



C&S Companies
 499 Col Eileen Collins Blvd.
 Syracuse, New York 13212-3930
 Phone: (315) 455-2000
 Fax: (315) 455-9667

Submittal #260526-1.0 260526 - Grounding and Bonding for Electrical Systems

Project: 128.060.001 - Dutchess Stadium New Clubhouse &
 Improvements
 1500 NY-9D
 Wappingers Falls, New York 12590

Grounding and Bonding for Electrical Systems - Product Information

SPEC SECTION:	260526 - Grounding and Bonding for Electrical Systems	SUBMITTAL MANAGER:	Kara Mearon (C&S Engineers Inc.)
STATUS:	Submitted	DATE CREATED:	03/13/2023
ISSUE DATE:		REVISION:	0
RESPONSIBLE CONTRACTOR:	Piazza Brothers Construction	RECEIVED FROM:	Julianna LoPriore
RECEIVED DATE:	04/10/2023	SUBMIT BY:	
FINAL DUE DATE:	04/24/2023	LOCATION:	
TYPE:	Product Information	COST CODE:	
APPROVERS:	Allen Schmidt (DLR Group), Sarah Treas (DLR Group)		
BALL IN COURT:	Allen Schmidt (DLR Group), Sarah Treas (DLR Group)		
DISTRIBUTION:			
DESCRIPTION:			
ATTACHMENTS:			

SUBMITTAL WORKFLOW

#	NAME	SUBMITTER/ APPROVER	SENT DATE	DUE DATE	RETURNED DATE	RESPONSE	ATTACHMENTS	COMMENTS
1	Damon Baxter	Submitter		1/8/2024		Pending		
2	Gus Carvajal	Submitter		1/8/2024		Pending		
3	Julianna LoPriore	Submitter		1/8/2024	4/10/2023	Submitted	Grounding and Bonding(TBS)-Upstate-260526-1.pdf	
4	Allen Schmidt	Approver	4/10/2023	4/24/2023		Pending		
5	Sarah Treas	Approver	4/10/2023	4/24/2023		Pending		



Submittal #260526-1.0 260526 - Grounding and Bonding for Electrical Systems

Architect/Engineer Approval:

- (A) Approved
- (A/N) Approved As Noted
- (RR) Revise and Resubmit
- (REJ) Rejected
- (SUB) Submit Specified Item

Checking is only for general compliance with the design concept of the project and general compliance with the information given in the contract documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for dimensions which shall be confirmed and correlated at the jobsite; fabrication processes and techniques of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.

Reviewed by: _____
Date: _____

DLRGROUP

Submittal Review

Project Name: Dutchess Stadium Left Field Building
 Project Number: 57-21113-01
 Submittal ID: 260526-1.0
 Received On: 4/10/2023
 Reviewed On: 4/14/2023
 Reviewed By: Collin Wheeler

Action: Furnish As Corrected

This review is for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review of submittals is not for the purpose of determining the accuracy and completeness of other information such as dimensions, quantities, and installation or performance of equipment or systems, which are the Contractor's responsibility. The Architect's review shall not constitute approval of safety precautions or construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. The Architect's comments, notes or corrections are not an authorization to proceed with Work involving a change in the Contract Sum, the Contract Time or both. If any portion of this review requires a change to the Work, an appropriate change instrument must be executed in accordance with the Contract Documents.

*** Refer to comments on following pages.**

BY

DATE

COPIES TO



SUBMITTAL COVER SHEET

From: Julianna LoPriore **Attn:** Tim Brown
Company: Piazza, Inc. **C&S Companies**
Phone/Fax #: (914)741-4435 **499 Col. Eileen Collins Blvd.**
Project: Dutchess Stadium **Syracuse, NY 13212**
Project #: RFB-DCB-18-22 **(315) 455-2000; Fax: 455-9577**

Reference: CSI Code: 260526 Dwg No: _____
 Paragraph: _____ Other: _____

Description: Grounding and Bonding

Supplier: Upstate Electric

Manufacturer: NVent and Harger

Item Type: _____ Product Data _____ Manf. Cert/Warranty
 _____ Shop Drawings _____ Samples
 Other: Technical Data

Contractor's Approval:

Reviewed for general compliance of specifications.
 This submittal is a **substitute** to the specified product.
 For Architects / Engineers Approval

This is our 1st submittal for this item.

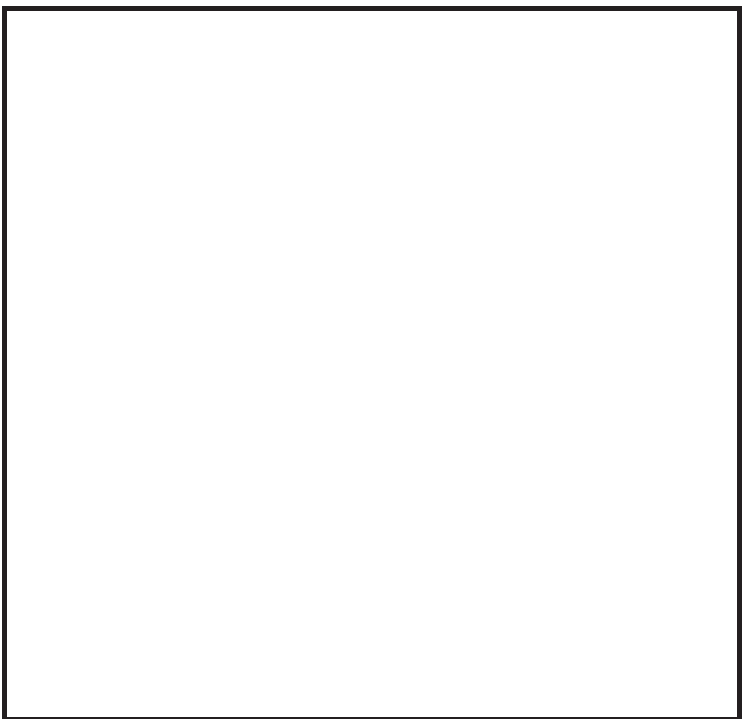
We are submitting _____ copies.

Contractor Submittal Review Stamp

THE ATTACHED MATERIAL HAS BEEN REVIEWED BY THE UNDERSIGNED AND IS BELIEVED TO COMPLY WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE UNDERSIGNED UNDERSTANDS VERIFICATION OF FIELD DIMENSIONS, AND COORDINATION WITH OTHER TRADES, REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.

Submitted by: Piazza, Inc.

Date: 4/10/2023

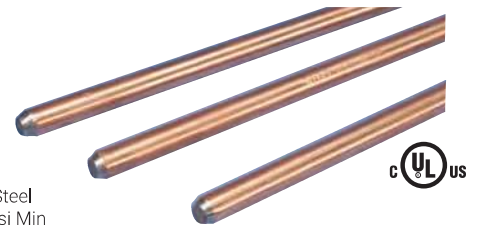


Copper-Bonded Ground Rods

MINIMUM 3/4-INCH DIAMETER, 10-FT IN LENGTH

POINTED RODS

- 99.9% pure electrolytic copper coating
- Molecular bond to nickel-sealed high strength steel core
- Rods have a high carbon steel core and tip that provide superior strength when driving
- Copper coating will not crack when bent or tear when driven
- Minimum copper coating of 10 mils on rods listed to UL® 467
- nVent ERICO name, length, diameter and part number is roll-stamped within 12" of chamfered end
- UL logo and control number where applicable stamped on each rod for easy inspection after installation



Material: Copper-Bonded Steel
Tensile Strength: 80,000 psi Min

Part Number	Ground Rod Diameter, Nominal	Ground Rod Diameter, Actual(Ø)	Length	Plating Thickness	Unit Weight
613840**	3/8"	0.358"	4.0'	10 mil	1,300 lb
611350**	1/2"	0.505"	5.0'	10 mil	3,500 lb
611380	1/2"	0.505"	8.0'	10 mil	5,500 lb
611300	1/2"	0.505"	10.0'	10 mil	6,900 lb
615840**	5/8"	0.560"	4.0'	10 mil	3,400 lb
615850**	5/8"	0.560"	5.0'	10 mil	4,200 lb
615860**	5/8"	0.560"	6.0'	10 mil	5,100 lb
615880	5/8"	0.560"	8.0'	10 mil	6,800 lb

Part Number	Ground Rod Diameter, Nominal	Ground Rod Diameter, Actual(Ø)	Length	Plating Thickness	Unit Weight
615800	5/8"	0.560"	10.0'	10 mil	8,500 lb
615812	5/8"	0.560"	12.0'	10 mil	10,000 lb
615815	5/8"	0.560"	15.0'	10 mil	12,800 lb
615883	5/8"	0.561"	8.0'	13 mil	6,800 lb
615803	5/8"	0.561"	10.0'	13 mil	8,400 lb
613440**	3/4"	0.681"	4.0'	10 mil	5,600 lb
613480	3/4"	0.681"	8.0'	10 mil	10,100 lb
613400	3/4"	0.681"	10.0'	10 mil	12,600 lb
613403	3/4"	0.681"	10.0'	13 mil	12,400 lb
613412	3/4"	0.681"	12.0'	10 mil	14,900 lb
613415	3/4"	0.681"	15.0'	10 mil	18,500 lb
614400	1"	0.911"	10.0'	10 mil	22,000 lb

** Non-UL listed rods
† Additional lengths available

STEEL DRIVING SLEEVES FOR POINTED RODS*



- Slides on top of ground rod to prevent mushrooming while driving into ground

Part Number	Ground Rod Size (Unthreaded)
B13714	1/2" Copper-Bonded or Steel rod
B13716	5/8" Copper-Bonded rod (.563" diameter)
B13731	5/8" Steel rod (.625" diameter)
B13718	3/4" Copper-Bonded rod (.682" diameter)
B13733	3/4" Steel rod (.750" diameter)
B13722	1" Copper-Bonded rod (.914" diameter)

*For unthreaded ground rods only.

ECONOMICAL SLEEVES FOR 5/8" COPPER-BONDED, POINTED RODS

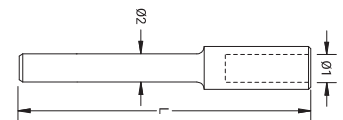


Part Number	Ground Rod Size
EDS58	5/8" Copper-Bonded Rods (.563" diameter)

DRIVING HEADS FOR COPPER-BONDED POINTED RODS



- For use in power assisted ground rod drivers



Part Number	Ground Rod Size	Ø1	Ø2	L
DH58	5/8" Copper-Bonded Rods (.563" diameter)	0.58"	0.85"	7"
DH34	3/4" Copper-Bonded Rods (.682" diameter)	0.78"	0.85"	7"

THREADLESS COMPRESSION COUPLERS FOR COPPER-BONDED POINTED RODS



- Made of high-strength silicon bronze
- Tapered so when rod is driven into coupling, parts compress to form a conductive connection

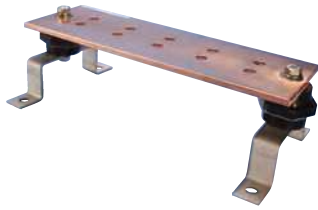


Part Number	Nominal Rod Diameter (in)	Unit Weight (lbs)	Standard Package
CC12F	1/2 (full)	0.240	25
CC58	5/8	0.300	25
CC34	3/4	0.450	25

Ground Bars

MINIMUM 24-IN WIDE, 4-IN IN HEIGHT

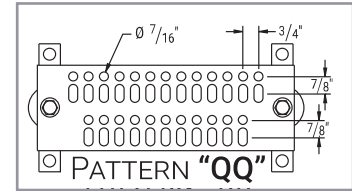
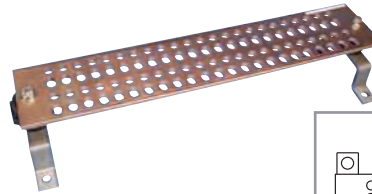
COMMONLY STOCKED COPPER GROUNDING BUS BARS* WITH INSULATORS & BRACKETS



Part Number	Thickness (in)	Width (in)	Length (in)	Hole Pattern
2" wide bar				
EGBA14212BB	1/4	2	12	BB
EGBA14212EE	1/4	2	12	EE
EGBA14212GG	1/4	2	12	GG
EGBA14212HH	1/4	2	12	HH
EGBA14215JJ	1/4	2	15	JJ
4" wide bar				
EGBA14410FF	1/4	4	10	FF
EGBA14412AA	1/4	4	12	AA
EGBA14412BB	1/4	4	12	BB
EGBA14412CC	1/4	4	12	CC
EGBA14412GG	1/4	4	12	GG
EGBA14412LL	1/4	4	12	LL
EGBA14418CC	1/4	4	18	CC
EGBA14420CC	1/4	4	20	CC
EGBA14424CC	1/4	4	24	CC
EGBA14424GG	1/4	4	24	GG
EGBA14424LL	1/4	4	24	LL
EGBA14424MM	1/4	4	24	MM

* Also available using pre-tinned copper bar. Add "T" to the part number.

QQ PATTERN, COPPER AND TINNED COPPER GROUNDING BUS BARS WITH INSULATORS & BRACKETS



Part Number	Thickness (in)	Width (in)	Length (in)	Hole Pattern	Plating
EGBA14412QQT	1/4	4	12	QQ	Tinned
EGBA14420QQ	1/4	4	20	QQ	Copper
EGBA14420QQT	1/4	4	20	QQ	Tinned
EGBA14424QQ	1/4	4	24	QQ	Copper
EGBA14424QQT	1/4	4	24	QQ	Tinned

Field Fabrication Ground Bars

Part Number	Thickness (in)	Width (in)	Length (in)
ECB14212	1/4	2	12
ECB14224	1/4	2	24
ECB14412	1/4	4	12
ECB14424	1/4	4	24
ECB142144	1/4	2	144
ECB144144	1/4	4	144

*non-UL listed, bare copper bars, no holes

Ground Bars with Plexiglass Covers

Part Number	Thickness (in)	Width (in)	Length (in)	Finish	Cover
EGBF14406LL	1/4	4	6	N	Y
EGBF14412LL	1/4	4	12	N	Y
EGBF14416LL	1/4	4	16	N	Y
EGBF14424CC	1/4	4	24	N	Y
EGBF14436CC	1/4	4	36	N	Y
EGBF14448CC	1/4	4	48	N	Y

MOUNTING KITS



- Include stainless steel hardware, 3/8" fasteners, insulators and brackets
- cULus® listed

Part Number	Description
B548A39	Mounting kit for steel beam
B548A41	Mounting kit for 1" & 2" wide bars
B548A42	Mounting kit for 3" & 4" wide bars

GROUND BAR INSULATORS



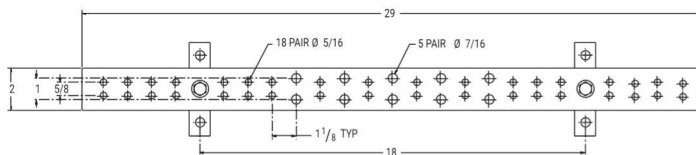
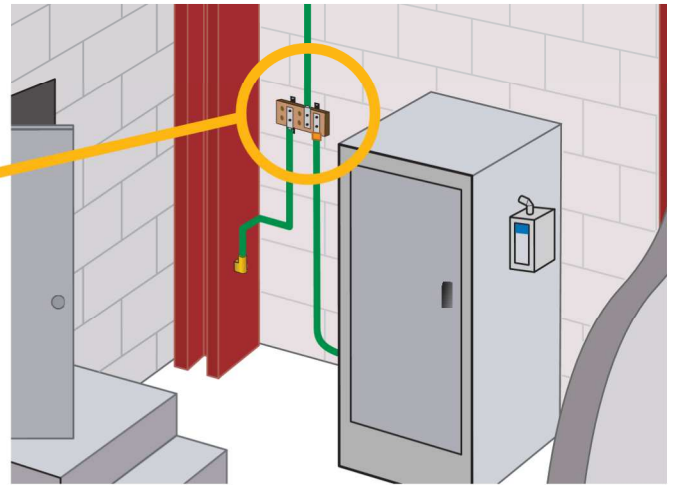
- UL Recognized for Canada and US
- Fiberglass reinforced thermoset polyester

Part Number	Height (in)	Diameter (in) (A)	Thread Size
559600	1	1-1/8	1/4 - 20 x 5/16
559620	1-1/4	1-5/8	1/4 - 20 x 5/16
559660	1-1/2	2	3/8 - 16 x 3/8
559685	2-1/8	2-1/2	5/8 - 11 x 5/8
559686	2-1/4	2-1/2	1/2 - 13 x 5/8
559687	2-1/4	2-1/2	3/8 - 16 x 5/8

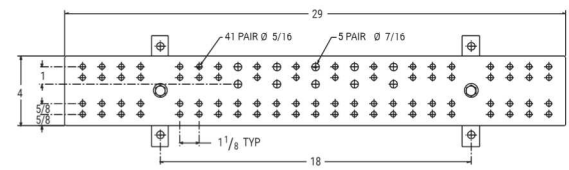
Telecom Ground Bars

TGB & TMGB Telecom Ground Bars

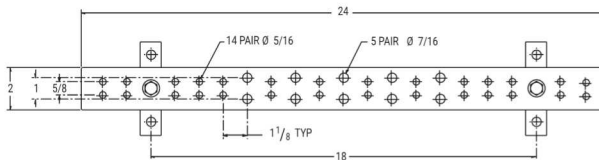
- UL® listed; meet TIA®/EIA® 607 and conform to BICSI® recommendations
- Comply with NEMA® Standards
- 1/4" thick copper bars
- Type 304 stainless steel brackets and insulators included with ground bar kits
- Electro-tin plating available (add "T" to ground bar part number)
- All bars contain 2 mounting holes (7/16")



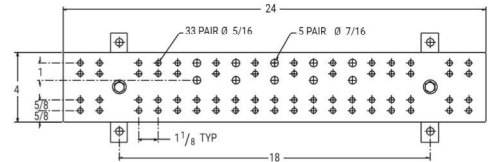
TGBA29L18PT



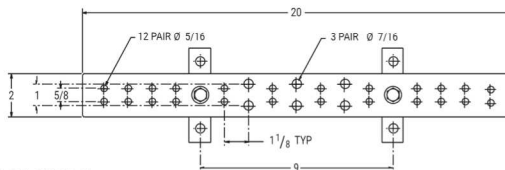
TMGBA29L41PT



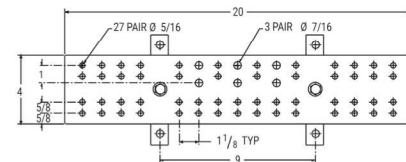
TGBA24L14PT



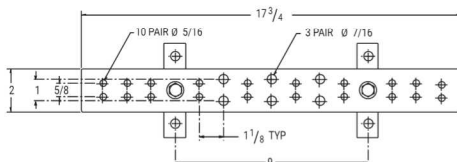
TMGBA24L33PT



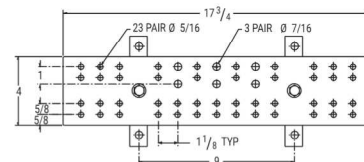
TGBA20L12PT



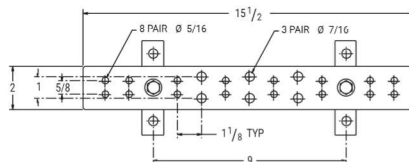
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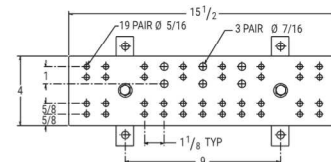
TGBA18L10PT



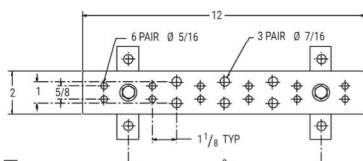
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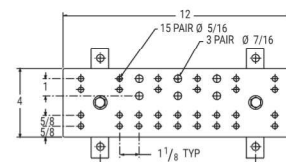
TGBA16L08PT



TMGBA16L19PT



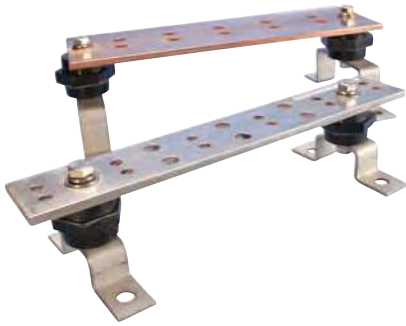
TGBA12L06PT



TMGBA12L15PT

Telecom Ground Bars MINIMUM 20-IN WIDE, 4-IN IN HEIGHT

TGB TELECOM GROUND BARS WITH INSULATORS & BRACKETS



Part Number	Thickness (in)	Width (in)	Length (in)	Plating
TGBA06L02P	1/4	2	6	
TGBA06L02PT	1/4	2	6	Tin
TGBA10L04P	1/4	2	10	
TGBA10L04PT	1/4	2	10	Tin
TGBA12L06P	1/4	2	12	
TGBA12L06PT	1/4	2	12	Tin
TGBA16L08P	1/4	2	15.5	
TGBA16L08PT	1/4	2	15.5	Tin
TGBA18L10P	1/4	2	17.75	
TGBA18L10PT	1/4	2	17.75	Tin
TGBA20L12P	1/4	2	20	
TGBA20L12PT	1/4	2	20	Tin
TGBA24L14P	1/4	2	24	
TGBA24L14PT	1/4	2	24	Tin
TGBA29L18P	1/4	2	29	
TGBA29L18PT	1/4	2	29	Tin

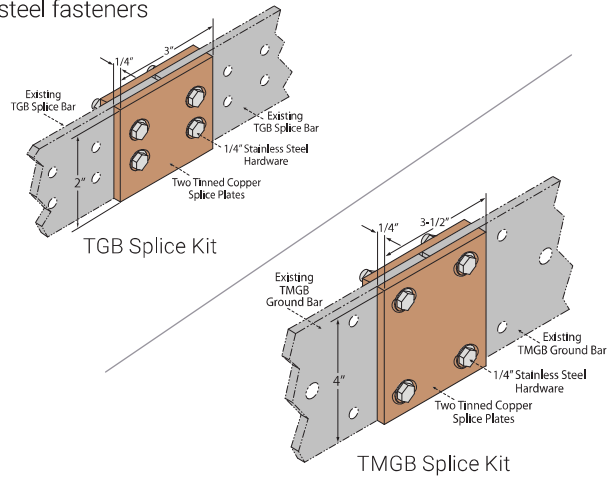
TMGB TELECOM MAIN GROUND BARS WITH INSULATORS & BRACKETS



Part Number	Thickness (in)	Width (in)	Length (in)	Finish
TMGBA12L15P	1/4	4	12	-
TMGBA12L15PT	1/4	4	12	Tinned
TMGBA16L19P	1/4	4	15.5	-
TMGBA16L19PT	1/4	4	15.5	Tinned
TMGBA18L23P	1/4	4	17.75	-
TMGBA18L23PT	1/4	4	17.75	Tinned
TMGBA20L27P	1/4	4	20	-
TMGBA20L27PT	1/4	4	20	Tinned
TMGBA24L33P	1/4	4	24	-
TMGBA24L33PT	1/4	4	24	Tinned
TMGBA29L41P	1/4	4	29	-
TMGBA29L41PT	1/4	4	29	Tinned

TGB & TMGB TELECOM GROUND BAR SPLICE KITS

- Includes 2 tinned copper splice plates and stainless steel fasteners



Part Number	Width (in)	Length (in)	Material
TGBSPLICEKIT	1/4	2	Tinned Copper
TMGBSPLICEKIT	1/4	4	Tinned Copper

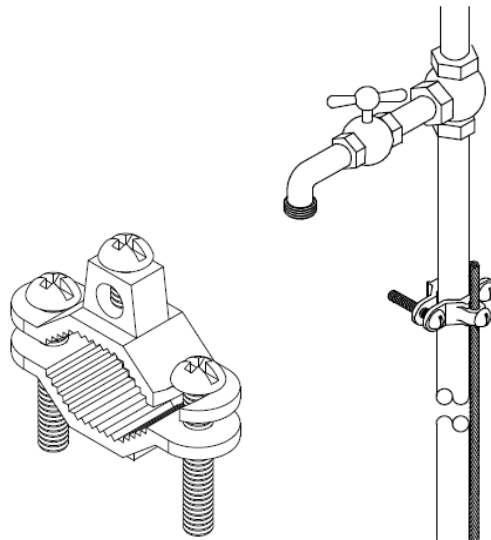
Theft Deterrent Telecom Ground Bars



Part Number	Thickness (in)	Width (in)	Length (in)	Finish	Pigtails
EGGBC14412QQ	1/4	4	12	Galvanized	0
EGGBC14424QQ	1/4	4	24	Galvanized	0
EGGBC14436QQ	1/4	4	36	Galvanized	0
EGGBC14412QQS2	1/4	4	12	Galvanized	2
EGGBC14424QQS2	1/4	4	24	Galvanized	2
EGGBC14436QQS2	1/4	4	36	Galvanized	2

Telecom Ground Bars with Covers

Part Number	Thickness (in)	Width (in)	Length (in)	Finish	Cover
TGBF06L02P	1/4	2	6	-	Y
TGBF06L02PT	1/4	2	6	Tinned	Y
TGBF10L04P	1/4	2	10	-	Y
TGBF10L04PT	1/4	2	10	Tinned	Y
TGBF12L06P	1/4	2	12	-	Y
TGBF12L06PT	1/4	2	12	Tinned	Y



BGC4 Water Pipe Ground Clamp .5-1"

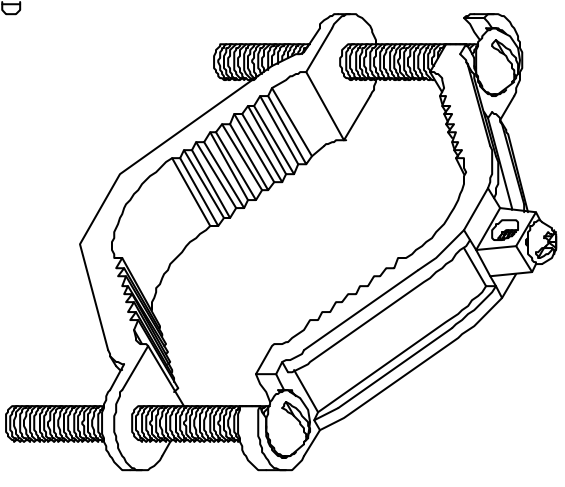
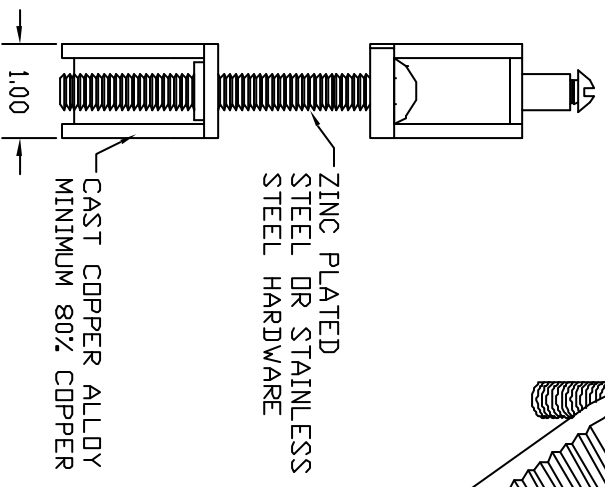
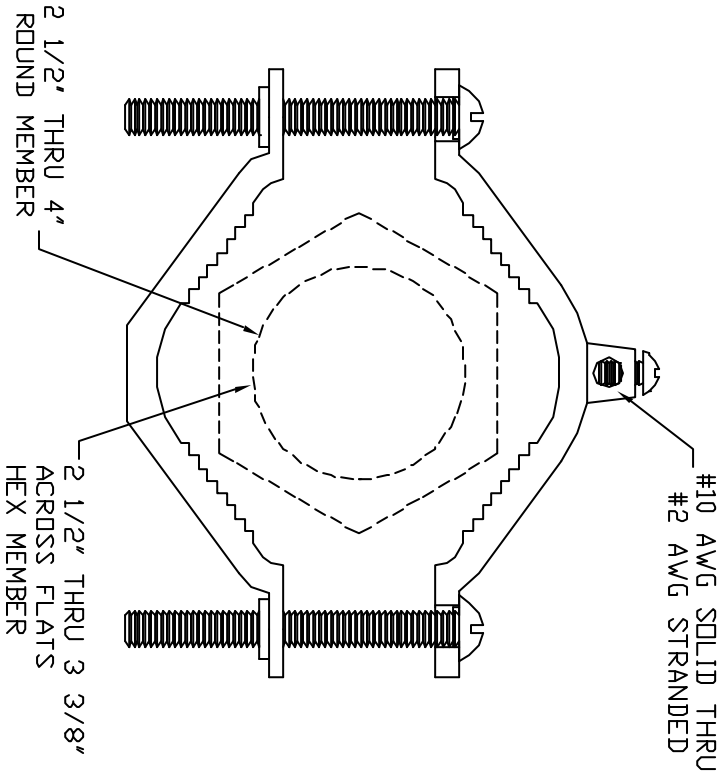
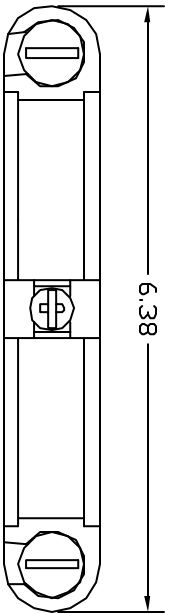
COPPER CLAD STEEL

DESCRIPTION

- ~~Bronze~~ water pipe ground clamp
- Accepts conductors from #10 AWG through #2 AWG
- Fits Ground rod or pipe size ½"-1"
- Torque rating 67 in. / lb.
- UL Listed 467

APPLICATION

- Many uses such as bonding to ground rods or copper water pipes



CLAMP TO BE LISTED UNDER UL467 FOR:
 1. PIPE GROUNDING
 2. GROUND ROD GROUNDING
 3. NATURAL GAS CORRUGATED STAINLESS STEEL TUBING FITTINGS.
 4. DIRECT BURIAL WITH STAINLESS HARDWARE.

2 1/2" THRU 4" PIPE GROUND CLAMP

EST. WT .9#

APPROVED

AS DRAWN:
 AS NOTED:
 DATE: _____

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LET	REVISION	DATE	BY
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-	-	-	-
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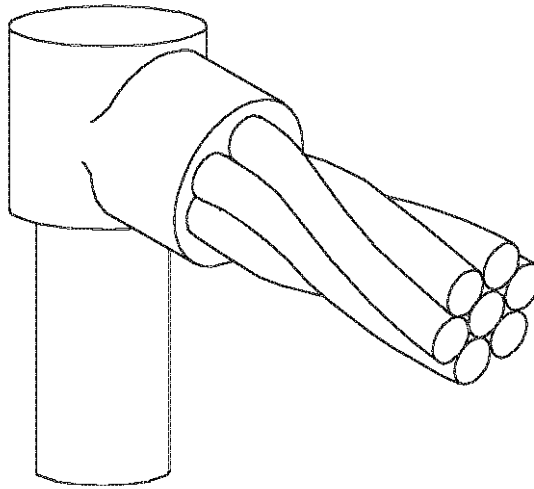
PART NO. BGC42.5-4
 WATER PIPE GROUND CLAMP 2.5 - 4 IN

TOLERANCES UNLESS NOTED: FRACTIONAL .00	REVISION +/- 1/16 +/- .030	DATE	BY
.000	+/- .010		

DRAWN BY: LAL
 CHECKED BY: LAL
 DATE: 071707

HARGER
 301 ZIEGLER DRIVE
 GRAYS LAKE, IL 60030
 (847) 548-8700

REVISION: -	SCALE: 1/2
SHEET 1	OF 1

**GD342SB****#2 Solid Copper Conductor
to
3/4" Nominal Ground Rod****Description**

#2 Solid Copper Conductor to 3/4" Nominal Ground Rod
Single Cable Dead Ended to Top of Ground Rod

UltraShot Weld Metal	NUWTube Weld Metal	Mold Handle
US90	NUWTUBE90	MH1