



Weaver

CONSTRUCTION MANAGEMENT

3679 S Huron Street, Suite 404 Englewood, Colorado 80110
Phone: (303) 789-4111 FAX: (303) 789-4310

SUBMITTAL TRANSMITTAL

June 22, 2012

Submittal No: 13100-003.A

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: Electrical Re-Submittal for 13100-003 due to changes in design build process. Revised Lightning Protection System for the EM & OPS Building

SPEC SECTION: 13100

PREVIOUS SUBMISSION DATES: 2/28/12

DEVIATIONS FROM SPEC: ___ YES X NO

CONTRACTOR'S STAMP: This submittal has been reviewed by Weaver Construction Management and, unless indicated otherwise, has been found to be in conformance with the intent of the contract documents.

Contractor's Stamp:

Engineer's Stamp:

Date: 6/22/12

Reviewed by: John Jacob

(X) Reviewed Without Comments

() Reviewed With Comments

ENGINEER'S

COMMENTS:

McDade-Woodcock, Inc.

TRANSMITTAL

No. 00033

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

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

PROJECT: Harold D. Thompson WRF

DATE: 6/19/2012

TO: Weaver General Construction

REF: Electrical Re-Submittal
13100-003-REVISED
Lightning Protection (Equip
Maint & OPS Bldg)

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 checked="" type="checkbox"/> Resubmit
<input type="checkbox"/> Plans		<input type="checkbox"/> Submit
<input type="checkbox"/> Samples	SENT VIA:	<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: 7/3/2012

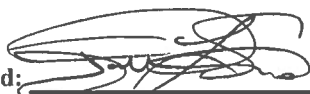
ITEM	PACKAGE	SUBMITTAL	DRAWING	REV.	ITEM NO.	COPIES	DATE	DESCRIPTION	STATUS
					001	1	6/19/2012	Electrical Submittal 13100-003-REVISED Lightning Protection Equipment Maintenance & OPS Building (Previously submitted as Equipment Maintenance Building on 2/27/2012 - Approved by Engineer on 3/21/2012)	OUT

Remarks: Electrical Re-Submittal for Review and Approval

*NOTE: This is 13100-003-REVISED for Lightning Protection - Equipment Maintenance & OPS Building.
(This was previously submitted as Equipment Maintenance Building on 2/27/2012 and APPROVED by Engineer on 3/21/2012).

Sent 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

EQUIPMENT MAINTENANCE & OPS BLDG.

13100-003 - REVISED

CORPORATE

2404 Claremont Ave. NE
Albuquerque, NM 87107

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Albuquerque, NM 87192

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Fax 505-884-6073

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Suite 170
Englewood CO 80112

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Fax 303-803-1818

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Mailing Address
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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
PUMPING & DISINFECTION
BUILDING

McDADE-WOODCOCK INC.
PROJECT NUMBER - 1402

ELECTRICAL SUBMITTAL

LIGHTNING PROTECTION

EQUIPMENT MAINTENANCE &
OPS BLDG.

13100-003 - REVISED

TABLE OF CONTENTS

TAB 1: Technical Data

CORPORATE

2404 Claremont Ave. NE
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McDADE-WOODCOCK, INC.

HAROLD D. THOMPSON RWRF
PUMPING & DISINFECTION
BUILDING

McDADE-WOODCOCK INC.
PROJECT NUMBER - 1413

ELECTRICAL SUBMITTAL

LIGHTNING PROTECTION

EQUIPMENT MAINTENANCE &
OPS BLDG.

13100-003 - REVISED

*** * * APPROVAL PAGE * * ***

**This submittal has been reviewed,
checked and approved for
compliance by:**

McDADE-WOODCOCK INC. - (JLS)

This Date: 6/15/2012

CORPORATE

2404 Claremont Ave. NE
Albuquerque, NM 87107

Mailing Address
P.O. Box 11592
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Ph 505-884-0155
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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

*PUMPING & DISINFECTION BUILDING
HAROLD D. THOMPSON RWRP
FOUNTAIN, COLORADO*

RE-SUBMITTAL

*SPECIFICATION 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 50M0.

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).



Get grounded.

EAST COAST LIGHTNING EQUIPMENT®

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.

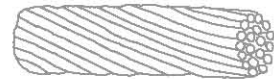
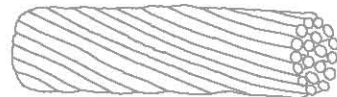
8.1.2 Strike termination devices shall be installed to provide a zone of protection in accordance with Section 8.2 for each part of a structure that is exposed to direct lightning strikes.

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.

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 (14.5mm²) of conductivity.~~~~C14T~~~~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 (30mm²) of conductivity.
Exceeds Class I requirements.~~~~C29L~~~~As above with leaded copper strands.~~~~C29T~~~~As above with tinned copper strands.~~~~C32~~~~32 strands of 17 (1.15mm) gauge basket weave copper cable.
217 pounds per thousand feet (323 grams/meter).
65,667 circular mils (33mm²) of conductivity.
Exceeds Class I requirements.~~~~C32L~~~~As above with leaded copper strands.~~~~C32T~~~~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 (61.5mm²) of conductivity.
Exceeds Class II requirements.~~~~C385T~~~~As above with tinned copper strands.~~~~C1/0-19~~~~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.~~~~C1/0-19T~~~~As above with tinned copper strands.~~~~C4/0-19~~~~19 strands of .1055 gauge (2.68mm) concentric lay copper cable.
653 pounds per thousand feet (972 grams/meter).
211,475 circular mils (107mm²) of conductivity.
Exceeds Class II requirements.~~~~C4/0-19T~~~~As above with tinned copper strands.~~**Get grounded.**
EAST COAST LIGHTNING EQUIPMENT

Blunt Air Terminals-AT

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

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

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

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

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

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

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

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

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

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

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



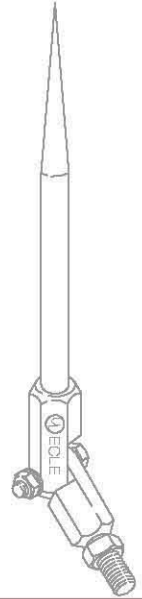
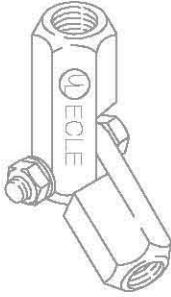
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EAST COAST LIGHTNING EQUIPMENT

Cast Swivel Couplings—SC

For male to female or female to female connections.
 Cast bronze or aluminum with stainless steel fasteners.
 Available with 3/8" (9.5mm), 1/2" (12.7mm) or
 5/8" (15.9mm) threads, in combinations to meet
 your requirements.

Female to female 3" x 3/4" (76mm x 19mm).
 Female to male 4" x 3/4" (102mm x 19mm).

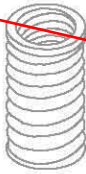


BRASS

ALUMINUM

SC3/8F-3/8FB	SC1/2F-5/8FB	SC1/2F-1/2FA
SC3/8F-3/8MB	SC1/2F-5/8MB	SC1/2F-1/2MA
SC3/8F-1/2FB	SC5/8F-1/2MB	SC1/2F-5/8FA
SC3/8F-1/2MB	SC5/8F-5/8FB	SC1/2F-5/8MA
SC1/2F-3/8MB	SC5/8F-5/8MB	SC5/8F-1/2MA
SC1/2F-1/2FB		SC5/8F-5/8FA
SC1/2F-1/2MB		SC5/8F-5/8MA

NOTE: Cast Swivel Couplings are also available tinned.



Air Terminal Bushing

AD1B Brass thread size reducer bushing.
 Converts 1/2" to 3/8". Approximately
 1/2" (1.27cm) diameter x 3/4" (1.9cm).
 Approximately .31 oz.

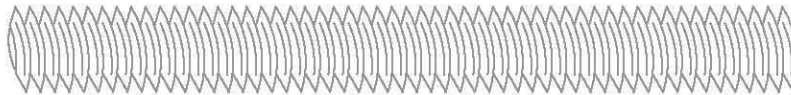


Air Terminal Coupling

~~ATC3/8B Slender, cylindrical brass coupling for connecting
 3/8" air terminal to 3/8" threaded rod or solid rod
 section. 1-1/2" x 1/2" (38.1mm x 12.7mm).~~

~~ATC1/2B As above for 1/2" air terminal to 1/2" threaded rod.
 1-1/2" x 5/8" (38.1mm x 15.8mm).~~

Threaded Rod—TR



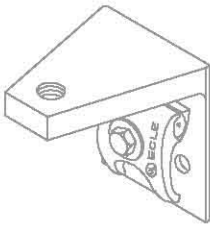
TR1S	3/8 Stainless Steel	3/8"-16 x 6'	(183cm)
TR2S	1/2 Stainless Steel	1/2"-13 x 6'	(183cm)

Threaded rod is available cut to any length that you require.



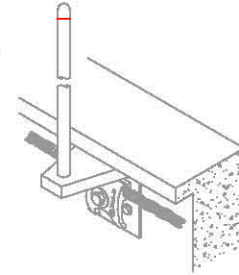
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EAST COAST LIGHTNING EQUIPMENT

Bolt Bases—BB

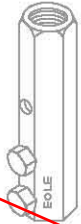


BB700B ~~2 1/2" Off Set Side Mount~~
 Cast bronze base with a 1-way bolt pressure cable holder. ~~2 1/2" offset. 5/16-18 stainless steel washer. 2-3/8" x 3" x 3-1/8" (6cm x 7.6cm x 7.9cm). Approximately 1 lb 7.2 oz (658 grams).~~

~~Use suffix 3/8, 1/2 or 5/8 to denote air terminal thread size.~~

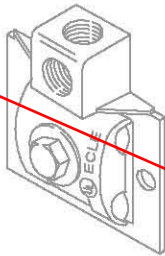


~~**BB700A** Aluminum~~
~~Approximately 9.22 oz. (233 grams).~~
~~Use suffix 1/2 and 5/8 to denote air terminal thread size.~~



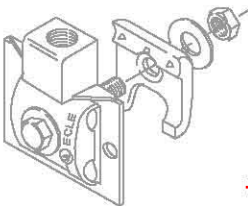
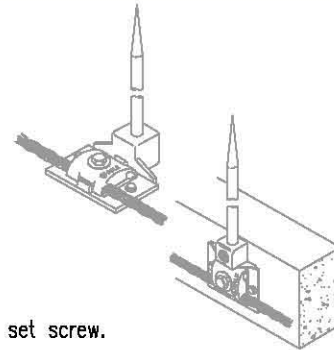
BB8B ~~Cable To Threaded Rod~~
 Hex brass 2-bolt splicer for cable to threaded rod or air terminal. ~~5/16-18 stainless steel bolt. 2-7/8" x 3/4" hex (7.3cm x 2.15cm); approximately 5 oz. (142 grams). Use suffix 3/8, 1/2 or 5/8 to denote air terminal thread size.~~

BB8A ~~Aluminum~~
~~Approximately 2 oz. (57 grams). 1/2" or 5/8" thread size. Also available with socket head set screws.~~



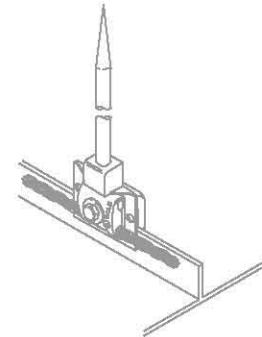
BB9B ~~Dual Thread~~
 A cast bronze base with a 2-way cable holder. Threaded for top or side mounting. ~~5/16-18 stainless steel bolt and washer. 2-13/16" x 2-15/16" (71.44mm x 74.61mm). Approximately 9.3 oz. (263 grams). Use suffix 3/8 or 1/2 to denote air terminal thread size.~~

BB9A ~~Aluminum~~
~~Approximately 4 oz. (113 grams). Only available with 1/2" thread size.~~
~~Use suffix "S" to request optional stainless steel set screw.~~



BB10B ~~Standing Seam Base~~
 A cast bronze base with two way bolt pressure cable connector. ~~One-way bolt pressure clamp on backside joins the unit to a standing seam without penetration. Creates a strong and rigid base for parallel runs of cable. Stainless steel bolt, nut and washer. 2-13/16" x 2-15/16" (71.44mm x 76.61mm); approximately 9.3 oz. (263 grams). Use suffix 3/8, 1/2 or 5/8 to denote air terminal thread size.~~

BB10A ~~Aluminum~~
~~Approximately 5 oz. (142 grams). Use suffix 1/2 or 5/8 to denote air terminal thread size.~~

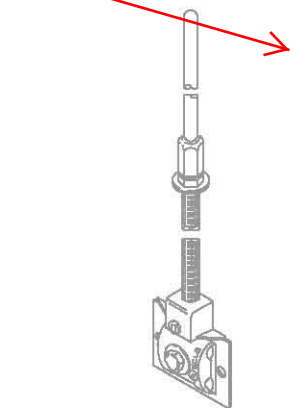


NOTE: Copper & bronze fittings are also available tinned.



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EAST COAST LIGHTNING EQUIPMENT

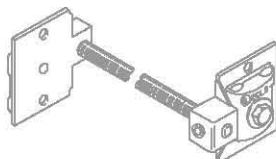
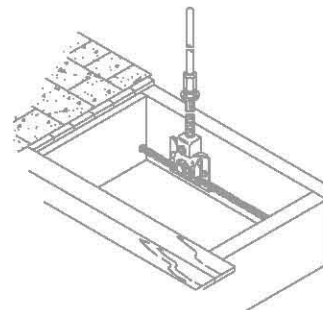
Thru-Structure Assemblies-TS



****TS1**

Thru-Roof Assembly

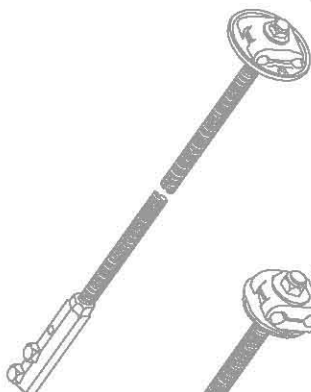
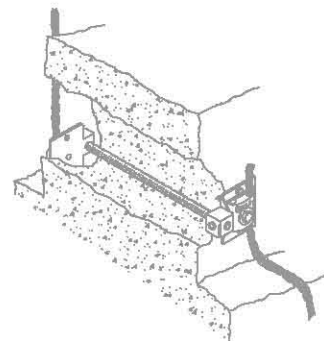
Supplied with 12" (30.5cm) threaded rod, stainless steel locking set screws, EPDM washer, stainless steel washer and nut, rod to air terminal coupling and 12" (30.5cm) air terminal.



****TS2**

~~Thru-Roof or Wall Assembly~~

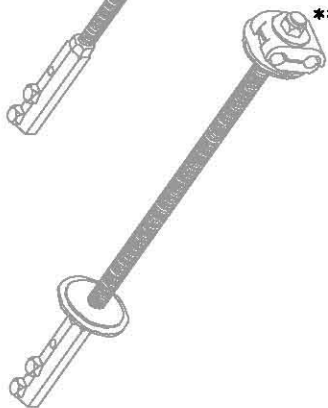
~~Supplied with 12" (30.5cm) threaded rod, stainless steel locking set screws and bolt pressure cable holder. The fittings are available in aluminum, bronze or one of each.~~



****TS3**

~~Thru-Roof or Wall Assembly~~

~~For right angle to straight tap. Supplied with 12" (30.5cm) threaded rod, nut and DPDM washer. The fittings are available in aluminum, bronze or one of each.~~



****TS4**

~~Thru-Roof or Wall Assembly~~

~~For right angle to straight tap. Supplied with 12" (30.5cm) threaded rod, 2 stainless steel fender washers, 2 EPDM washers, 2 nuts and a fully adjustable bolt pressure cable holder. The fittings are available in aluminum, bronze or one of each.~~

**When ordering Thru-Structure Assemblies-specify material, threaded rod length and diameter. Many lengths and connectors are available for special connections. Call the factory with your specific needs.



Get grounded.

ECL EAST COAST LIGHTNING EQUIPMENT

Conduit Caps – CC



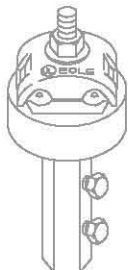
CC3B Conduit Cap to Threaded Rod

~~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).~~



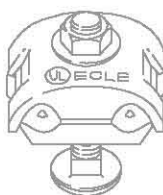
CC4A Aluminum

~~Approximately 5.6 oz. (159 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).~~



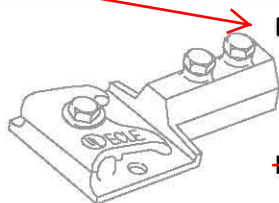
BF100B Round-Round US PATENT NO. 424, 924
 Cast bronze bolt pressure cable to cable or cable to rod clamp. 1-1/2" stainless steel carriage bolt. Specifically designed for cable splices on single membrane roofs. 1-9/16" x 1-3/4" (39.7mm x 44.45mm); approximately 7.6 oz. (215 grams).



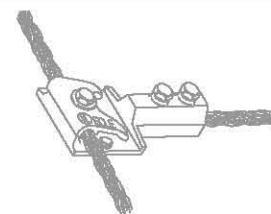
BF100A Aluminum

~~Approximately 3 oz. (85 grams).~~

US PATENT NO. 424, 924



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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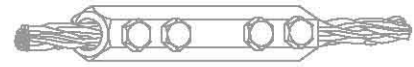
Bolt Fittings – BF

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).~~

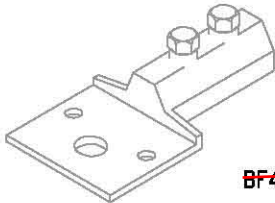


BF3A

Aluminum

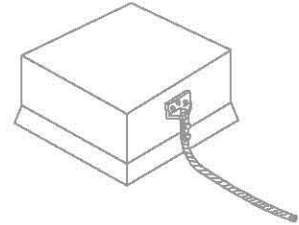
~~Aluminum. Approximately 2 oz. (57 grams).~~

BF4B



Bonding 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).~~

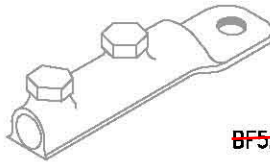


BF4A

Aluminum

~~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).~~

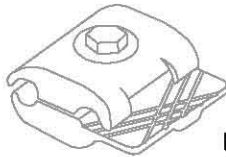


BF5A

Aluminum

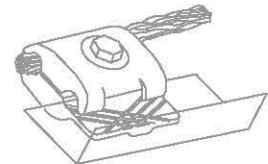
~~Aluminum. Approximately 2 oz. (57 grams).~~

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).~~

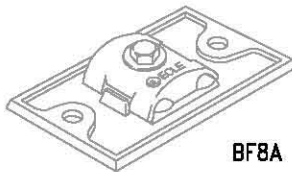


BF7A

Aluminum

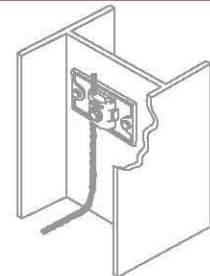
~~Aluminum. Approximately 3 oz. (85 grams).~~

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

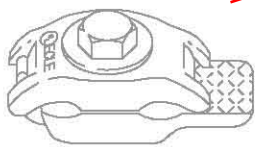
Aluminum

~~Aluminum. Approximately 3.8 oz. (108 grams).~~



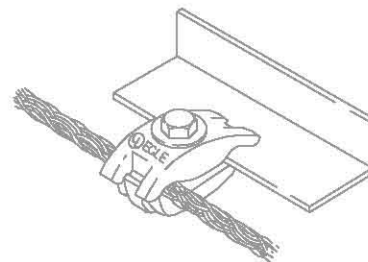
Get grounded.
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Bolt Fittings–BF



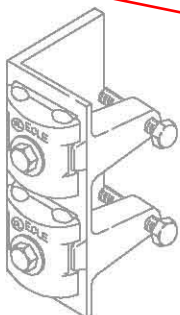
BF15B

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).



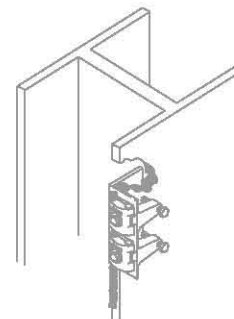
BF15A

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).~~

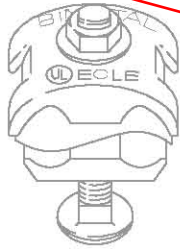
NOTE: Copper & bronze fittings are also available tinned.



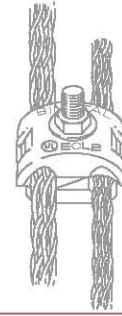
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Bimetallic Fittings—BM

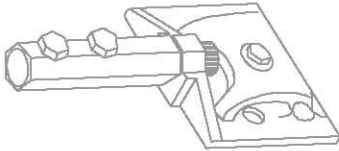
For Connecting Aluminum and Copper

**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).



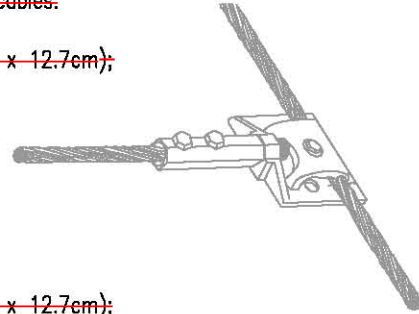
U.S. Patent No. 424, 924

**BM2A****Bimetallic Tee Splicer**

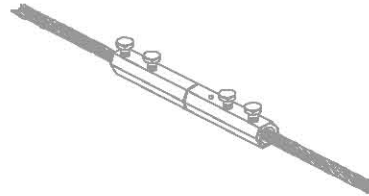
~~Bolt pressure aluminum casting with one-way cap and hex-brass tap for copper cables. Stainless steel bolts and washer. 2-1/4" x 2" x 5" (5.7cm x 5.1cm x 12.7cm); approximately 10 oz. (284 grams).~~

BM2B**Bimetallic Tee Splicer**

~~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" (5.7cm x 5.1cm x 12.7cm); approximately 10 oz. (284 grams).~~

**BM3****Bimetallic 4-Bolt Straight Splicer**

~~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, bolts, nut and washer.~~

BM7B**Conduit Cap to Cable**

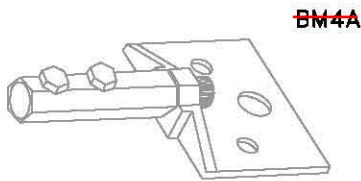
~~As above for joining copper roof cable to aluminum down conductor. 4 oz. (113 grams).~~



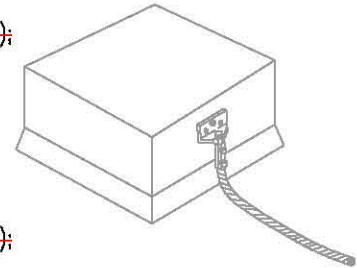
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Bimetallic Fittings—BM

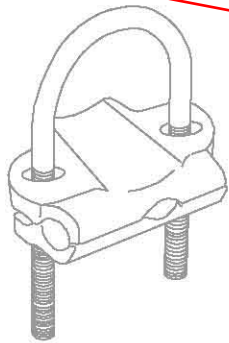
For Connecting Aluminum and Copper

**BM4A****Bimetallic Bonding Lug
for Primary Conductors**

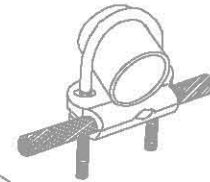
For bonding to aluminum from a copper cable run. Stainless steel bolts. 2-1/4" x 2" x 5" (5.7cm x 5.1cm x 12.7cm); approximately 6.3 oz. (179 grams).

**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**

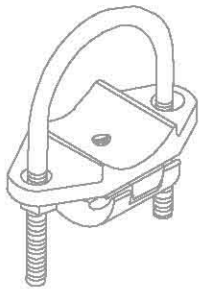
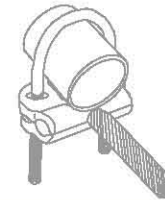
Cast bronze pipe clamp. Fits rods or pipes with 1/2" to 1-1/4" (1.3cm to 3.2cm) O.D. Has 2-way bolt pressure cable holder. 5/16-18 stainless steel U-bolt, nuts and washers. 2-1/2" x 3-1/2" (6.35cm x 8.9cm); approximately 9 oz. (255 grams).

**PC1UT****Tinned**

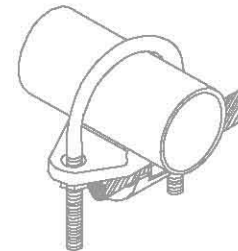
Approximately 9 oz. (255 grams).

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**

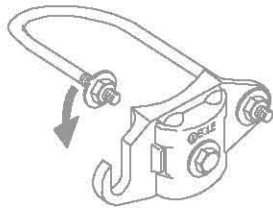
Approximately 8.5 oz. (241 grams).

PC2UA**Aluminum**

Approximately 4.2 oz. (119 grams).



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U-Bolt Pipe Clamps-PC**PC3UB****3" U-Bolt Clamp**

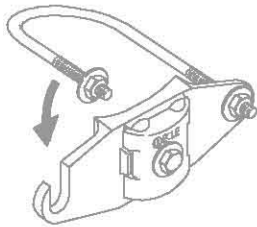
Cast bronze pipe clamp. Fits up to 3" (7.6cm) O.D. pipe. Has 2-way bolt pressure cable holder with cover that can be turned 90 degrees. 5/16-18 stainless steel U-bolt, nuts and washers. Approximately 13 oz. (369 grams).

PC3UT**Tinned**

~~Approximately 13 oz. (369 grams).~~

PC3UA**Aluminum**

~~Approximately 6 oz. (170 grams).~~

**PC4UB****4" U-Bolt Clamp**

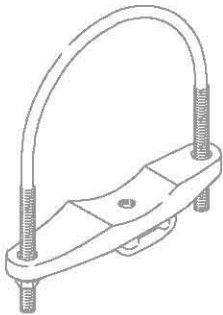
Cast bronze pipe clamp. Fits up to 4-1/2" (114.3mm) O.D. pipe. Has 2-way bolt pressure cable holder with cover that can be turned 90 degrees. 5/16-18 stainless steel U-bolt, nuts and washers. Approximately 26.4 oz. (748 grams).

PC4UT**Tinned**

~~Approximately 26.4 oz. (748 grams).~~

PC4UA**Aluminum**

~~Approximately 11.86 oz. (335 grams).~~

**PC6UB****6" U-Bolt Clamp**

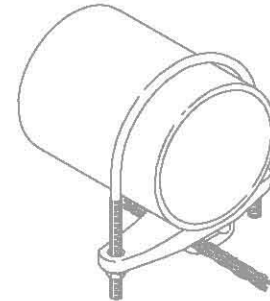
Cast bronze pipe clamps. Fits up to 6.75" (171.45mm) O.D. pipe Two-way bolt pressure cable holder with cover that can be turned 90 degrees. Stainless steel U-bolt, nuts and washers. Approximately 2 lbs. 5.4 oz. (1060 grams).

PC6UT**Tinned**

~~Approximately 2 lbs. 5.4 oz. (1060 grams).~~

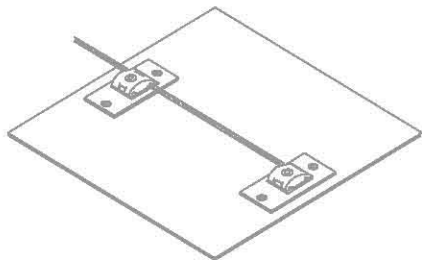
PC6UA**Aluminum**

~~Approximately 14 oz. (397 grams).~~



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Ground Plate-GP



Copper ground plate with two bolt pressure cable holders.

- ~~GP1 18" x 18" x .032 (45.7cm x 45.7cm x .0813cm)~~
- ~~GP2 18" x 24" x .032 (45.7cm x 61cm x .0813cm)~~
- ~~GP3 18" x 36" x .032 (45.7cm x 91.4cm x .0813cm)~~

Call factory for information on other sizes.

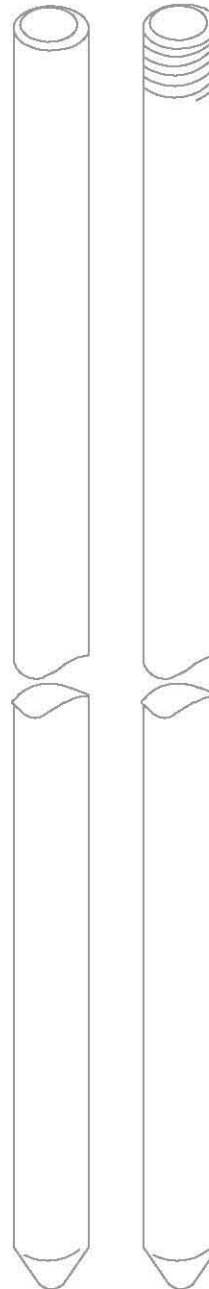
Ground Rods-GR

UL listed copper clad steel ground rods.

- ~~GR3X 5/8" x 8' (1.59cm x 2.44m)~~
- ~~GR3 5/8" x 10' (1.59cm x 3.05m)~~
- ~~GR3S 5/8" x 10' Sectional (1.59cm x 3.05m)~~
- ~~GR4 3/4" x 10' (1.91cm x 3.05m)~~
- ~~GR4S 3/4" x 10' Sectional (1.91cm x 3.05m)~~

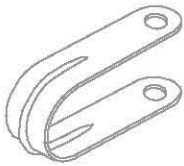
Call factory for information on other available ground rod sizes.

A variety of stainless steel ground rods are also available.



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Fastener Loops-FL

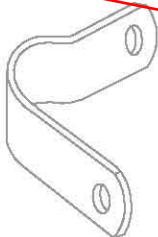
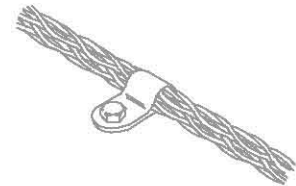


~~FL1C*~~ 1-Nail stamped copper loop.

~~FL1T*~~ 1-Nail stamped tinned copper loop.

~~FL1A*~~ 1-Nail stamped aluminum loop.

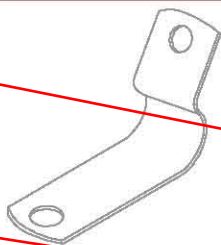
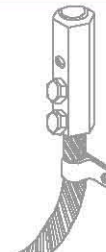
*Use with Class I conductors.



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

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

*Use with Class I conductors.

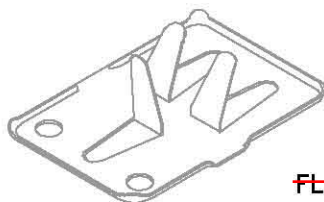
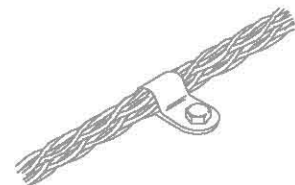


~~FL3C*~~ 1/4" hole, largest stamped copper loop.

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

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

† Use with Class II conductors.



~~FL4C~~

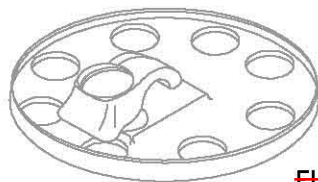
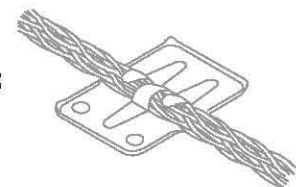
Stamped Adhesive Crimp Copper Loop

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 finned.

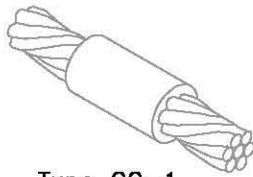


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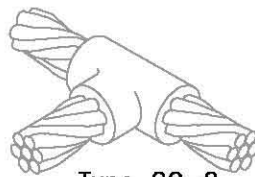
Exothermic Connections

We stock a complete line of weld metals, molds and accessories.
Call for a complete catalog of exothermic weld equipment.

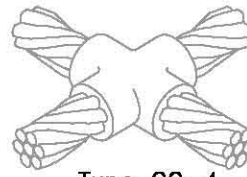
Cable To Cable



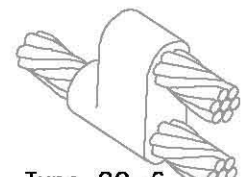
~~Type CC-1~~



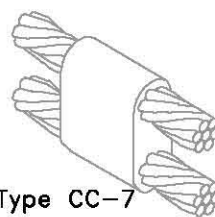
~~Type CC-2~~



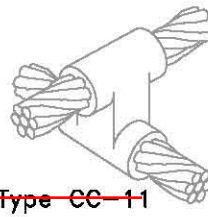
~~Type CC-4~~



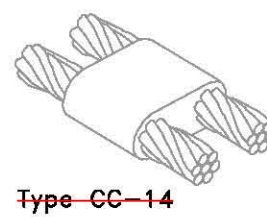
~~Type CC-6~~



Type CC-7

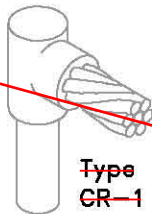


~~Type CC-11~~

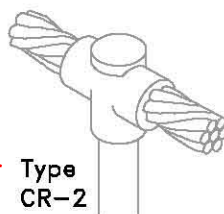


~~Type CC-14~~

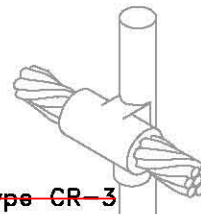
Cable To Ground Rod



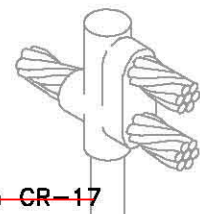
~~Type CR-1~~



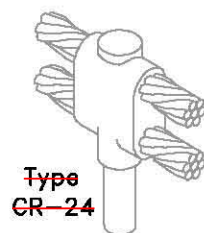
Type CR-2



~~Type CR-3~~



~~Type CR-17~~



Type CR-24



~~Type RR-1~~

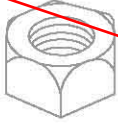
When ordering exothermic molds, be sure to specify the size of the conductor(s) and/or rod(s) you will be using.



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Stainless Steel Fasteners

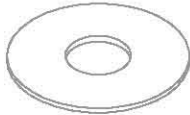
Nuts



~~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

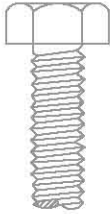
Washers



~~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~~

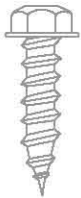
Hex Head Bolts



~~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"~~

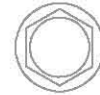
Hex Head
 Hex Head
 Hex Head
 Hex Head
 Hex Head
 Hex Head
 Hex Head
 Hex Head

Hex Washer Head Self-Tapping Screws

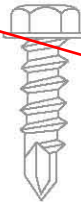


~~#10 x 3/4"~~
~~#10 x 1"~~
~~#10 x 1-1/2"~~

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

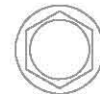


Hex Washer Head Self-Drilling Screws



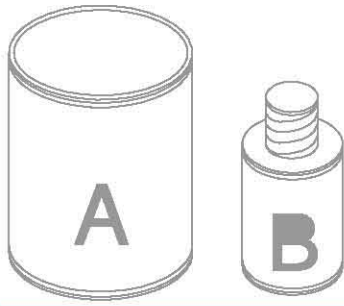
~~#10 x 5/8"~~
~~#10 x 3/4"~~
~~#10 x 1-1/2"~~
~~#12 x 3/4"~~
~~#12 x 1-1/4"~~

Magnetic Tech
 Magnetic Tech
 Magnetic Tech
 Magnetic Tech
 Magnetic Tech 5



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Sealants



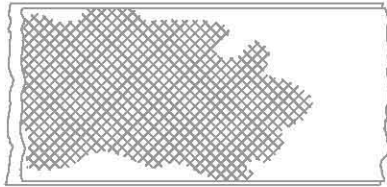
~~Two-Part Pourable Sealer~~

~~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 INC.

The Lightning Protection Institute

This is to certify that

Bret A. Peifer

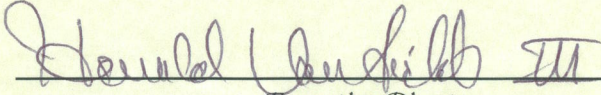
*being qualified by experience and found upon examination
in*

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

