50mm<sup>2</sup>) of conductivity.  
Exceeds Class I requirements.

A28



~~28 strands of 14 gauge (1.63mm) basket weave aluminum cable.~~  
~~115 pounds per thousand feet (172 grams/meter).~~  
~~115,047 circular mils (58mm<sup>2</sup>) of conductivity.~~  
~~Exceeds Class I requirements.~~

A37



~~37 strands of 12-1/2 gauge (1.92mm) concentric wire aluminum cable.~~  
~~200 pounds per thousand feet (298 grams/meter).~~  
~~211,475 circular mils (107mm<sup>2</sup>) of conductivity.~~  
~~Exceeds Class II requirements (4/0).~~



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**EAST COAST LIGHTNING EQUIPMENT**

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24 Lanson Drive | Winsted, CT 06098

T 860.379.9072

F 860.379.2046

EM info@ecle.biz

WEB www.ecle.biz

## Copper and Tinned Conductor

C14



14 strands of 17 gauge (1.15mm) secondary bonding copper cable.  
92 pounds per thousand feet (137 grams/meter).  
28,729 circular mils (14.5mm<sup>2</sup>) of conductivity.

G14T

As above with tinned copper strands.

C29



29 strands of 17 gauge (1.15mm) basket weave copper cable.  
192 pounds per thousand feet (286 grams/meter).  
59,450 circular mils (30mm<sup>2</sup>) of conductivity.  
Exceeds Class I requirements.

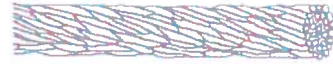
G29L

As above with leaded copper strands.

G29T

As above with tinned copper strands.

G32



32 strands of 17 (1.15mm) gauge basket weave copper cable.  
217 pounds per thousand feet (323 grams/meter).  
65,667 circular mils (33mm<sup>2</sup>) of conductivity.  
Exceeds Class I requirements.

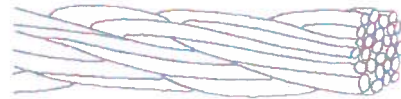
G32L

As above with leaded copper strands.

G32T

As above with tinned copper strands.

C385

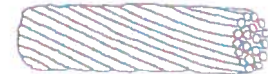


28 strands of .066 gauge (1.68mm) rope lay copper cable.  
385 pounds per thousand feet (573 gram/meter).  
121,968 circular mils (61.5mm<sup>2</sup>) of conductivity.  
Exceeds Class II requirements.

G385T

As above with tinned copper strands.

G1/0-19

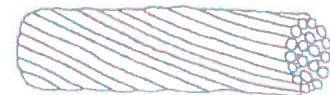


19 strands of .0837 gauge (2.13mm) concentric lay copper cable.  
326 pounds per thousand feet.  
105,600 circular mils of conductivity.  
Exceeds Class II requirements.

G1/0-19T

As above with tinned copper strands.

G4/0-19



19 strands of .1055 gauge (2.68mm) concentric lay copper cable.  
653 pounds per thousand feet (972 grams/meter).  
211,475 circular mils (107mm<sup>2</sup>) of conductivity.  
Exceeds Class II requirements.

G4/0-19T

As above with tinned copper strands.



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**EAST COAST LIGHTNING EQUIPMENT**

## Blunt Air Terminals-AT

Class I -1/2" (12.7mm) diameter, threaded base, UL listed.

| ALUMINUM |        |   |
|----------|--------|---|
|          | AT10AB | <del>1/2" x 10" (12.7mm x 254mm)</del>  |
|          | AT12AB | <del>1/2" x 12" (12.7mm x 305mm)</del>  |
|          | AT15AB | <del>1/2" x 15" (12.7mm x 381mm)</del>  |
|          | AT18AB | <del>1/2" x 18" (12.7mm x 458mm)</del>  |
|          | AT24AB | <del>1/2" x 24" (12.7mm x 610mm)</del>  |
|          | AT36AB | <del>1/2" x 36" (12.7mm x 915mm)</del>  |
|          | AT48AB | <del>1/2" x 48" (12.7mm x 1220mm)</del> |

Class II -5/8" (15.9mm) diameter, threaded base, UL listed.

| ALUMINUM |         |   |
|----------|---------|---|
|          | AT110AB | <del>5/8" x 10" (15.9mm x 254mm)</del>  |
|          | AT112AB | <del>5/8" x 12" (15.9mm x 305mm)</del>  |
|          | AT115AB | <del>5/8" x 15" (15.9mm x 381mm)</del>  |
|          | AT118AB | <del>5/8" x 18" (15.9mm x 458mm)</del>  |
|          | AT124AB | <del>5/8" x 24" (15.9mm x 610mm)</del>  |
|          | AT136AB | <del>5/8" x 36" (15.9mm x 915mm)</del>  |
|          | AT148AB | <del>5/8" x 48" (15.9mm x 1220mm)</del> |

Class I -3/8" (9.5mm) diameter, threaded base, UL listed.

| COPPER |        |  |
|--------|--------|--|
|        | AT10CB | <del>3/8" x 10" (9.5mm x 254mm)</del>  |
|        | AT12CB | <del>3/8" x 12" (9.5mm x 305mm)</del>  |
|        | AT15CB | <del>3/8" x 15" (9.5mm x 381mm)</del>  |
|        | AT18CB | <del>3/8" x 18" (9.5mm x 458mm)</del>  |
|        | AT24CB | <del>3/8" x 24" (9.5mm x 610mm)</del>  |
|        | AT36CB | <del>3/8" x 36" (9.5mm x 915mm)</del>  |
|        | AT48CB | <del>3/8" x 48" (9.5mm x 1220mm)</del> |

Class II -1/2" (12.7mm) diameter, threaded base, UL listed.

| COPPER |         |   |
|--------|---------|---|
|        | AT110CB | <del>1/2" x 10" (12.7mm x 254mm)</del>  |
|        | AT112CB | <del>1/2" x 12" (12.7mm x 305mm)</del>  |
|        | AT115CB | <del>1/2" x 15" (12.7mm x 381mm)</del>  |
|        | AT118CB | <del>1/2" x 18" (12.7mm x 458mm)</del>  |
|        | AT124CB | <del>1/2" x 24" (12.7mm x 610mm)</del>  |
|        | AT136CB | <del>1/2" x 36" (12.7mm x 915mm)</del>  |
|        | AT148CB | <del>1/2" x 48" (12.7mm x 1220mm)</del> |

Class II -5/8" (15.9mm) diameter, threaded base, UL listed.

| COPPER |         |   |
|--------|---------|---|
|        | AT210CB | <del>5/8" x 10" (15.9mm x 254mm)</del>  |
|        | AT212CB | <del>5/8" x 12" (15.9mm x 305mm)</del>  |
|        | AT215CB | <del>5/8" x 15" (15.9mm x 381mm)</del>  |
|        | AT218CB | <del>5/8" x 18" (15.9mm x 458mm)</del>  |
|        | AT224CB | <del>5/8" x 24" (15.9mm x 610mm)</del>  |
|        | AT236CB | <del>5/8" x 36" (15.9mm x 915mm)</del>  |
|        | AT248CB | <del>5/8" x 48" (15.9mm x 1220mm)</del> |

All air terminals are available in any length to twelve feet (365.75cm).

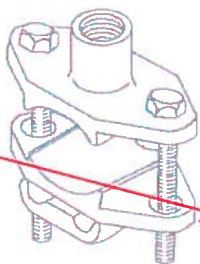


## Bolt Bases—BB

**BB12B**

### Horizontal Pipe Mount

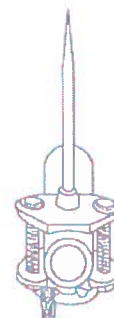
A cast bronze base for horizontal mounting of air terminals on pipes up to 2" (5.1cm) in diameter. 2 way bolt pressure cable holder fits cables through 1/0. Stainless steel bolts, nuts and washers. 3 1/2" x 2" (8.9cm x 5.1cm); approximately 12 oz. (340 grams). Use suffix 3/8, 1/2 or 5/8 to denote air terminal thread size.



**BB12A**

### Aluminum

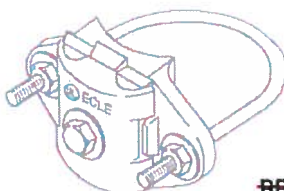
Approximately 4 oz. (113 grams). Use suffix 1/2 or 5/8 to denote air terminal thread size.



**BB13B**

### Vertical Pipe Mount

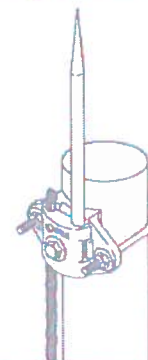
A cast bronze base for vertical mounting of air terminals on pipes up to 2" (5.1cm) in diameter. 2 way bolt pressure cable holder fits cables through 1/0. Can be used with or without cable. Stainless steel U bolt, nuts and washers. 3 1/2" x 2" (8.9cm x 5.1cm); approximately 12 oz. (340 grams).



**BB13A**

### Aluminum

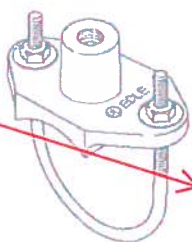
Approximately 4 oz. (113 grams).



**BB14B**

### Horizontal Air Terminal Mount

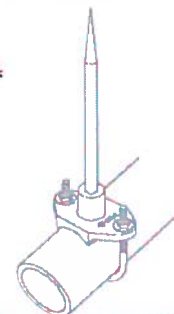
A cast bronze base for horizontal air terminal mounting only. Fits pipes up to 2" (5.1cm) in diameter. Stainless steel U bolt, nuts and washers. 3 1/2" x 2" (8.9cm x 5.1cm); approximately 11 oz. (312 grams). Use suffix 3/8, 1/2 or 5/8 to denote air terminal thread size.



**BB14A**

### Aluminum

Approximately 3.5 oz. (99 grams). Use suffix 1/2 or 5/8 to denote air terminal thread size.



**NOTE:** Copper & bronze fittings are also available finned.



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### Conduit Caps - CC



**CC3B** Conduit Cap to Threaded Rod

Cast bronze cap with bolt pressure cable holder machined to fit snugly over 1-1/2" Schedule 40 PVC conduit. Internally threaded brass hex stock adapter extends below. Stainless steel nut and washer. Overall height 2.8" (7cm). Approximately 12.8 oz. (363 grams). Specify 3/8 or 1/2 internal thread size when ordering.

**CC3A** Aluminum  
Approximately 4.8 oz. (136 grams).  
Specify 1/2 or 5/8 internal thread size when ordering.

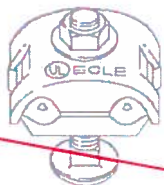


**CC4B** Conduit Cap to Cable  
Cast bronze cap with bolt pressure cable holder machined to fit snugly over 1-1/2" Schedule 40 PVC conduit. Has brass hex stock bolt pressure cable holder extending below. Stainless steel bolts, nuts and washer. Overall height 4.2" (10.6CM). Approximately 15.2 oz. (431 grams).

**CC4A** Aluminum  
Approximately 5.6 oz. (158 grams).



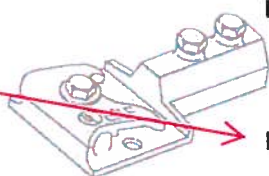
**Conduit Bushing**  
A brass conduit bushing to be used with 1/2" copper pipe cable guards. Has set screw for bonding cable to copper pipe. 7/8" x 3/4" (2.22cm x 1.9cm); approximately 1.1 oz. (31.2 grams).



US PATENT NO. 424, 924

**BF100B** Round-Round US PATENT NO. 424, 924  
Cast bronze bolt pressure cable to cable or cable to rod clamp. 1-1/2" stainless steel carriage bolt. Specifically designed for cable splices on single membrane roofs. 1-9/16" x 1-3/4" (39.7mm x 44.45mm); approximately 7.6 oz. (215 grams).

**BF100A** Aluminum  
Approximately 3 oz. (85 grams).



**BF2B** Tee  
Cast bronze pressure "tee" splicer. Stainless steel bolts and washer. 2-1/4" x 2" x 5" (5.7cm x 5.1cm x 12.7cm); approximately 10 oz. (284 grams).

**BF2A** Aluminum  
Approximately 3.5 oz. (99 grams).

**NOTE:** Copper & bronze fittings are also available tinned.



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**Bolt Fittings — BF**

**BF3B**

**Straight**

4-bolt hex brass straight splicer.  
Stainless steel bolts.  
~~3 1/2" x 3/4" (8.9cm x 1.9cm) hex;~~  
~~approximately 6 oz. (170 grams).~~



**BF3A**

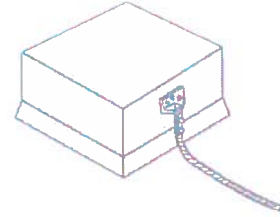
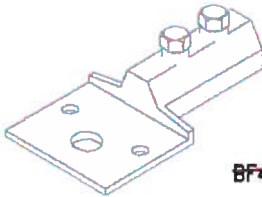
**Aluminum**

Approximately 2 oz. (57 grams).

**BF4B**

**Bending Lug**

Cast bronze primary cable to metal surface bonding lug. Has over four square inches of contact. Stainless steel bolts.  
~~2 1/4" x 2" x 5" (5.7cm x 5.1cm x 12.7cm);~~  
~~approximately 9 oz. (255 grams).~~



**BF4A**

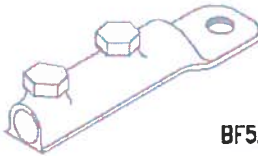
**Aluminum**

Approximately 3 oz. (85 grams).

**BF5B**

**Mini-Bonding Lug**

Cast bronze secondary cable to metal surface bonding lug. Stainless steel bolts.  
~~3 1/2" x 9/16" (8.9cm x 1.4cm);~~  
~~approximately 3 oz. (85 grams).~~



**BF5A**

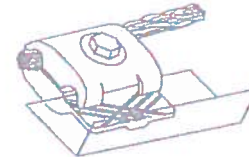
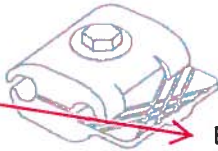
**Aluminum**

Approximately 2 oz. (57 grams).

**BF7B**

**Round to Flat**

Cast bronze bolt pressure cable to flat surface clamp. Stainless steel bolt and washer.  
~~1 9/16" x 2 1/4" (4cm x 5.7cm);~~  
~~approximately 7.3 oz. (207 grams).~~



**BF7A**

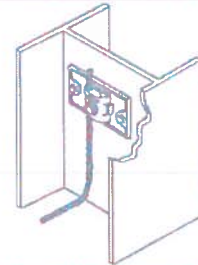
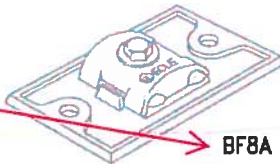
**Aluminum**

Approximately 3 oz. (85 grams).

**BF8B**

**2-Way Bonding Plate**

Cast bronze, 8-square-inch bonding plate with 2-way bolt pressure cable holder. Stainless steel bolt and washer. ~~2 1/16" x 4" (52.38mm x 101.6mm).~~ Approximately ~~10.3 oz. (292 grams).~~



**BF8A**

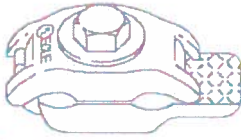
**Aluminum**

Approximately 3.8 oz. (108 grams).



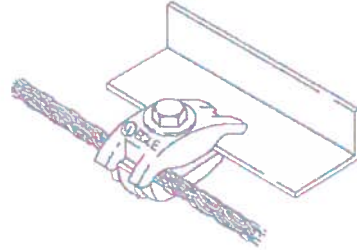
**Get grounded.**  
**EAST COAST LIGHTNING EQUIPMENT**

## Bolt Fittings-BF



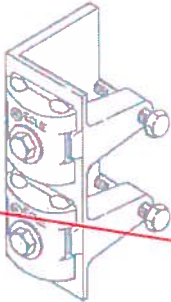
BF15B

~~Miniature Round to Flat  
Cast bronze miniature cable to flat  
surface clamp for secondary bonding.  
Stainless steel bolt and washer.  
3/4" x 2 1/4" (1.9cm x 5.7cm);  
approximately 3.5 oz. (99 grams).~~



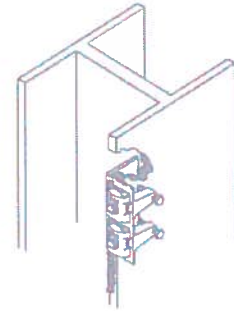
BF15A

Aluminum  
Approximately 1.5 oz. (43 grams).



BF18B

~~8 Square Inch Beam Clamp  
Cast bronze 8 square inch bonding plate with  
2 two way bolt pressure cable holders. For  
primary bonding to beams and similar flat metal  
protrusions. 2 stainless steel bolts and washers.  
3 1/4" x 4" (82.6mm x 101.6mm);  
approximately 2 lbs. 2.1 oz. (967 grams).~~



BF18A

Aluminum  
Approximately 13.3 oz. (377 grams).

NOTE: Copper & bronze fittings are also available flnned.

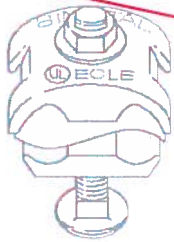


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**Bimetallic Fittings—BM**

For Connecting Aluminum and Copper



**BM100**

**Bimetallic Round to Round** U.S. Patent No. 424, 924  
 Cast bimetallic bolt pressure clamp for joining 2 dissimilar cables. Aluminum two-way cast top. Bronze two-way cast bottom. Specifically designed for cable splices on single membrane roofs. Stainless steel spacer plate. Stainless steel carriage bolt, nut and washer. 1-9/16" x 1-3/4" (39.69mm x 44.45mm); approximately 6 oz. (170 grams).

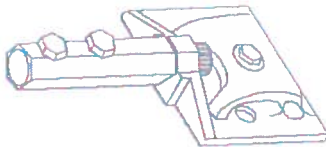


U.S. Patent No. 424, 924

**BM2A**

**Bimetallic Tee Splice**

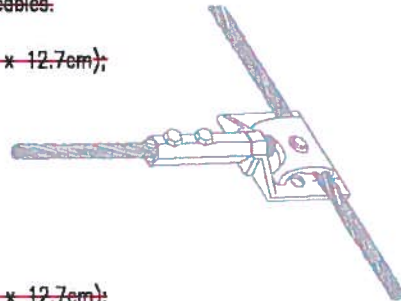
Bolt pressure aluminum casting with one-way cap and hex brass tap for copper cables. Stainless steel bolts and washer. 2-1/4" x 2" x 5" (6.7cm x 5.1cm x 12.7cm); approximately 10 oz. (284 grams).



**BM2B**

**Bimetallic Tee Splice**

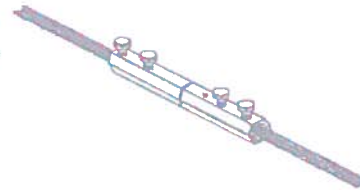
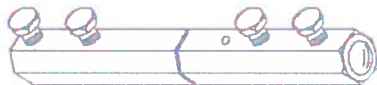
Bolt pressure bronze casting with one-way cap and hex aluminum tap for aluminum cables. Stainless steel bolts and washer. 2-1/4" x 2" x 5" (6.7cm x 5.1cm x 12.7cm); approximately 10 oz. (284 grams).



**BM3**

**Bimetallic 4-Bolt Straight Splice**

For joining aluminum and copper cables. Stainless steel bolts. 3-1/2" x 3/4" (8.9cm x 1.9cm) hex; approximately 6 oz. (170 grams).



**BM7A**

**Conduit Cap to Cable**

Cast aluminum cap with bolt pressure cable holder machined to fit snugly over 1-1/2" Schedule 40 PVC conduit. Has brass hex stock cable holder extending below. Joined by stainless steel threaded stub and galvanic barrier. For joining aluminum roof cable to copper down conductor. 4-1/4" (10.8cm) overall height, 8 oz. (227 grams). Stainless steel stub, bolt, nut and washer.



**BM7B**

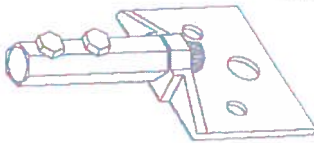
**Conduit Cap to Cable**

As above for joining copper roof cable to aluminum down conductor. 4 oz. (113 grams).



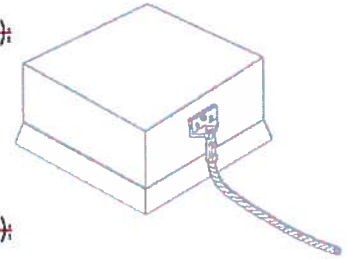
**Get grounded.**  
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**Bimetallic Fittings—BM**  
For Connecting Aluminum and Copper



**BM4A**

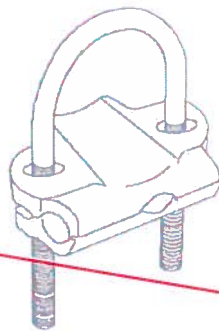
**Bimetallic Bonding Lug for Primary Conductors**  
For bonding to aluminum from a copper cable run. Stainless steel bolts. 2 1/4" x 2" x 5" (5.7cm x 5.1cm x 12.7cm); approximately 6.3 oz. (179 grams).



**BM4B**

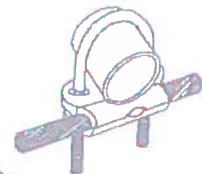
**Bimetallic Bonding Lug for Primary Conductors**  
For bonding copper or brass from an aluminum cable run. Stainless steel bolts. 2 1/4" x 2" x 5" (5.7cm x 5.1cm x 12.7cm); approximately 6.2 oz. (176 grams).

**U-Bolt Pipe Clamps—PC**



**PC1UB**

**Smallest U-Bolt Clamp**  
Cast bronze pipe clamp. Fits rods or pipes with 1/2" to 1 1/4" (1.3cm to 3.2cm) O.D. Has 2-way bolt pressure cable holder. 5/16-18 stainless steel U-bolt, nuts and washers. 2 1/2" x 3 1/2" (6.35cm x 8.9cm); approximately 9 oz. (255 grams).

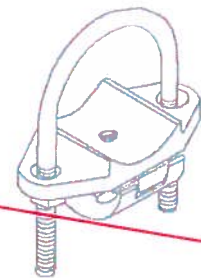
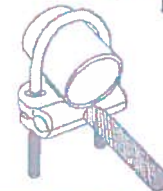


**PC1UT**

**Tinned**  
Approximately 9 oz. (255 grams).

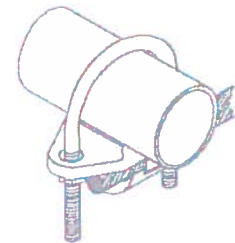
**PC1UA**

**Aluminum**  
Approximately 5 oz. (142 grams).



**PC2UB**

**2" U-Bolt Clamp**  
Cast bronze pipe clamp. Fits up to 2" (5.1cm) O.D. pipe. Has 2-way bolt pressure cable holder with cover that can be turned 90 degrees. 5/16-18 stainless steel U-bolt, nuts and washers. Approximately 8.5 oz. (241 grams).



**PC2UT**

**Tinned**  
Approximately 8.5 oz. (241 grams).

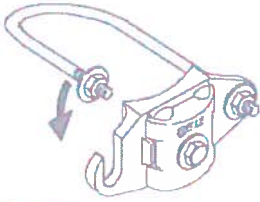
**PC2UA**

**Aluminum**  
Approximately 4.2 oz. (119 grams).



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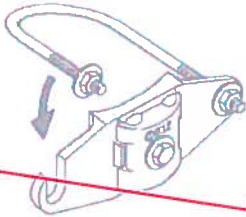
**U-Bolt Pipe Clamps-PC**



**PC3UB 3" U Bolt Clamp**  
 Cast bronze pipe clamp. Fits up to 3" (7.6cm) O.D. pipe. Has 2 way bolt pressure cable holder with cover that can be turned 90 degrees. 5/16-18 stainless steel U bolt, nuts and washers. Approximately 13 oz. (369 grams).

**PC3UT Tinned**  
 Approximately 13 oz. (369 grams).

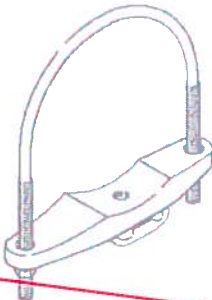
**PC3UA Aluminum**  
 Approximately 6 oz. (170 grams).



**PC4UB 4" U Bolt Clamp**  
 Cast bronze pipe clamp. Fits up to 4 1/2" (114.3mm) O.D. pipe. Has 2 way bolt pressure cable holder with cover that can be turned 90 degrees. 5/16-18 stainless steel U bolt, nuts and washers. Approximately 26.4 oz. (748 grams).

**PC4UT Tinned**  
 Approximately 26.4 oz. (748 grams).

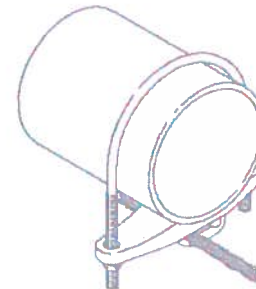
**PC4UA Aluminum**  
 Approximately 11.86 oz. (335 grams).



**PC6UB 6" U Bolt Clamp**  
 Cast bronze pipe clamps. Fits up to 6.75" (171.45mm) O.D. pipe Two way bolt pressure cable holder with cover that can be turned 90 degrees. Stainless steel U bolt, nuts and washers. Approximately 2 lbs. 5.4 oz. (1060 grams).

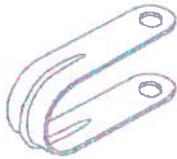
**PC6UT Tinned**  
 Approximately 2 lbs. 5.4 oz. (1060 grams).

**PC6UA Aluminum**  
 Approximately 14 oz. (397 grams).



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**Fastener Loops-FL**

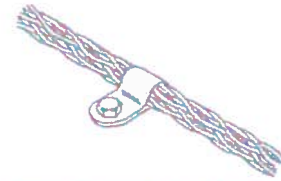


**FL1C\*** 1 Nail stamped copper loop.

**FL1T\*** 1 Nail stamped tinned copper loop.

**FL1A\*** 1 Nail stamped aluminum loop.

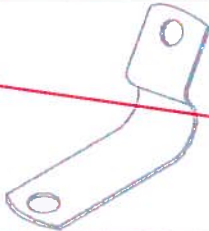
\*Use with Class I conductors.



**FL2C\*** 1/4" hole, medium stamped copper loop.

**FL2T\*** 1/4" hole, medium stamped tinned copper loop.

\*Use with Class I conductors.

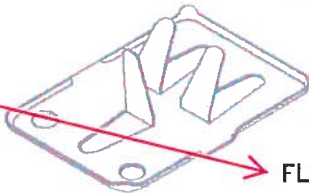
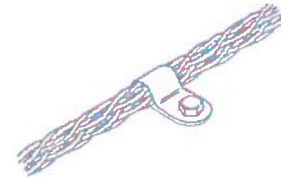


**FL3C†** 1/4" hole, largest stamped copper loop.

**FL3T†** 1/4" hole, largest stamped tinned copper loop.

**FL3A†** 1/4" hole, largest stamped aluminum loop.

† Use with Class II conductors.

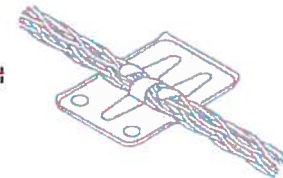


**FL4C** ~~Stamped Adhesive Crimp Copper Loop~~

~~For use on built up, single membrane or other flat roof surfaces where mechanical penetrations must be avoided. Use with adhesives compatible to roof surface. 2 1/4" x 3 1/2" (5.7cm x 8.9cm); approximately 1.4 oz. (40 grams).~~

**FL4A** ~~Stamped Adhesive Crimp Aluminum Loop~~

~~As above, but stamped aluminum. Approximately .8 oz. (23 grams).~~



**FL7B** ~~Heavy Duty Cable Holder~~

~~A cast bronze, bolt-type adhesive fastener for securing cable. Suitable for use on built up, single membrane or other roof surfaces where mechanical penetration must be avoided. Use with adhesives compatible to roof surfaces. 3 1/8" (7.9cm) diameter casting with stainless steel bolt and cast clip. Approximately 4.8 oz. (113 grams).~~

**FL7A** ~~Aluminum~~

~~Approximately 1.7 oz. (48 grams).~~

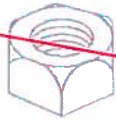
**NOTE:** Copper & bronze fittings are also available tinned.



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## Stainless Steel Fasteners

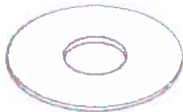
### Nuts



~~1/4-20~~  
~~5/16-18~~  
~~3/8-16~~  
~~1/2-13~~  
~~5/8-11~~  
~~1/2-13~~

Hex Finish Nut  
 Hex Finish Nut  
 Hex Finish Nut  
 Hex Jam Nut  
 Hex Jam Nut  
 Acorn Cap Nut

### Washers



~~1/4"~~ Flat Washer  
~~5/16"~~ Flat Washer  
~~3/8"~~ Flat Washer  
~~1/2"~~ Flat Washer  
~~1/2"~~ Fender Washer 2" OD

~~1/4"~~ Lock Washer  
~~5/16"~~ Lock Washer  
~~3/8"~~ Lock Washer  
~~1/2"~~ Lock Washer

### Hex Head Bolts



~~1/4-20 x 1/2"~~  
~~1/4-20 x 5/8"~~  
~~1/4-20 x 1-1/4"~~  
~~5/16-18 x 3/4"~~  
~~5/16-18 x 7/8"~~  
~~5/16-18 x 1-1/4"~~  
~~3/8-16 x 1"~~  
~~3/8-16 x 1-1/4"~~

Hex Head  
 Hex Head  
 Hex Head  
 Hex Head  
 Hex Head  
 Hex Head  
 Hex Head  
 Hex Head

### Hex Washer Head Self-Tapping Screws



~~#10 x 3/4"~~  
~~#10 x 1"~~  
~~#10 x 1-1/2"~~

Magnetic Type 'A'  
 Magnetic Type 'A'  
 Magnetic Type 'A'



### Hex Washer Head Self-Drilling Screws



~~#10 x 5/8"~~  
~~#10 x 3/4"~~  
~~#10 x 1-1/2"~~  
~~#12 x 3/4"~~  
~~#12 x 1-1/4"~~

Magnetic Tech  
 Magnetic Tech  
 Magnetic Tech  
 Magnetic Tech  
 Magnetic Tech 5



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### Stainless Steel Fasteners

#### Nails and Nail-Ins

|                     |   |
|---------------------|---|
| <del>4D Nail</del>  | <del>1 1/2" annular ring, threaded stainless steel nail</del> |
| <del>6D Nail</del>  | <del>2" annular ring, threaded stainless steel nail</del>     |
| <del>10D Nail</del> | <del>3" annular ring, threaded stainless steel nail</del>     |
| 1/4" Nail-In        | Rawl Zamac, mushroom head nail-in stainless 1" pin            |



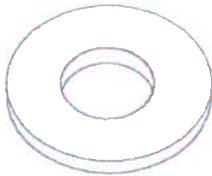
#### Sheet Metal Screws

|                         |                              |
|-------------------------|------------------------------|
| <del>#10 x 5/8"</del>   | <del>Phillip Pan Screw</del> |
| <del>#12 x 3/4"</del>   | <del>Phillip Pan Screw</del> |
| <del>#12 x 1"</del>     | <del>Phillip Pan Screw</del> |
| <del>#12 x 1 1/4"</del> | <del>Phillip Pan Screw</del> |



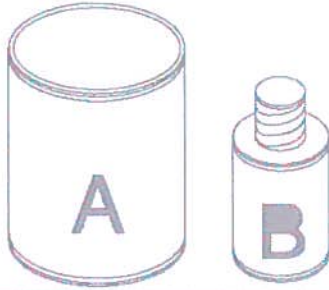
#### Rubber (EPDM) Washers

Available ~~1/8", 3/16", 3/8", 1/2" and 5/8"~~.  
EPDM washers are ~~3/32"~~ thick.



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## Sealants



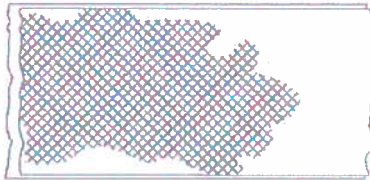
### ~~Two-Part Pourable Sealer~~

~~1-gallon Part A, 1-quart Part B  
Fast-drying adhesive cement for adhering to  
rubber membrane roofing.~~



### ~~Rubber Lap Sealer~~

~~Black sealant 11 fluid ounce tube  
Compatible with rubber membrane roofing materials.~~



### ~~Rubber Flashing~~

~~Pressure sensitive, 6" wide uncured rubber flashing with  
adhesive backing. (6" w x 100' L roll. Approximately .075 thick.)~~

### Adhesive/Sealant

#### Heavy Duty Sealant



High performance sealant adheres to a variety of building substrates.

M-1 by Chemlink in 10.1 fluid ounce tube (299 ml)

Black  
Grey  
White

Available by the tube and in 24 tube cases.



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**EAST COAST LIGHTNING EQUIPMENT**

# *The Lightning Protection Institute*

*This is to certify that*

***Bret A. Peifer***

*being qualified by experience and found upon examination*

*in*

*Colorado Springs, Colorado*

*to possess advanced knowledge and expert abilities, is a*

***Master Installer Designer # 1042***

*of Mr. Lightning. Attest this  
October Twentieth, Two Thousand Ten.*

  
\_\_\_\_\_  
*Executive Director*





