



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION  
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR HCAI SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

**APPLICATION #: OSP-0177**

**HCAI Special Seismic Certification Preapproval (OSP)**

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: Post Glover Resistors, Inc.

Manufacturer's Technical Representative: Jonathan Nash

Mailing Address: 4750 Olympic Blvd., Erlanger, KY 41018

Telephone: (859) 372-8919

Email: Jonathan.Nash@postglover.com

**Product Information**

Product Name: Power Isolation and Correction Systems

Product Type: Grounding Systems

Product Model Number: Reference attachment

General Description: Each unit consists of one to four power resistor banks, cap and pin standoff type insulators, current transformer, and grounded NEMA 3R safety enclosure. Tested units included those with and without additional seismic bracing/restraint.

Mounting Description: Rigid, Floor Mounted

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

**Applicant Information**

Applicant Company Name: Dynamic Certification Laboratories

Contact Person: Kelly Laplace

Mailing Address: 1315 Greg Street Suite 109, Sparks, NV 89431

Telephone: (775) 358-5085

Email: kelly@shaketest.com

Title: Business Manager





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**California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)**

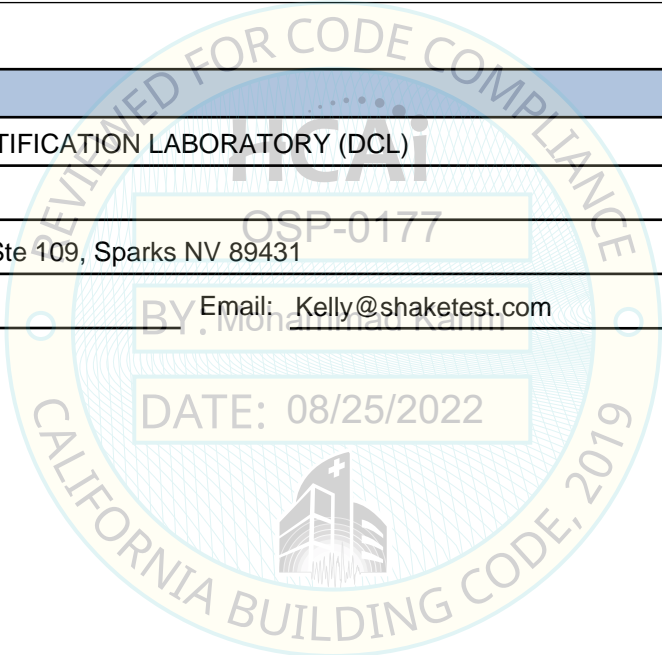
Company Name: THE VMC GROUP  
Name: Kenneth Tarlow California License Number: S2851  
Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814  
Telephone: (832) 627-2214 Email: ken.tarlow@thevmcgroup.com

**Certification Method**

GR-63-Core     ICC-ES AC156     IEEE 344     IEEE 693     NEBS 3  
 Other (Please Specify): \_\_\_\_\_

**Testing Laboratory**

Company Name: DYNAMIC CERTIFICATION LABORATORY (DCL)  
Contact Person: Kelly Laplace  
Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431  
Telephone: (775) 358-5085 Email: Kelly@shaketest.com





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**Seismic Parameters**

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.73 (seismically braced), 1.63 (non-seismically braced)

SDS (Design spectral response acceleration at short period, g) = 2.4 (seismically braced), 2.26 (non-seismically braced)

$a_p$  (Amplification factor) = 1.0

$R_p$  (Response modification factor) = 2.5

$\Omega_0$  (System overstrength factor) = 2.0

$I_p$  (Importance factor) = 1.5

$z/h$  (Height ratio factor) = 1

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

**HCAI Approval (For Office Use Only) - Approval Expires on 08/25/2028**

Date: 8/25/2022

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = See Above  $z/h$  = 1

Condition of Approval (if applicable): DATE: 08/25/2022



## Special Seismic Certification

### Table 1 - Certified Components - Seismically Braced Enclosures



**DCL Project Number:** 92756-2201  
**Manufacturer:** Post Glover Resistors, Inc.  
**Product Line:** Neutral Grounding Device  
**Mounting Description:** Rigid base mounted  
**Certified Seismic Level:**  $S_{DS} = 2.40g$ ,  $z/h = 1$

Model	Voltage <sup>1</sup> (Model digit 6-8)	Time <sup>1</sup> (Model digit 9)	Current <sup>1</sup> (Model digit 10-12)	Current Transformer <sup>1</sup> (Model digit 20)	Dimensions (in)			Weight (lb)	Unit
					Length	Width	Height		
NU_-NGD27C030-GGG0A01JA	277	Cont/385C	30	300:5 to 400:5	48	48	48	720	UUT4A
NU_-NG049C1D3-GGG0A01DA	4,900	Cont/385C	1.3	50:5 to 250:5				750	UUT3A
NU_-NG013C019-GGGAA01LA	1,300	Cont/385C	19	500:5 to 5000:5				1,070	UUT2A
NCU-NGxxxxxxx-GGG0A01xA	Varies	Varies	Varies	50:5 to 5000:5				720 to 1,230	Interpolated
NCU-NGxxxxxxx-GGGAA01xA									Interpolated
NCU-NGxxxxxxx-GGGBA01xA									Interpolated
NCU-NGxxxxxxx-GGGEA01xA									Interpolated
NCU-NGxxxxxxx-GGGPA01xA					Interpolated				
NU_-NGD10C360-GGGAA01LA	100	Cont/385C	360	50:5 to 250:5	1,230	UUT1A			

Note:

1. Voltage, Time, Current and Current Transformer Ratio are a function of the properties of the tested and certified subcomponents.

## Special Seismic Certification

### Table 2 - Certified Components - Non-Seismically Braced Enclosures



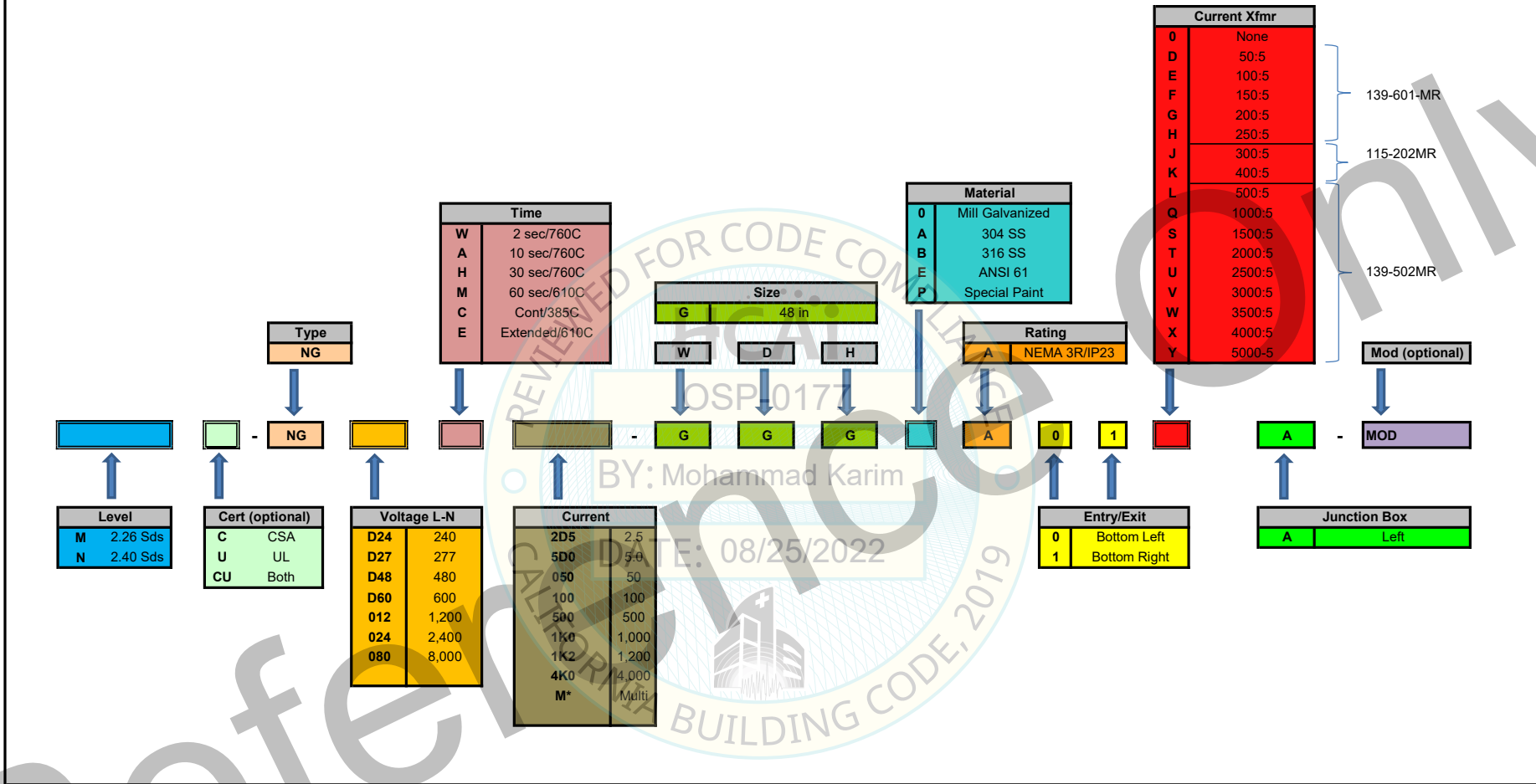
**DCL Project Number:** 92756-2201  
**Manufacturer:** Post Glover Resistors, Inc.  
**Product Line:** Neutral Grounding Device  
**Mounting Description:** Rigid base mounted  
**Certified Seismic Level:**  $S_{DS} = 2.26g$ ,  $z/h = 1$

Model	Voltage <sup>1</sup> (Model digit 6-8)	Time <sup>1</sup> (Model digit 9)	Current <sup>1</sup> (Model digit 10-12)	Current Transformer <sup>1</sup> (Model digit 20)	Dimensions (in)			Weight (lb)	Unit
					Length	Width	Height		
MU_-NGD27C030-GGG0A01JA	277	Cont/385C	30	300:5 to 400:5	48	48	48	580	UUT4B
MU_-NG049C1D3-GGG0A01DA	4,900	Cont/385C	1.3	50:5 to 250:5				620	UUT3B
MU_-NG013C019-GGGAA01LA	1,300	Cont/385C	19	500:5 to 5000:5				920	UUT2B
MCU-NGxxxxxxx-GGG0A01xA	Varies	Varies	Varies	50:5 to 5000:5				580 to 1,060	Interpolated
MCU-NGxxxxxxx-GGGAA01xA									Interpolated
MCU-NGxxxxxxx-GGGBA01xA									Interpolated
MCU-NGxxxxxxx-GGGEA01xA									Interpolated
MCU-NGxxxxxxx-GGGPA01xA									Interpolated
MU_-NGD10C360-GGGAA01LA	100	Cont/385C	360	50:5 to 250:5	1,060	UUT1B			

Note:

1. Voltage, Time, Current and Current Transformer Ratio are a function of the properties of the tested and certified subcomponents.

## Seismic Neutral Grounding Resistor Part Number Configuration



## Special Seismic Certification

### Table 3 - Certified Subcomponents - Seismically Braced Enclosures



DCL Project Number: 92756-2201

Certified Seismic Level:  $S_{DS} = 2.40g$ ,  $z/h = 1.0$

ENCLOSURES					
Model Number	Manufacturer	Size	Material	Notes	Unit
NG444-S-2D50	Post Glover	48"x48"x48"	Mill Galvanized	NEMA 3R/IP23	UUT3A, UUT4A
NG444-S-2D50-304			304 Stainless Steel		Interpolated
NG444-S-2D50-316			316 Stainless Steel		Interpolated
NG444-S-2D50-PG			Galvanneal, Painted		Interpolated
NG444-S-2D50-2			Mill Galvanized		Interpolated
NG444-S-2D50-2-304			304 Stainless Steel		Interpolated
NG444-S-2D50-2-316			316 Stainless Steel		Interpolated
NG444-S-2D50-2-PG			Galvanneal, Painted		Interpolated
NG444-S-2D50-3			Mill Galvanized		Interpolated
NG444-S-2D50-3-304			304 Stainless Steel		Interpolated
NG444-S-2D50-3-316			316 Stainless Steel		Interpolated
NG444-S-2D50-3-PG			Galvanneal, Painted		Interpolated
NG444-S-2D50-4			Mill Galvanized		Interpolated
NG444-S-2D50-4-304			304 Stainless Steel		UUT1A, UUT2A
NG444-S-2D50-4-316			316 Stainless Steel		Interpolated
NG444-S-2D50-4-PG			Galvanneal, Painted		Interpolated
INSULATORS					
Model Number	Manufacturer	Notes		Unit	
KIT-I5-1-304	Meister Intl.	Stand off, 5kV, 60kV BIL		UUT1A, UUT2A	
KIT-I15-1-304		Stand off, 15kV, 110 kV BIL		UUT1A, UUT2A, UUT3A, UUT4A	
JUNCTION BOX					
Model Number	Manufacturer	Notes		Unit	
BN4060604CHSS-ALT1	Wiegmann	6x6x4, 304 SS, NEMA 4X, w/4 point shorting block		UUT1A, UUT2A, UUT3A, UUT4A	
CURRENT TRANSFORMERS					
Model Number	Manufacturer	Notes		Unit	
139-601-MR	Spectrum Ind.	50:5 to 250:5 ratio		UUT1A, UUT3A	
115-202-MR		300:5 to 400:5 ratio		UUT4A	
139-502-MR		500:5 to 5000:5 ratio		UUT2A	

**Special Seismic Certification**  
**Table 3 - Certified Subcomponents - Seismically Braced Enclosures (Continued)**



DCL Project Number: 92756-2201  
 Certified Seismic Level:  $S_{DS} = 2.40g$ ,  $z/h = 1.0$

RESISTOR BANKS, GRID ELEMENT TYPE								
Model Number	Manufacturer	Material	Grid Width <sup>1</sup>	Number of Stacks <sup>1</sup>	Grid Shape <sup>1</sup>	Grid Thickness (Gauge) <sup>1</sup>	Unit	
SG226-18SR-A1-S-SUB	Post Glover	Mill Galvanized	A1	1	T	26 (thinnest) ↓ 11 (thickest)	Interpolated	
SG226-18SR-A1-S-SUB		304 or 316 SS	A1	1 to 4	T			
SG311-A1-SUB to SG315-A1-S-SUB		Mill Galvanized, 304, or 316 SS	A1		H			
SG211-A1-S-SUB to SG224-A1-S-SUB			A1		T			
SG311-A2-S-SUB to SG315-A2-S-SUB			A2		H			
SG211-A2-S-SUB to SG224-A2-S-SUB			A2		T			
SG226-18SR-A2-S-SUB			A2		T			
SG311-A3-S-SUB to SG315-A3-S-SUB			A3		H			
SG211-A3-S-SUB to SG224-A3-S-SUB			A3		T			
SG226-18SR-A3-S-SUB			A3		T			
SG311-A3-S-SUB			304 SS		A3			H
SG313-A3-S-SUB					A3			H
SG211-A3-S-SUB		A3			T			
SG213-A3-S-SUB		A3			T			

RESISTOR BANKS, WIREWOUND							
Model Number	Manufacturer	Material	Grid Width <sup>1</sup>	Number of Stacks <sup>1</sup>	Grid Shape <sup>1</sup>	Wire Thickness (Gauge) <sup>1</sup>	Unit
21FDL115500-A3-S-SUB	Post Glover	Mill Galvanized	A3	1	n/a	24	UUT3A
01FDL115500-A3-S-SUB to 21FDL2400-A3-S-SUB		Mill Galvanized, 304, or 316 SS	A3	1 to 4	n/a	24-11	Interpolated
21FDL2400-A3-S-SUB		304 SS	A3	4	n/a	11	UUT2A

Notes:  
 1. Ratings (voltage, time, current) determine element type (wirewound or grid), width of grid (A1, A2, A3), number of stacks (1-4), gauge of wire or grid plate (24-11Ga wire, 26-11Ga plate) and grid shape ( H or T).



# Special Seismic Certification

## Table 4 - Certified Subcomponents - Non-Seismically Braced Enclosures



DCL Project Number: 92756-2201

Certified Seismic Level:  $S_{DS} = 2.26g$ ,  $z/h = 1.0$

ENCLOSURES					
Model Number	Manufacturer	Size	Material	Notes	Unit
NG444-S-2D26	Post Glover	48"x48"x48"	Mill Galvanized	NEMA 3R/IP23	UUT3B, UUT4B
NG444-S-2D26-304			304 Stainless Steel		Interpolated
NG444-S-2D26-316			316 Stainless Steel		Interpolated
NG444-S-2D26-PG			Galvanneal, Painted		Interpolated
NG444-S-2D26-2			Mill Galvanized		Interpolated
NG444-S-2D26-2-304			304 Stainless Steel		Interpolated
NG444-S-2D26-2-316			316 Stainless Steel		Interpolated
NG444-S-2D26-2-PG			Galvanneal, Painted		Interpolated
NG444-S-2D26-3			Mill Galvanized		Interpolated
NG444-S-2D26-3-304			304 Stainless Steel		UUT1B, UUT2B
NG444-S-2D26-3-316			316 Stainless Steel		Interpolated
NG444-S-2D26-3-PG			Galvanneal, Painted		Interpolated
INSULATORS					
Model Number	Manufacturer	Notes		Unit	
KIT-I5-1-304	Meister Intl.	Stand off, 5kV, 60kV BIL		UUT1B, UUT2B	
KIT-I15-1-304		Stand off, 15kV, 110 kV BIL		UUT1B, UUT2B, UUT3B, UUT4B	
JUNCTION BOX					
Model Number	Manufacturer	Notes		Unit	
BN4060604CHSS-ALT1	Wiegmann	6x6x4, 304 SS, NEMA 4X, w/4 point shorting block		UUT1B, UUT2B, UUT3B, UUT4B	
CURRENT TRANSFORMERS					
Model Number	Manufacturer	Notes		Unit	
139-601-MR	Spectrum Ind.	50:5 to 250:5 ratio		UUT1B, UUT3B	
115-202-MR		300:5 to 400:5 ratio		UUT4B	
139-502-MR		500:5 to 5000:5 ratio		UUT2B	

**Special Seismic Certification**

**Table 4 - Certified Subcomponents - Non-Seismically Braced Enclosures (Continued)**



DCL Project Number: 92756-2201

Certified Seismic Level:  $S_{DS} = 2.26g, z/h = 1.0$

RESISTOR BANKS, GRID ELEMENT TYPE									
Model Number	Manufacturer	Material	Grid Width <sup>1</sup>	Number of Stacks <sup>1</sup>	Grid Shape <sup>1</sup>	Grid Thickness (Gauge) <sup>1</sup>	Unit		
SG226-18SR-A1-S-SUB	Post Glover	Mill Galvanized	A1	1	T	26 (thinnest) ↓ 11 (thickest)	UUT4B		
SG226-18SR-A1-S-SUB		304 or 316 SS	A1	1 to 4	T		Interpolated		
SG311-A1-SUB to SG315-A1-S-SUB		Mill Galvanized, 304, or 316 SS	A1		H				
SG211-A1-S-SUB to SG224-A1-S-SUB			A1		T				
SG311-A2-S-SUB to SG315-A2-S-SUB			A2		H				
SG211-A2-S-SUB to SG224-A2-S-SUB			A2		T				
SG226-18SR-A2-S-SUB			A2		T				
SG311-A3-S-SUB to SG315-A3-S-SUB			A3		H				
SG211-A3-S-SUB to SG224-A3-S-SUB			A3		T				
SG226-18SR-A3-S-SUB			A3		T				
SG311-A3-S-SUB		304 SS	A3		H			UUT1B	
SG313-A3-S-SUB			A3		H			UUT1B	
SG211-A3-S-SUB			A3		T			UUT1B	
SG213-A3-S-SUB			A3		T			UUT1B	
RESISTOR BANKS, WIREWOUND									
Model Number	Manufacturer	Material	Grid Width <sup>1</sup>		Number of Stacks <sup>1</sup>	Grid Shape <sup>1</sup>		Wire Thickness (Gauge) <sup>1</sup>	Unit
21FDL115500-A3-S-SUB	Post Glover	Mill Galvanized	A3	1	n/a	24	UUT3B		
01FDL115500-A3-S-SUB to 21FDL2400-A3-S-SUB		Mill Galvanized, 304, or 316 SS	A3	1 to 4	n/a	24-11	Interpolated		
21FDL2400-A3-S-SUB		304 SS	A3	4	n/a	11	UUT2B		

Notes:

1. Ratings (voltage, time, current) determine element type (wirewound or grid), width of grid (A1, A2, A3), number of stacks (1-4), gauge of wire or grid plate (24-11Ga wire, 26-11Ga plate) and grid shape ( H or T).

**Special Seismic Certification**  
**Table 5 - Tested Units**

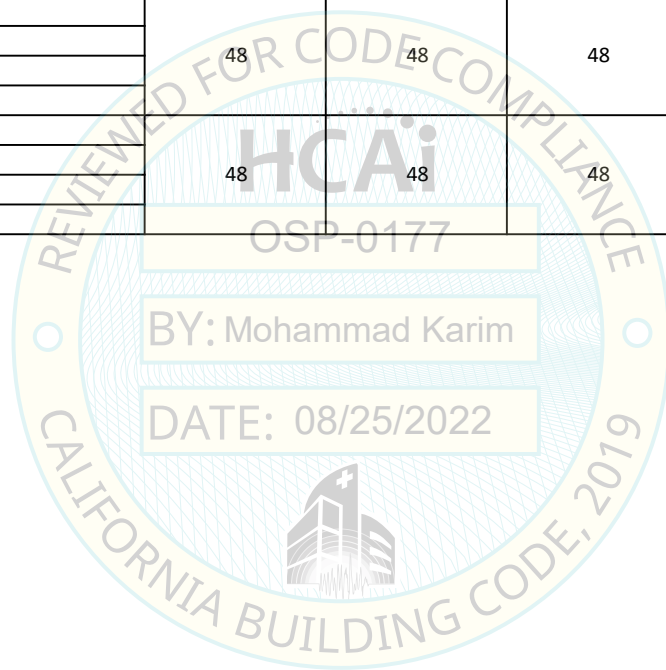


DCL Project Number: 92756-2201

Manufacturer: Post Glover Resistors, Inc.

Product Line: Neutral Grounding Device

Model	Seismically Braced Enclosure	Dimensions (in)			Weight (lb)	Sds (g), z/h = 1.0	Unit
		Length	Width	Height			
NU_-NGD10C360-GGGAA01LA	Yes	48	48	48	1,230	2.5	UUT1A
NU_-NG013C019-GGGAA01LA	Yes				1,070	2.4	UUT2A
NU_-NG049C1D3-GGG0A01DA	Yes				750	2.5	UUT3A
NU_-NGD27C030-GGG0A01JA	Yes				720	2.5	UUT4A
MU_-NGD10C360-GGGAA01LA	No	48	48	48	1,060	2.26	UUT1B
MU_-NG013C019-GGGAA01LA	No				920	2.26	UUT2B
MU_-NG049C1D3-GGG0A01DA	No				620	2.26	UUT3B
MU_-NGD27C030-GGG0A01JA	No				580	2.26	UUT4B



# UUT1A UNIT UNDER TEST (UUT) Summary Sheet



**DCL Project Number:** 92756-2201

**Manufacturer:** Post Glover Resistors

**Product Line:** Neutral Grounding Resistor

**Model Number:** NU\_-NGD10C360-GGGAA01LA

**Product Construction Summary:**

NEMA 3R / IP23 enclosure, stainless steel (enclosure seismically braced)

**Options / Component Summary:**

Tested unit contained four A3 resistor grids (90A-185A), 5kV and 15kV insulators, standoff insulators, NEMA 4X junction box, and multi-ratio current transformer

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

**UUT Properties**

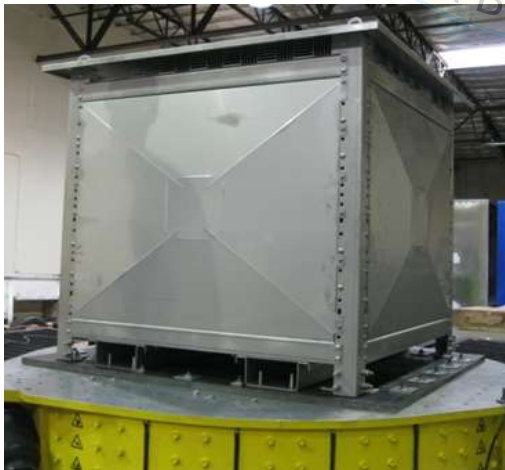
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1,230	48	48	48	19.7	18.6	25.6

**Seismic Test Parameters**

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67
		2.50	0.0	1.5	2.50	1.00	1.67	0.67

**Unit Mounting Description:**

The unit was rigidly mounted to the shake table using the factory-mounted brackets and forklift tubes. A total of twelve 1/2-inch A307 bolts were used, one on each corner, and two on either side of the two forklift tubes.



UUT1A mounted to shake table and ready for test.



Side panel removed to photograph UUT1A interior.

Overall view of UUT1A

# UUT1B UNIT UNDER TEST (UUT) Summary Sheet



**DCL Project Number:** 92756-2201

**Manufacturer:** Post Glover Resistors

**Product Line:** Neutral Grounding Resistor

**Model Number:** MU\_-NGD10C360-GGGAA01LA

**Product Construction Summary:**

NEMA 3R / IP23 enclosure, stainless steel (enclosure not seismically braced)

**Options / Component Summary:**

Tested unit contained four A3 resistor grids (90A-185A), 5kV and 15kV insulators, standoff insulators, NEMA 4X junction box, and multi-ratio current transformer

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

**UUT Properties**

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1,060	48	48	48	15.1	7.3	24.2

**Seismic Test Parameters**

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.26	1.0	1.5	3.62	2.71	1.51	0.60
		2.26	0.0	1.5	2.26	0.90	1.51	0.60

**Unit Mounting Description:**

The unit was rigidly mounted to the shake table using the factory-mounted brackets. A total of four 1/2-inch A307 bolts were used, one on each corner.



Side panel removed to photograph interior. Notice seismic bracing has been removed and number of insulators have been reduced.

Overall view of UUT1B

# UUT2A UNIT UNDER TEST (UUT) Summary Sheet



**DCL Project Number:** 92756-2201

**Manufacturer:** Post Glover Resistors

**Product Line:** Neutral Grounding Resistor

**Model Number:** NU\_-NG013C019-GGGAA01LA

**Product Construction Summary:**

NEMA 3R / IP23 enclosure, stainless steel (enclosure seismically braced)

**Options / Component Summary:**

Tested unit contained four wirewound A3 11A resistor grids, 5kV and 15kV insulators, standoff insulators, NEMA 4X junction box, and multi-ratio current transformer

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

**UUT Properties**

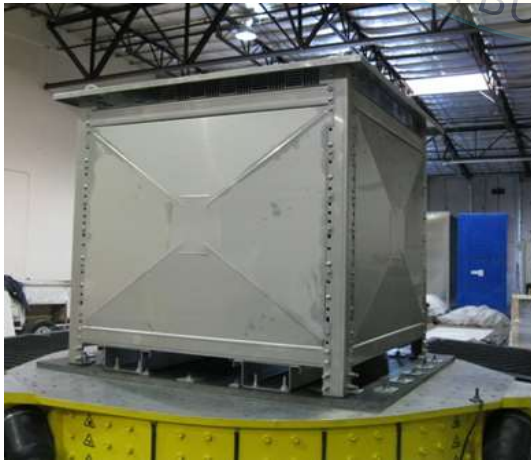
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1,070	48	48	48	26.7	26.4	>33

**Seismic Test Parameters**

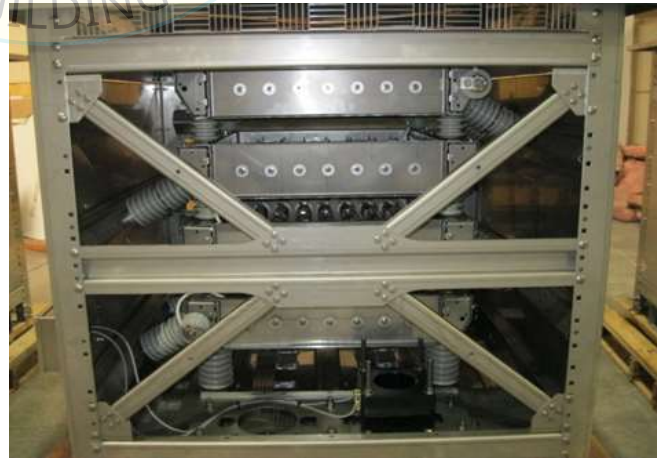
Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.40	1.0	1.5	3.84	2.88	1.67	0.67
		2.50	0.0	1.5	2.50	1.00	1.67	0.67

**Unit Mounting Description:**

The unit was rigidly mounted to the shake table using the factory-mounted brackets and forklift tubes. A total of twelve 1/2-inch A307 bolts were used, one on each corner, and two on either side of the two forklift tubes.



UUT2A mounted to shake table and ready for test.



Side panel removed to photograph UUT2A interior.

Overall view of UUT2A

# UUT2B UNIT UNDER TEST (UUT) Summary Sheet



**DCL Project Number:** 92756-2201

**Manufacturer:** Post Glover Resistors

**Product Line:** Neutral Grounding Resistor

**Model Number:** MU\_-NG013C019-GGGAA01LA

**Product Construction Summary:**

NEMA 3R / IP23 enclosure, stainless steel (enclosure not seismically braced)

**Options / Component Summary:**

Tested unit contained four wirewound A3 11A resistor grids, 5kV and 15kV insulators, standoff insulators, NEMA 4X junction box, and multi-ratio current transformer

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

**UUT Properties**

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
920	48	48	48	18.4	19.7	>33

**Seismic Test Parameters**

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.26	1.0	1.5	3.62	2.71	1.51	0.60
		2.26	0.0	1.5	2.26	0.90	1.51	0.60

**Unit Mounting Description:**

The unit was rigidly mounted to the shake table using the factory-mounted brackets. A total of four 1/2-inch A307 bolts were used, one on each corner.



Side panels removed to photograph interior. Notice seismic bracing has been removed and number of insulators have been reduced.



Unit mounted on shake table and ready for test (side panel removed for photograph).

Overall view of UUT2B

# UUT3A UNIT UNDER TEST (UUT) Summary Sheet



**DCL Project Number:** 92756-2201

**Manufacturer:** Post Glover Resistors

**Product Line:** Neutral Grounding Resistor

**Model Number:** NU\_-NG049C1D3-GGG0A01DA

**Product Construction Summary:**

NEMA 3R / IP23 enclosure, mill galvanized (enclosure seismically braced)

**Options / Component Summary:**

Tested unit contained one wirewound A3 11A resistor grid, 5kV and 15kV insulators, standoff insulators, NEMA 4X junction box, and multi-ratio current transformer

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

**UUT Properties**

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
750	48	48	48	>33	>33	>33

**Seismic Test Parameters**

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67
		2.50	0.0	1.5	2.50	1.00	1.67	0.67

**Unit Mounting Description:**

The unit was rigidly mounted to the shake table using the factory-mounted brackets and forklift tubes. A total of twelve 1/2-inch A307 bolts were used, one on each corner, and two on either side of the two forklift tubes.



UUT3A mounted to shake table and ready for test. Side panel removed for viewing of interior.

Overall view of UUT3A



# UUT3B UNIT UNDER TEST (UUT) Summary Sheet



**DCL Project Number:** 92756-2201

**Manufacturer:** Post Glover Resistors

**Product Line:** Neutral Grounding Resistor

**Model Number:** MU\_-NG049C1D3-GGG0A01DA

**Product Construction Summary:**

NEMA 3R / IP23 enclosure, mill galvanized (enclosure not seismically braced)

**Options / Component Summary:**

Tested unit contained one wirewound A3 1.6A resistor grid, 5kV and 15kV insulators, standoff insulators, NEMA 4X junction box, and multi-ratio current transformer

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

**UUT Properties**

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
620	48	48	48	>33	>33	>33

**Seismic Test Parameters**

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.26	1.0	1.5	3.62	2.71	1.51	0.60
		2.26	0.0	1.5	2.26	0.90	1.51	0.60

**Unit Mounting Description:**

The unit was rigidly mounted to the shake table using the factory-mounted brackets. A total of four 1/2-inch A307 bolts were used, one on each corner.



Side panel removed to photograph interior. Notice seismic bracing has been removed and number of insulators have been reduced.



Unit mounted on shake table and ready for test (side panel removed for photograph).

Overall view of UUT3B

# UUT4A UNIT UNDER TEST (UUT) Summary Sheet



**DCL Project Number:** 92756-2201

**Manufacturer:** Post Glover Resistors

**Product Line:** Neutral Grounding Resistor

**Model Number:** NU\_-NGD27C030-GGG0A01JA

**Product Construction Summary:**

NEMA 3R / IP23 enclosure, mill galvanized (enclosure seismically braced)

**Options / Component Summary:**

Tested unit contained one A1 30A resistor grid, 15kV insulators, standoff insulators, NEMA 4X junction box, and multi-ratio current transformer

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

**UUT Properties**

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
720	48	48	48	>33	>33	>33

**Seismic Test Parameters**

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67
		2.50	0.0	1.5	2.50	1.00	1.67	0.67

**Unit Mounting Description:**

The unit was rigidly mounted to the shake table using the factory-mounted brackets and forklift tubes. A total of twelve 1/2-inch A307 bolts were used, one on each corner, and two on either side of the two forklift tubes.



UUT4A with side panel removed for viewing of internal components.



UUT4A mounted to shake table and ready for test.

Overall view of UUT4A

# UUT4B UNIT UNDER TEST (UUT) Summary Sheet



**DCL Project Number:** 92756-2201

**Manufacturer:** Post Glover Resistors

**Product Line:** Neutral Grounding Resistor

**Model Number:** MU\_-NGD27C030-GGG0A01JA

**Product Construction Summary:**

NEMA 3R / IP23 enclosure, mill galvanized (enclosure not seismically braced)

**Options / Component Summary:**

Tested unit contained one A1 30A resistor grid, 15kV insulators, standoff insulators, NEMA 4X junction box, and multi-ratio current transformer

**Note:** The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

**UUT Properties**

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
580	48	48	48	20.3	18.0	>33

**Seismic Test Parameters**

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC156	2.26	1.0	1.5	3.62	2.71	1.51	0.60
		2.26	0.0	1.5	2.26	0.90	1.51	0.60

**Unit Mounting Description:**

The unit was rigidly mounted to the shake table using the factory-mounted brackets. A total of four 1/2-inch A307 bolts were used, one on each corner.



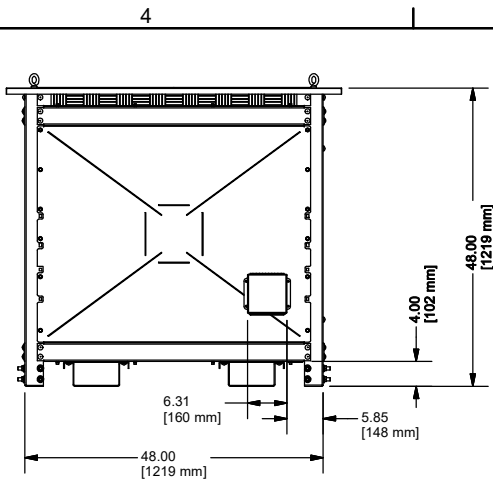
Side panel removed to photograph interior. Notice seismic bracing has been removed and number of insulators have been reduced.



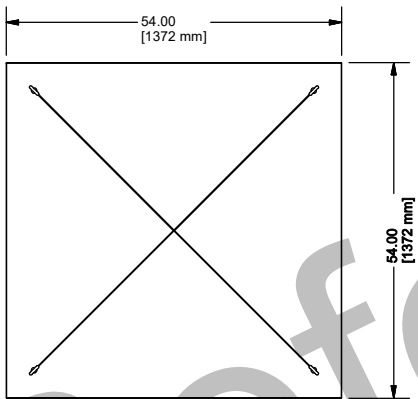
Unit mounted on shake table and ready for test.

Overall view of UUT4B

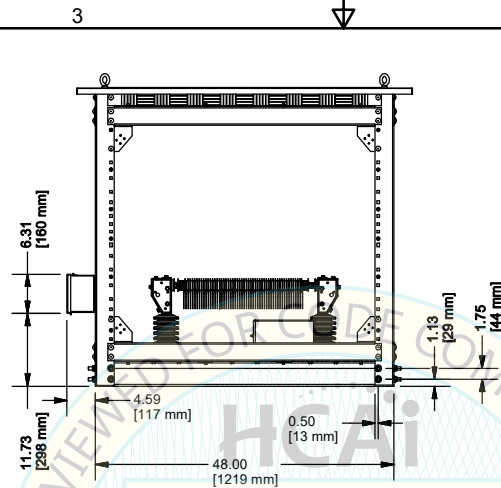
Approved Product Drawing



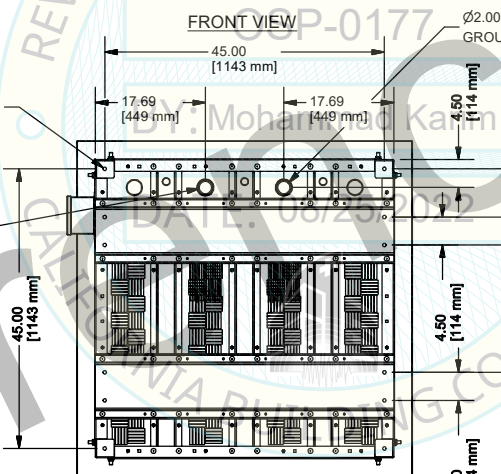
LEFT SIDE VIEW



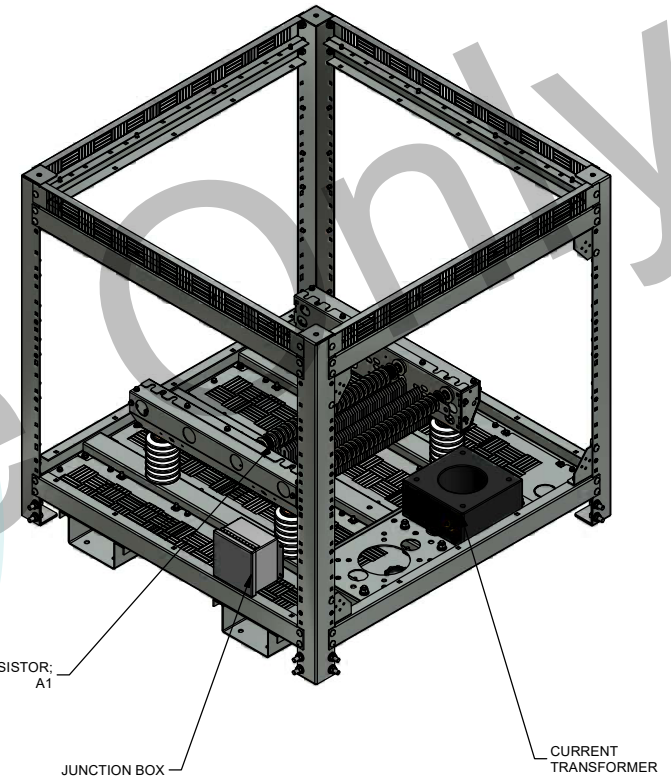
TOP VIEW



FRONT VIEW



BOTTOM VIEW

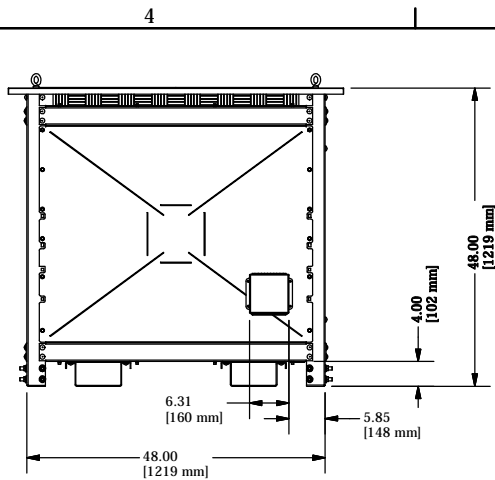


REVIEW FOR COMPLIANCE  
 HCAI  
 Mohan Kumar  
 DATE: 08/25/2012  
 VIA REGULATORY CODE: 2019

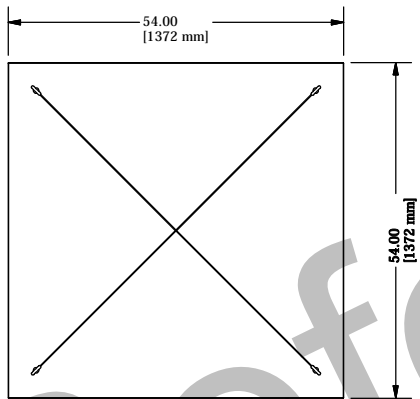
<b>Post Glover</b> "The Resistor Specialists"	4750 Olympic Blvd Erlanger, KY USA 41018 Phone: 800.537.8144 / 859.283.0778 Fax: 859.283.2978 www.postglover.com	TITLE/DESCRIPTION: assembly, seismic NGR, (1) A1, SDS = 2.26	
		DATE: 2/15/2011	APPROVED FLS
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		SHEET: 1 OF 1	
		DRAWING NUMBER NG444-S-2D26-JBL-A11	



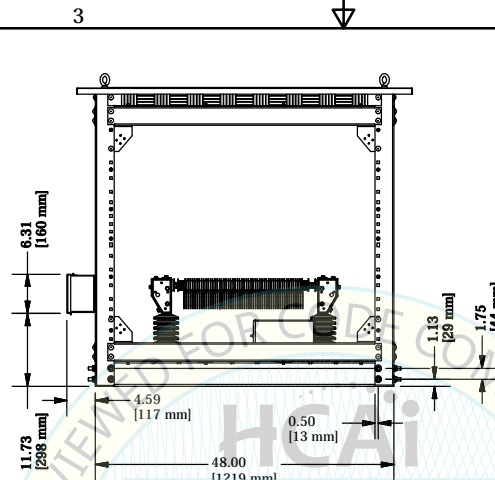
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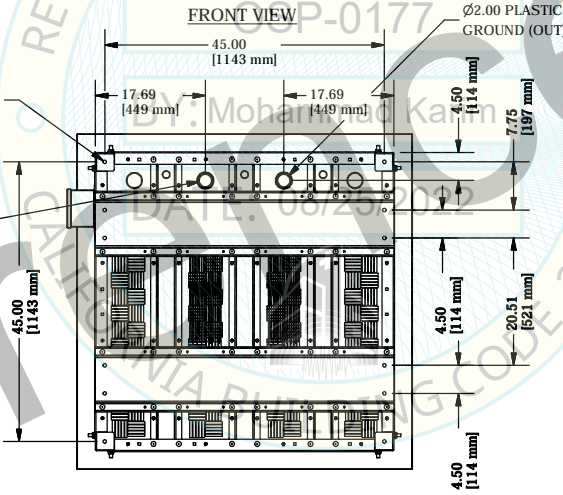
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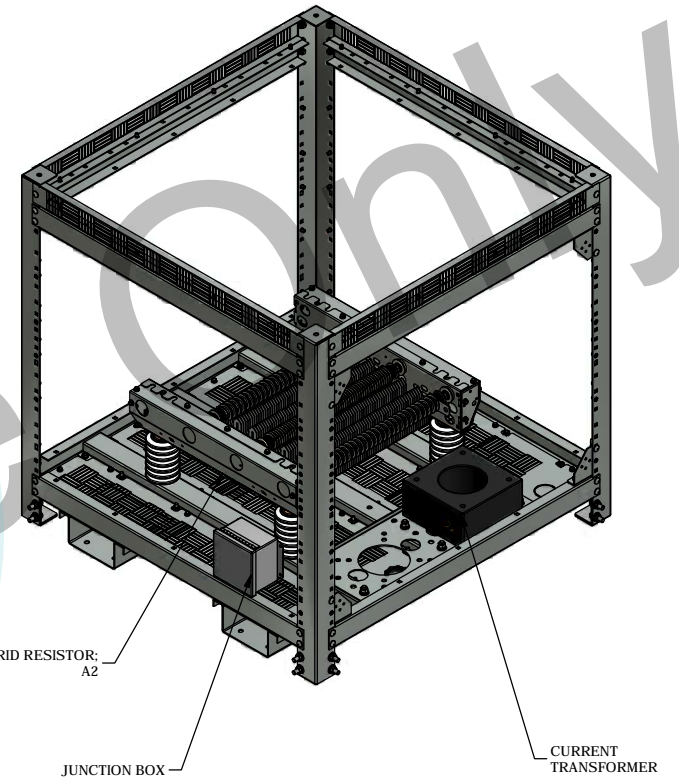
TOP VIEW



FRONT VIEW



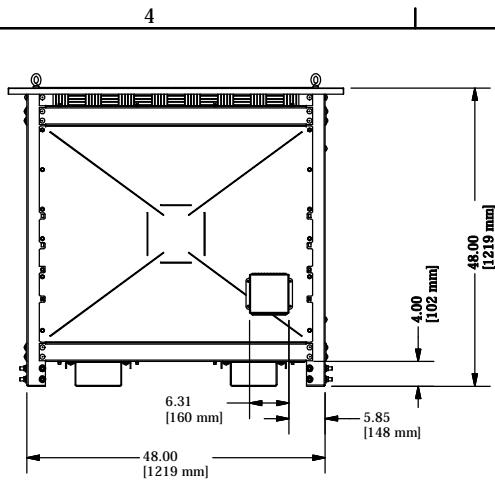
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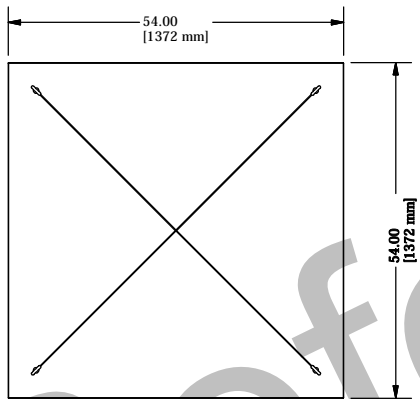
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		DATE: 2/15/2011 SHEET: 1 OF 1	DRAWN MAB
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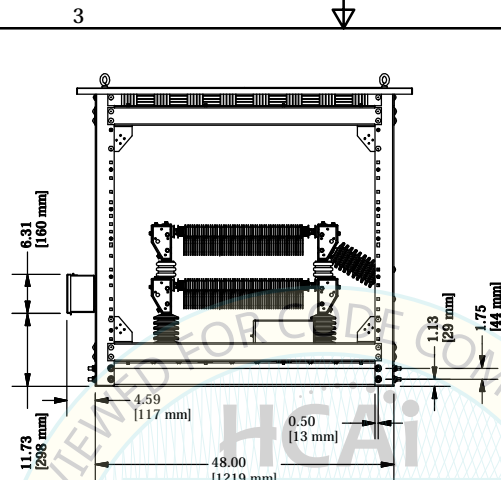
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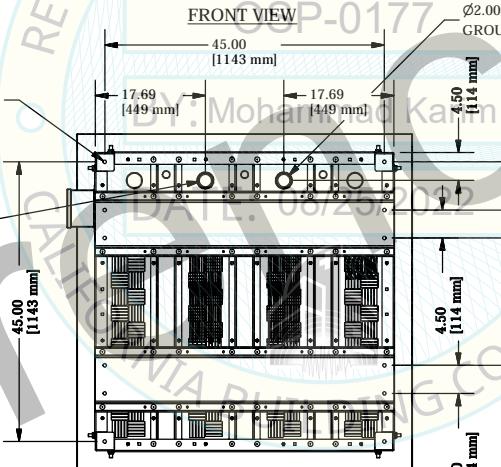
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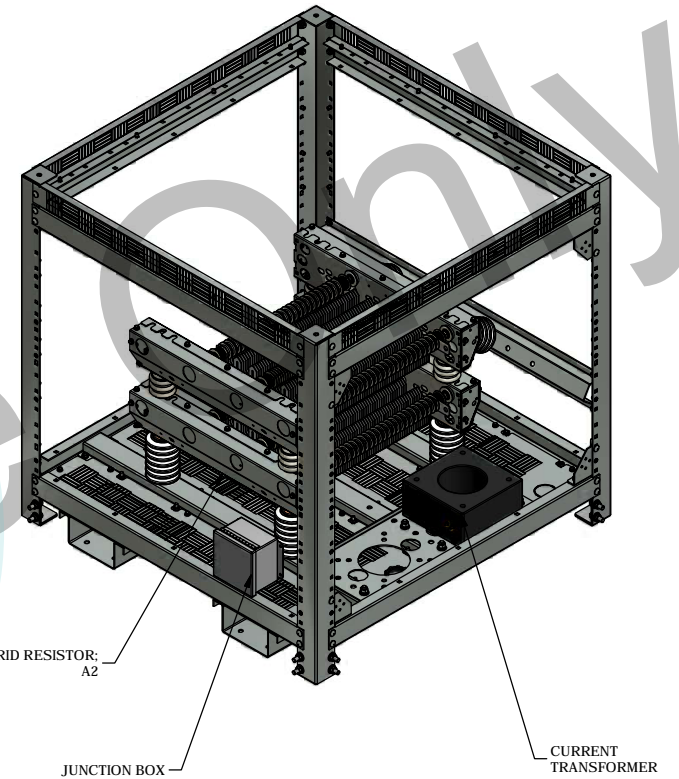
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FRONT VIEW



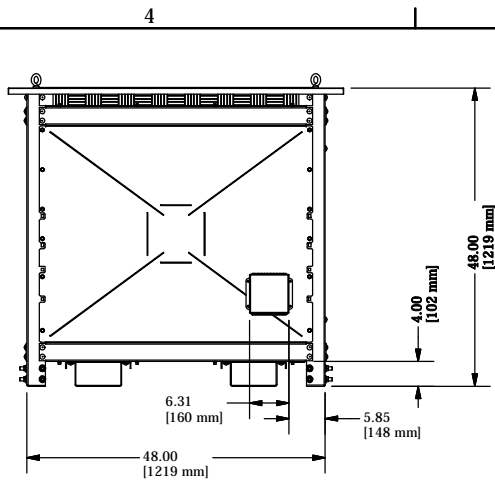
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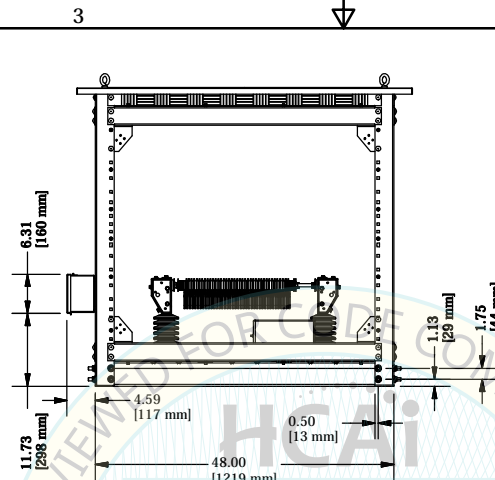
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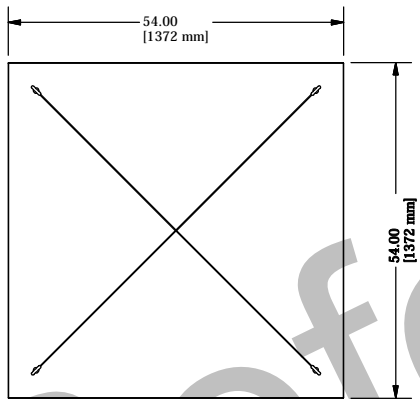
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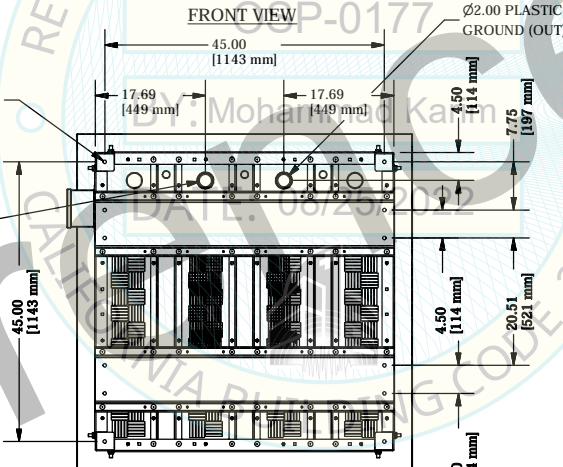
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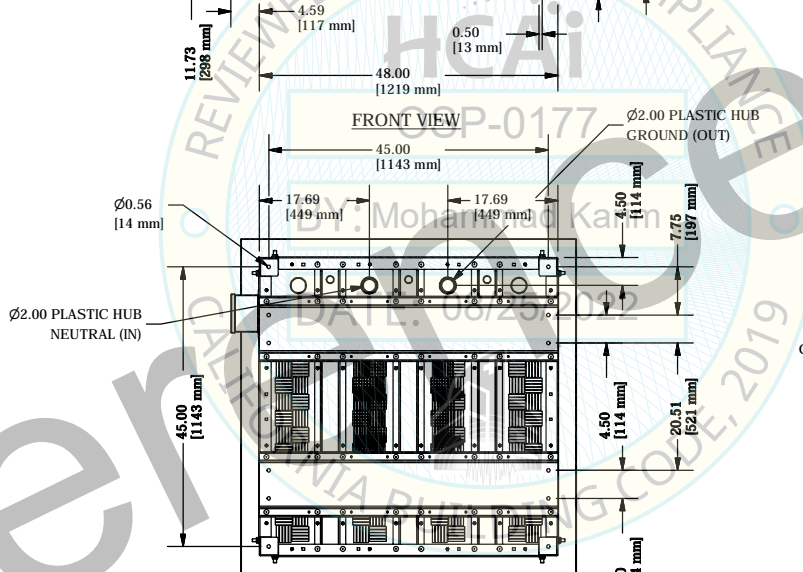
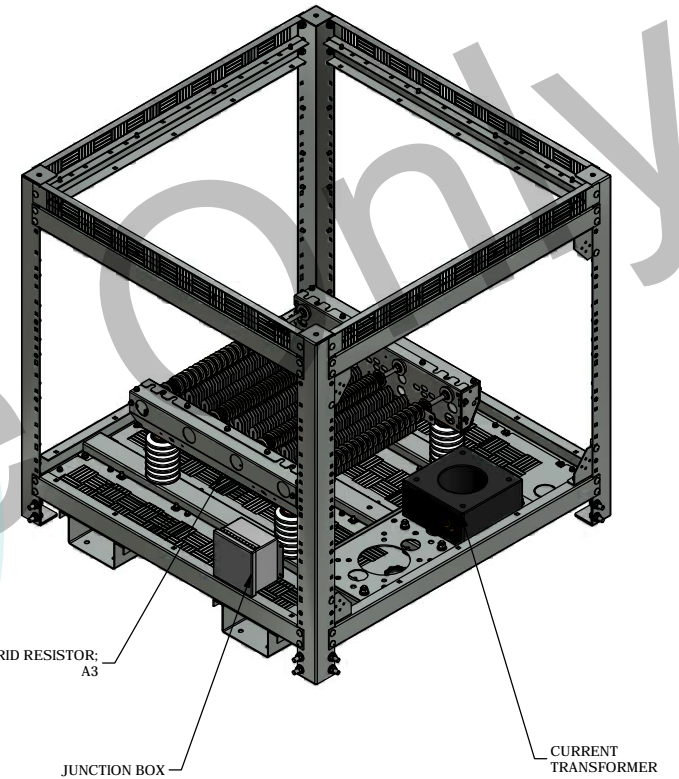
FRONT VIEW



TOP VIEW



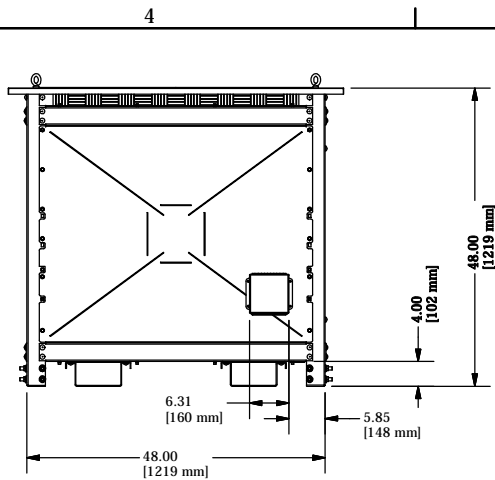
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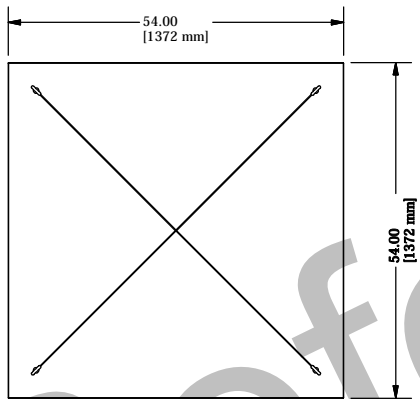
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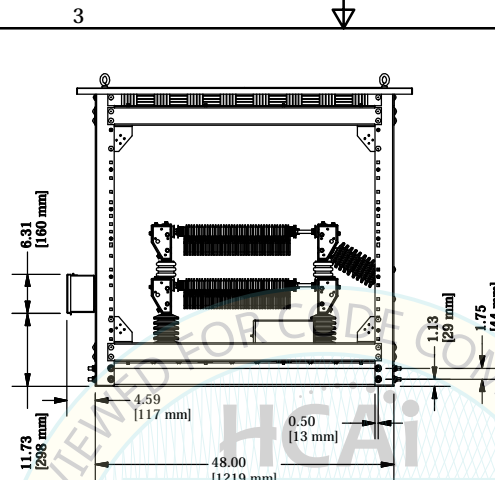
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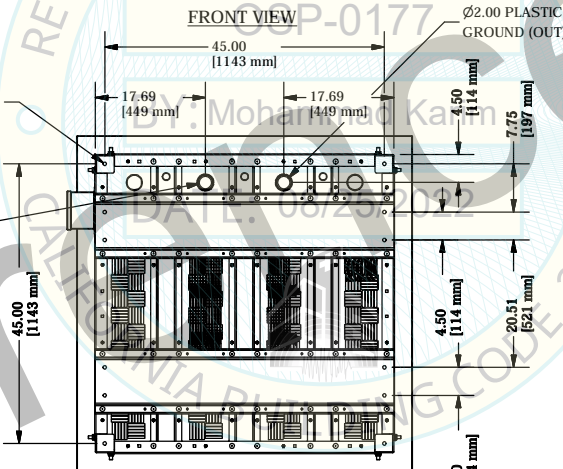
LEFT SIDE VIEW



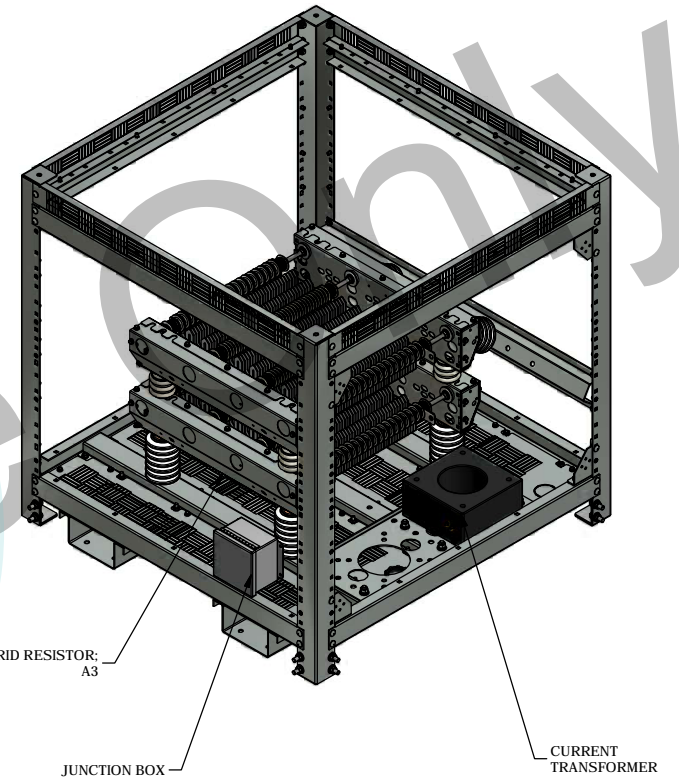
TOP VIEW



FRONT VIEW



BOTTOM VIEW

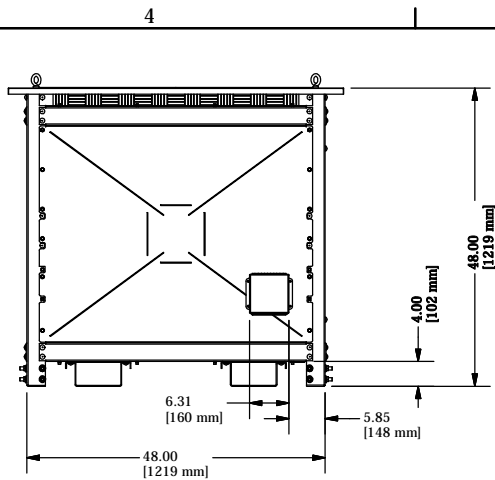


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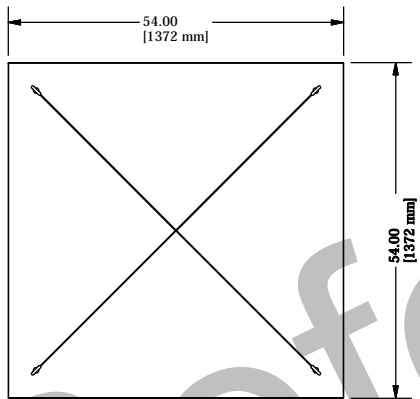




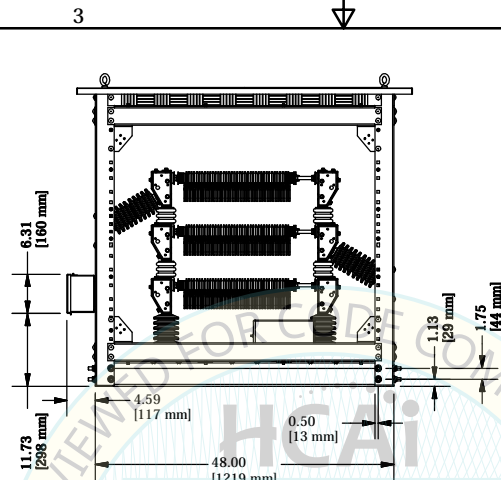
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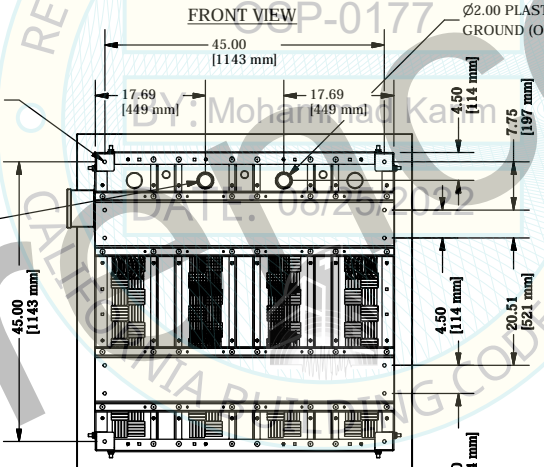
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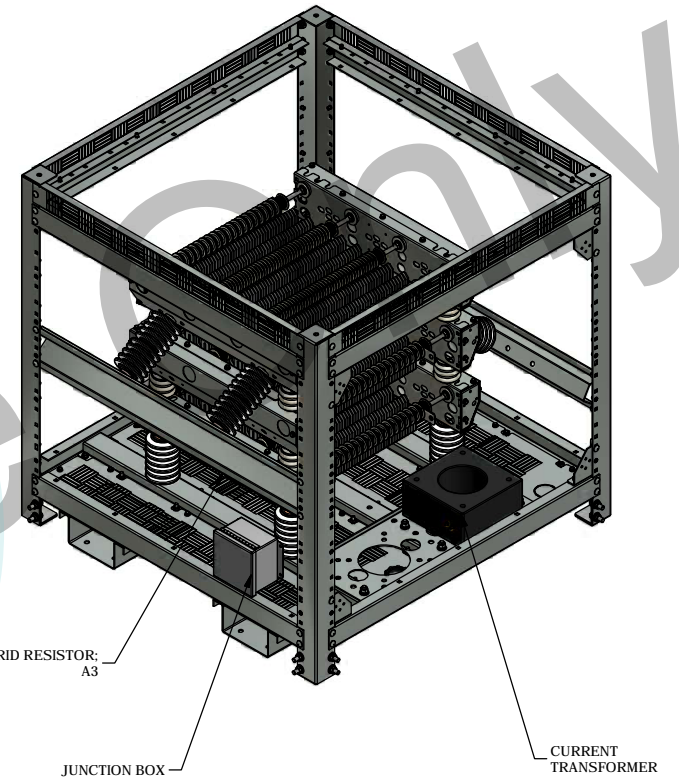
TOP VIEW



FRONT VIEW



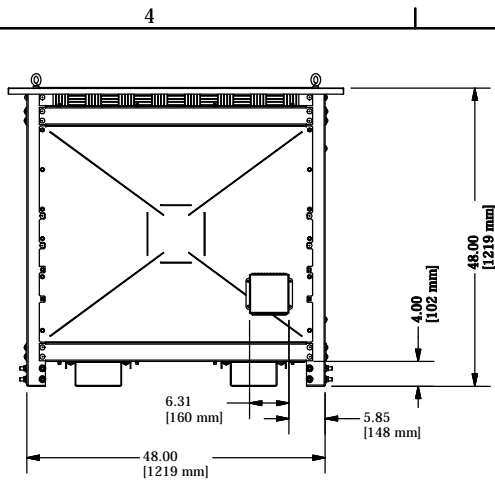
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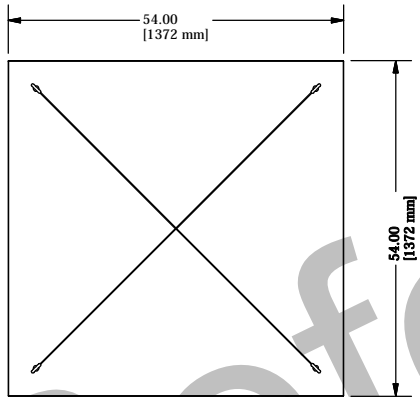
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		REVISION 00



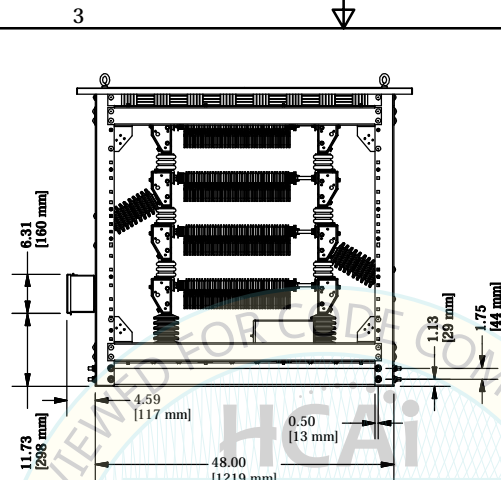
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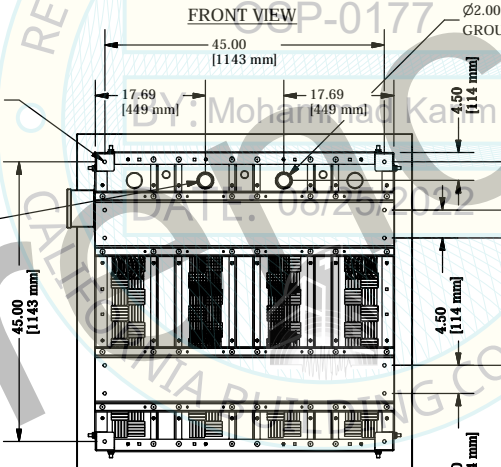
LEFT SIDE VIEW



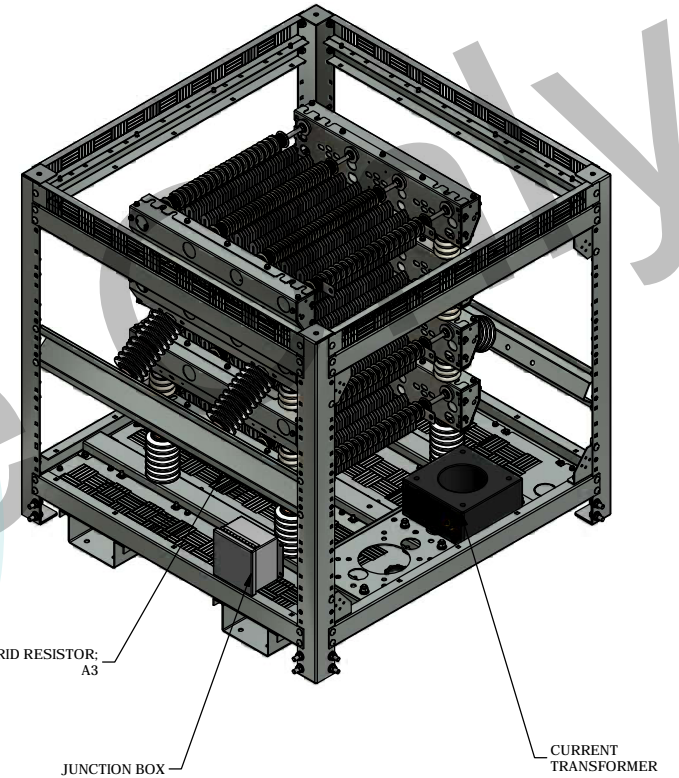
TOP VIEW



FRONT VIEW



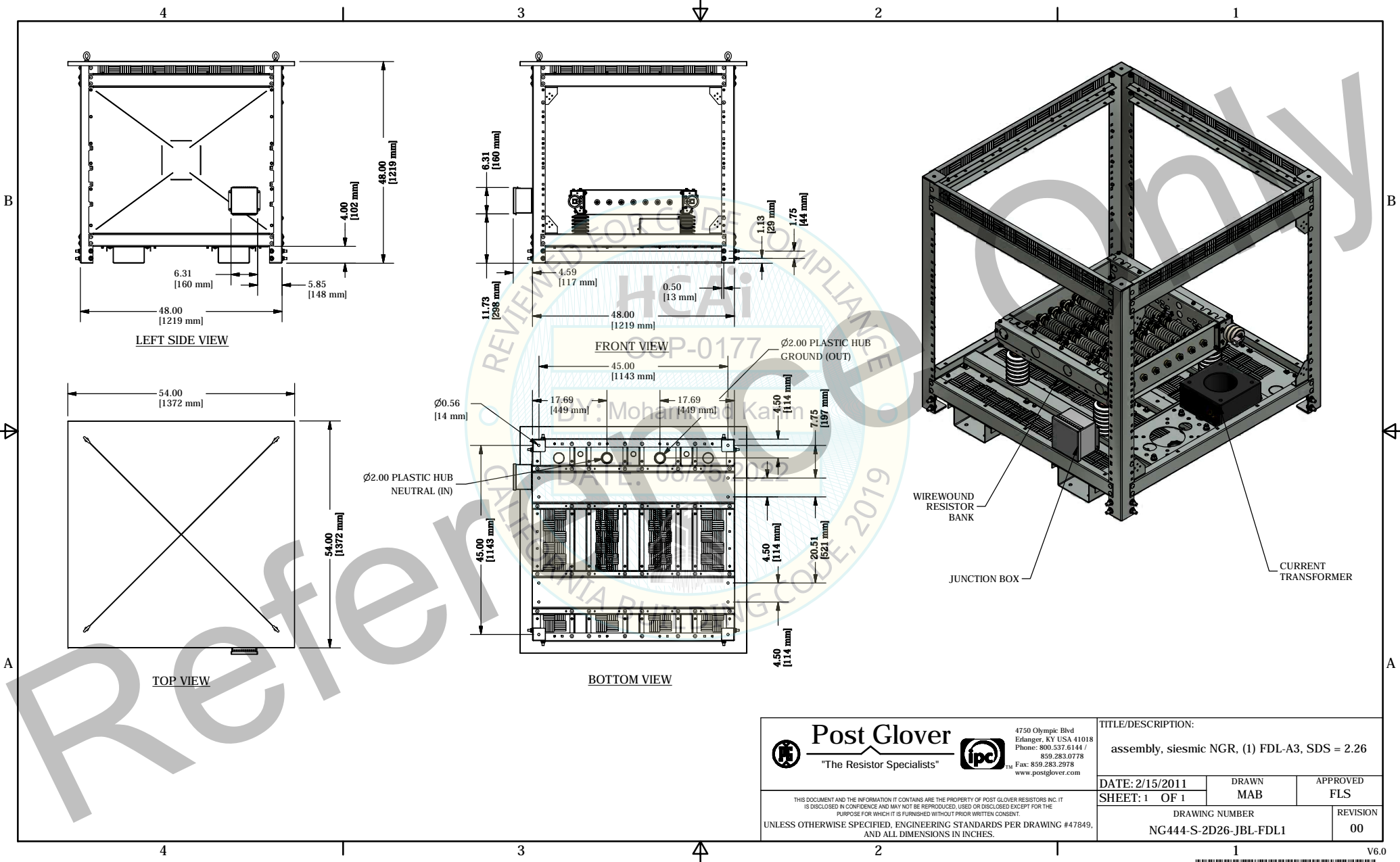
BOTTOM VIEW



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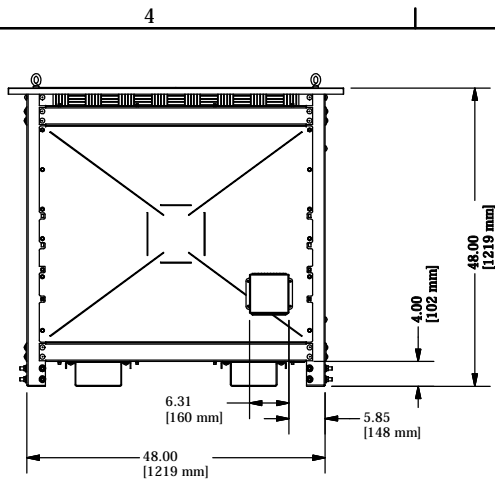
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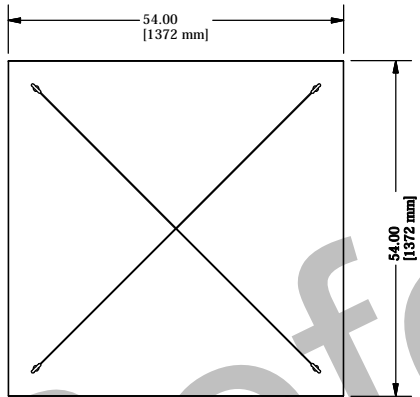
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		DATE: 2/15/2011 SHEET: 1 OF 1	DRAWN MAB
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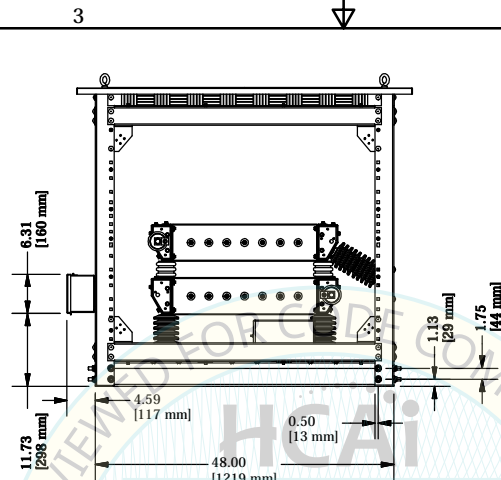
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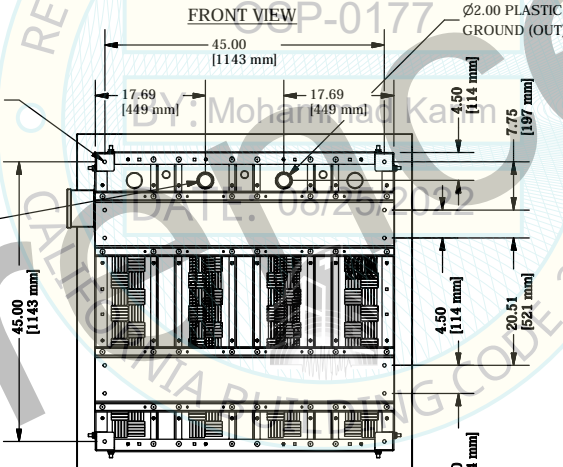
LEFT SIDE VIEW



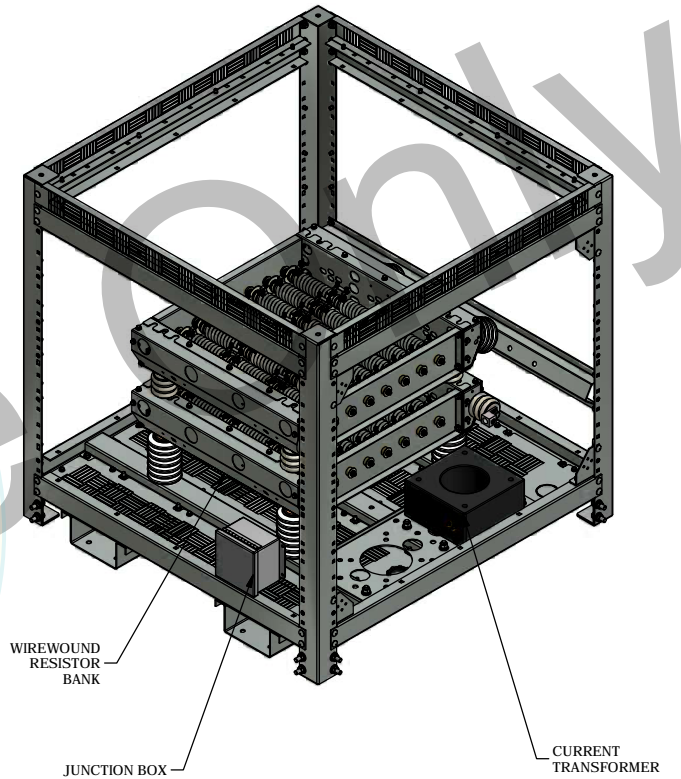
TOP VIEW



FRONT VIEW



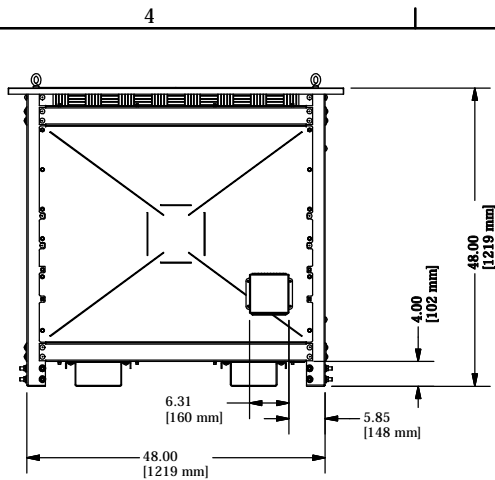
BOTTOM VIEW



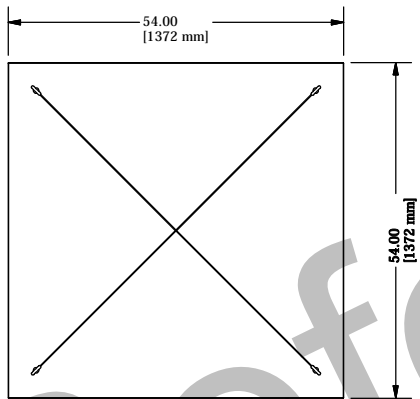
<p>Post Glover "The Resistor Specialists"</p>	<p>4750 Olympic Blvd Erlanger, KY USA 41018 Phone: 800.537.6144 / 859.283.0778 Fax: 859.283.2978 www.postglover.com</p>	TITLE/DESCRIPTION: assembly, siesmic NGR, (2) FDL-A3, SDS = 2.26	
		DATE: 2/15/2011 SHEET: 1 OF 1	DRAWN MAB
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<small>UNLESS OTHERWISE SPECIFIED, ENGINEERING STANDARDS PER DRAWING #47849, AND ALL DIMENSIONS IN INCHES.</small>			REVISION 00



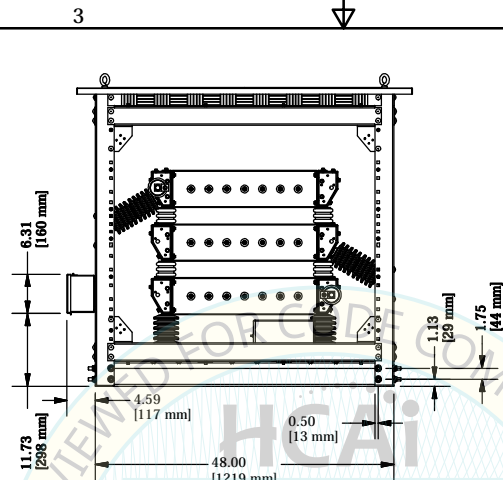
Approved Product Drawing



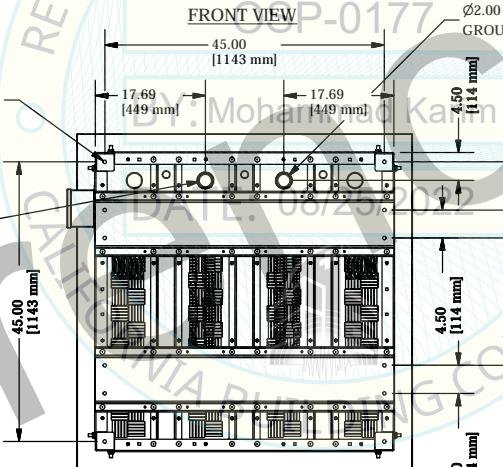
LEFT SIDE VIEW



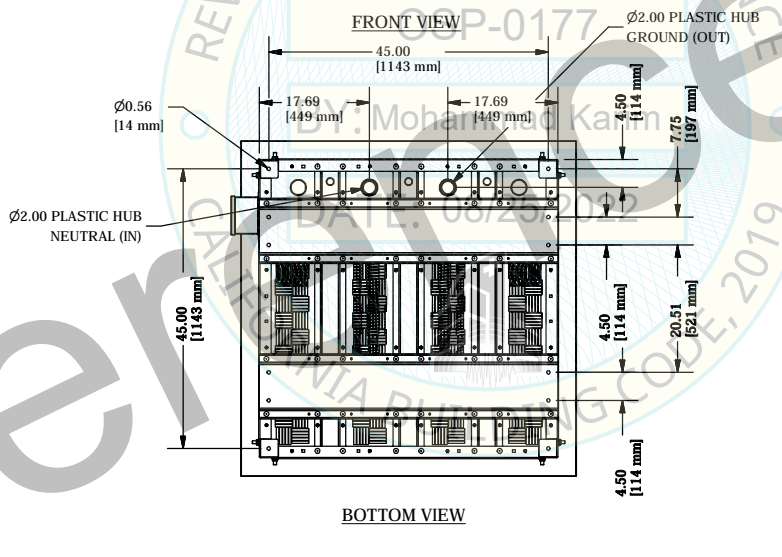
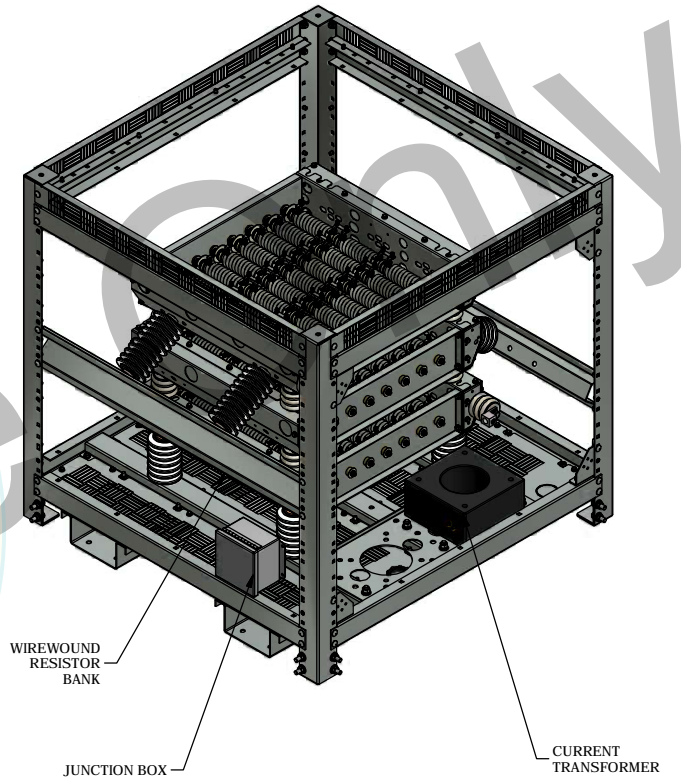
TOP VIEW



FRONT VIEW



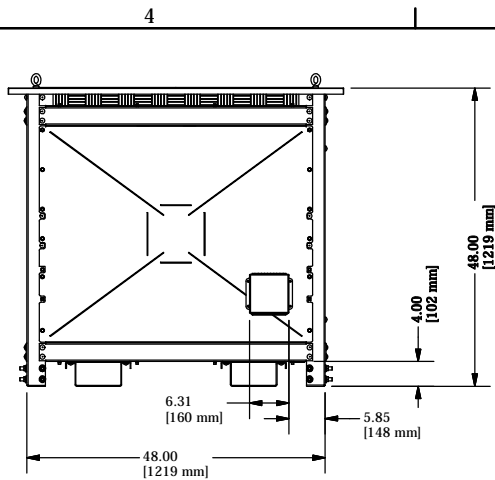
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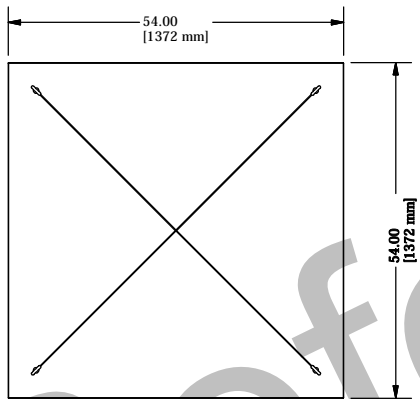
<p><b>Post Glover</b> "The Resistor Specialists"</p>	<p>4750 Olympic Blvd Erlanger, KY USA 41018 Phone: 800.537.6144 / 859.283.0778 Fax: 859.283.2978 www.postglover.com</p>	TITLE/DESCRIPTION: assembly, siesmic NGR, (3) FDL-A3, SDS = 2.26	
		DATE: 2/15/2011	APPROVED FLS
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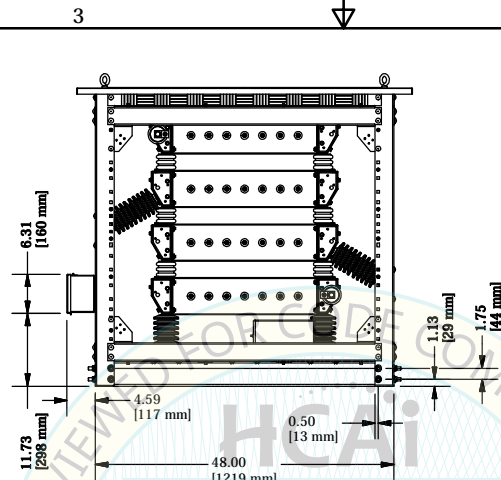
Approved Product Drawing



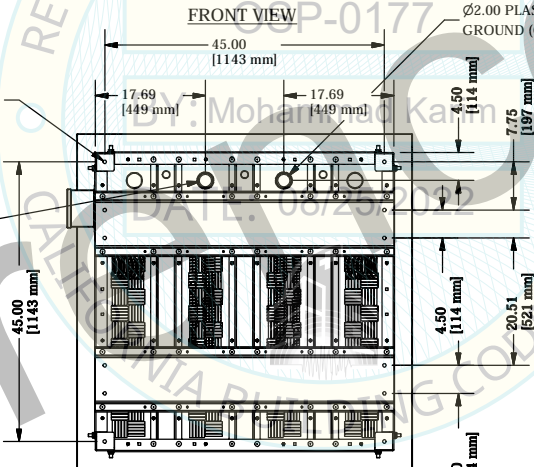
LEFT SIDE VIEW



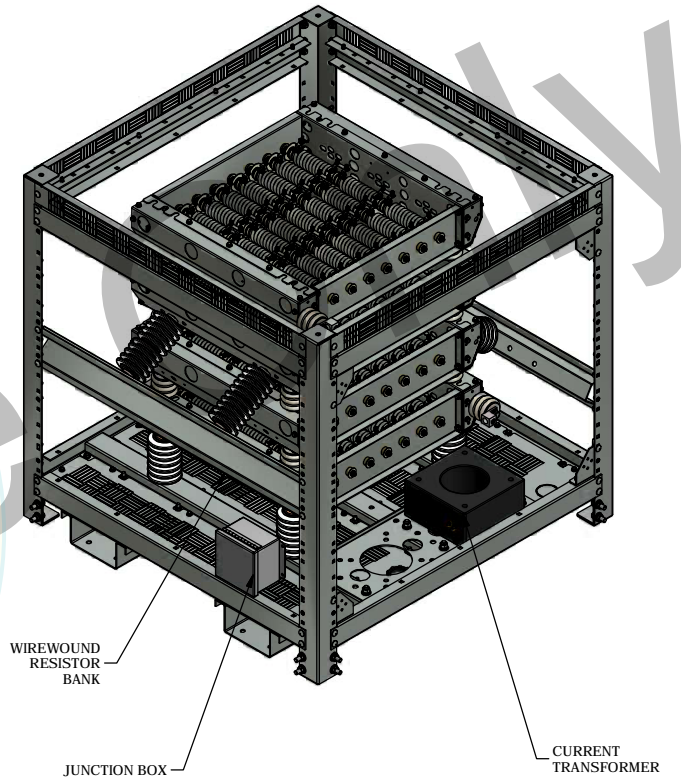
TOP VIEW



FRONT VIEW



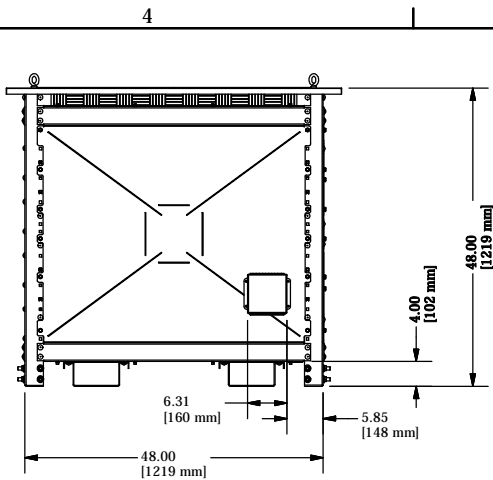
BOTTOM VIEW



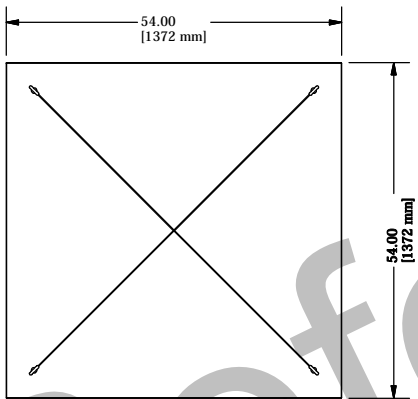
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		DATE: 2/15/2011 SHEET: 1 OF 1	DRAWN MAB
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<small>UNLESS OTHERWISE SPECIFIED, ENGINEERING STANDARDS PER DRAWING #47849, AND ALL DIMENSIONS IN INCHES.</small>			REVISION 00



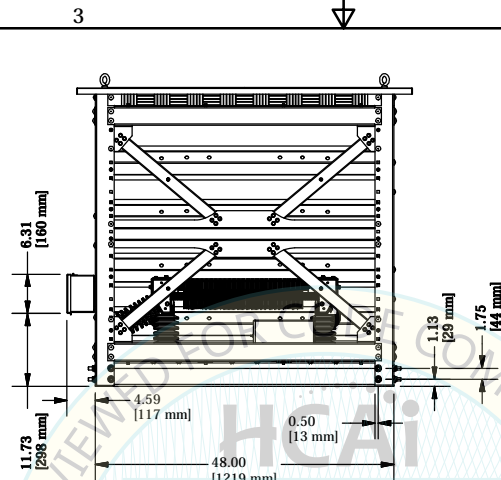
Approved Product Drawing



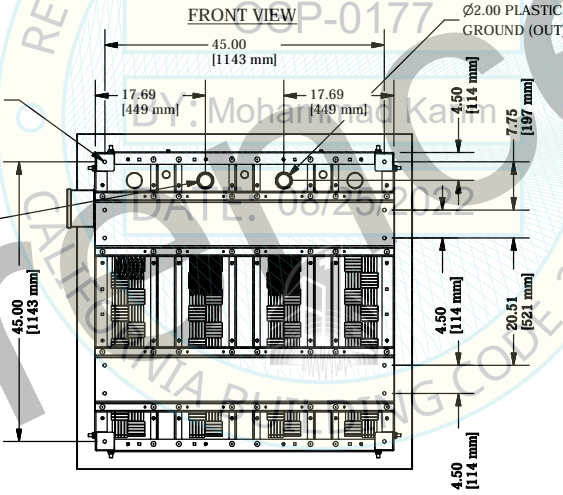
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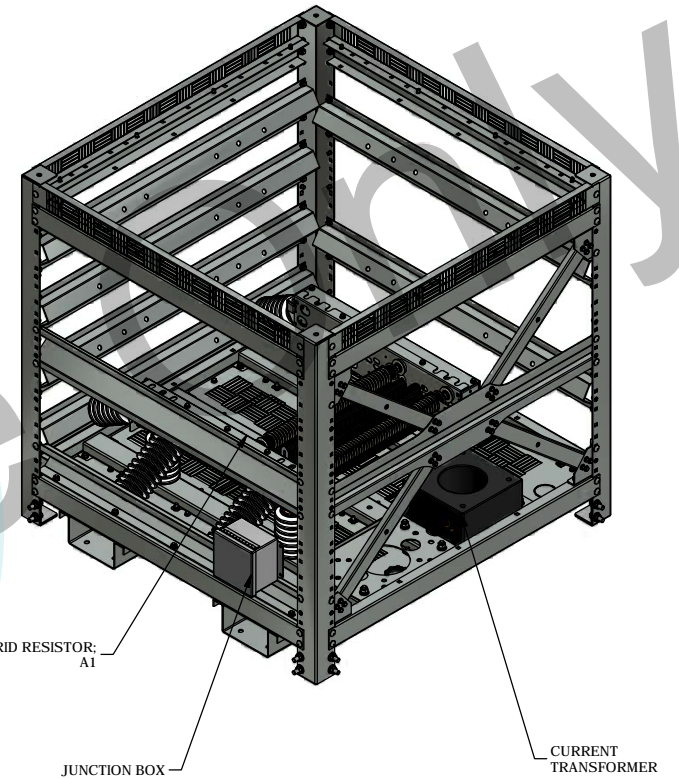
TOP VIEW



FRONT VIEW



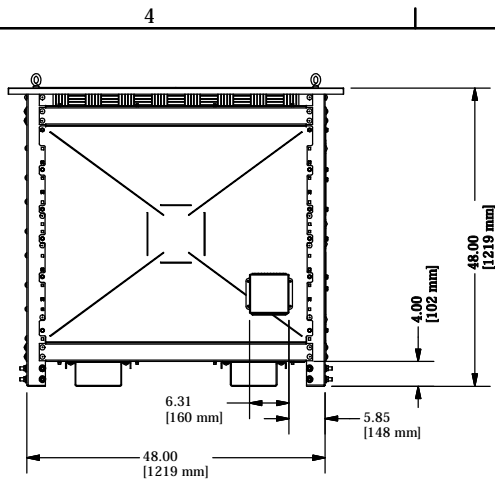
BOTTOM VIEW



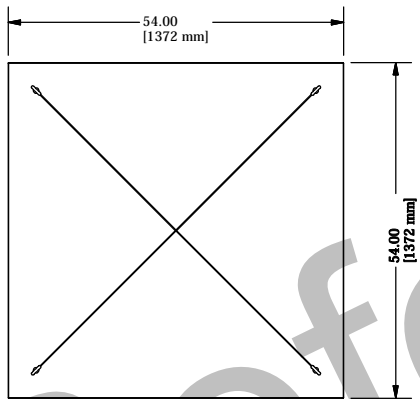
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		DATE: 2/17/2011	APPROVED FLS
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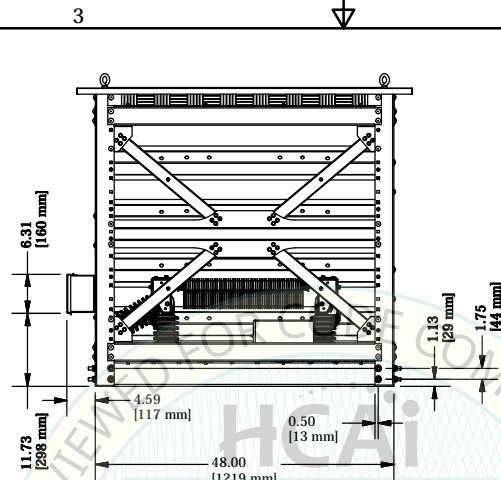
Approved Product Drawing



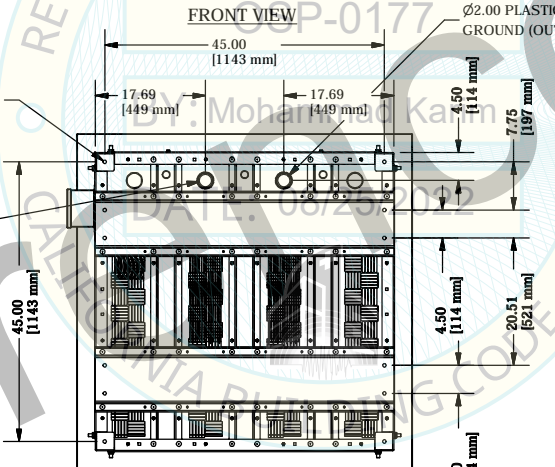
LEFT SIDE VIEW



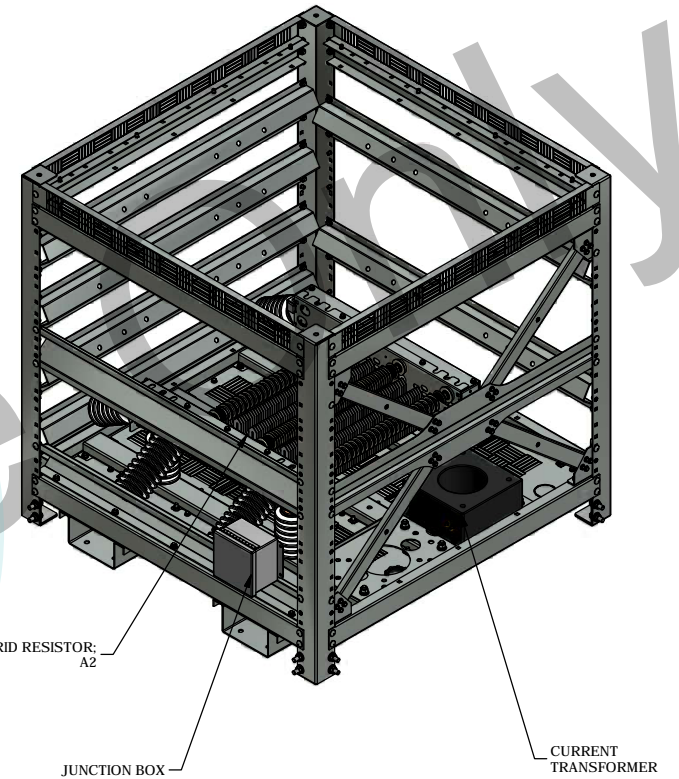
TOP VIEW



FRONT VIEW



BOTTOM VIEW

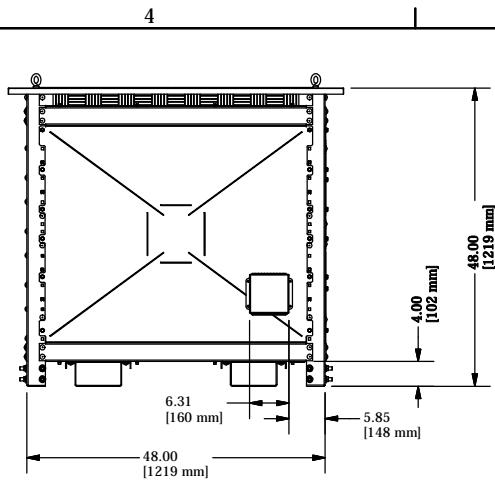


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		DATE: 2/17/2011	DRAWN MAB
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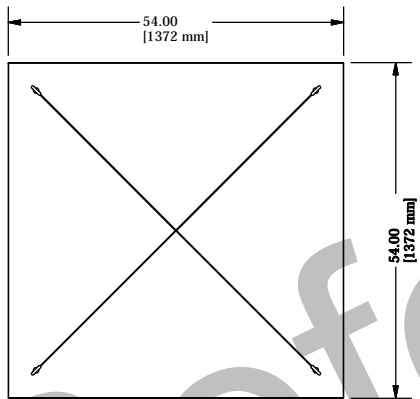




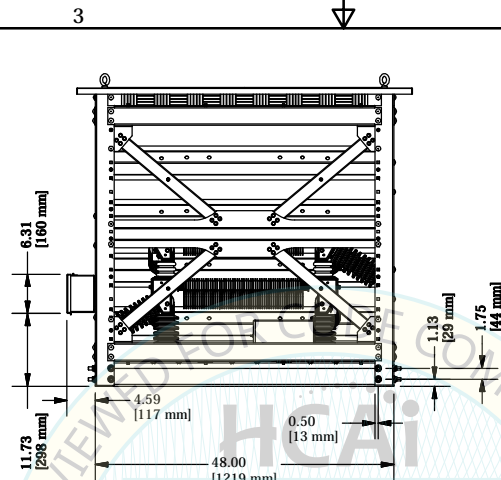
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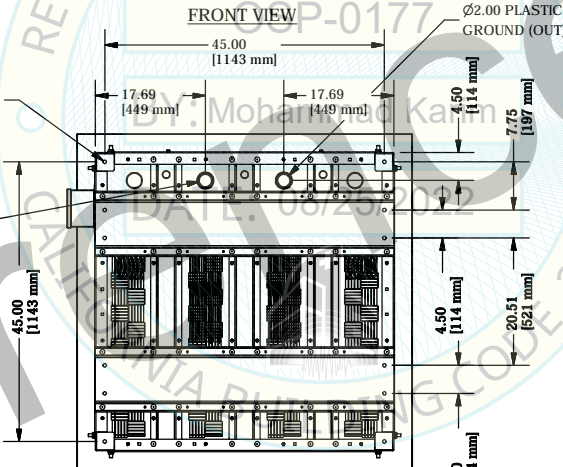
LEFT SIDE VIEW



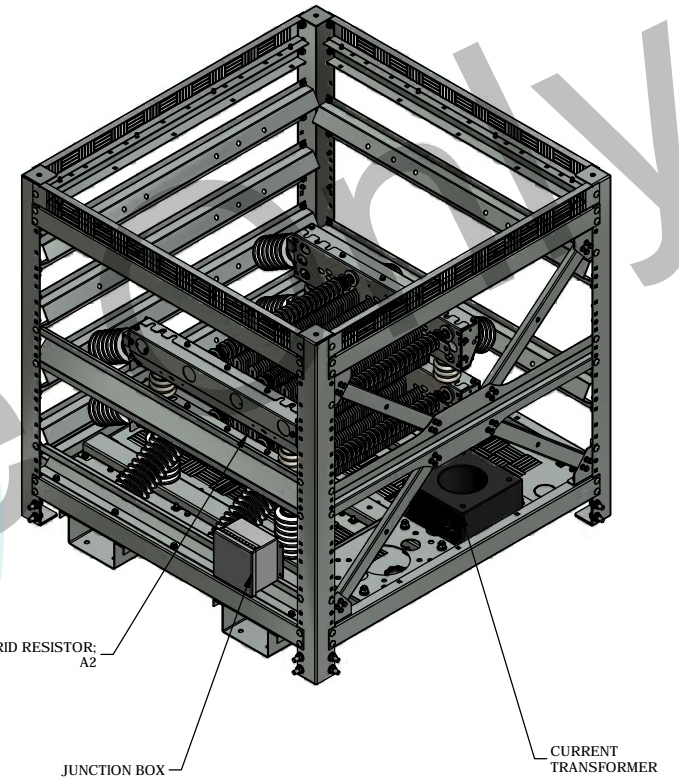
TOP VIEW



FRONT VIEW



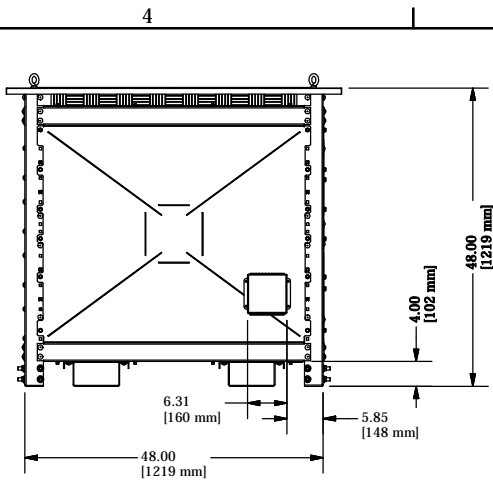
BOTTOM VIEW



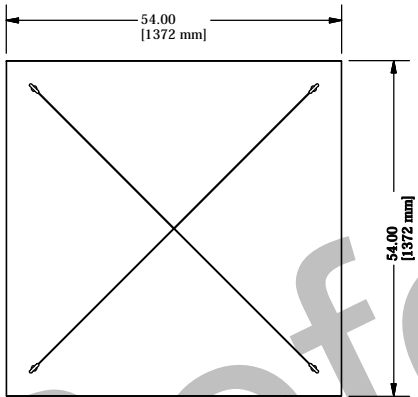
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		DATE: 2/17/2011 SHEET: 1 OF 1	DRAWN MAB	APPROVED FLS
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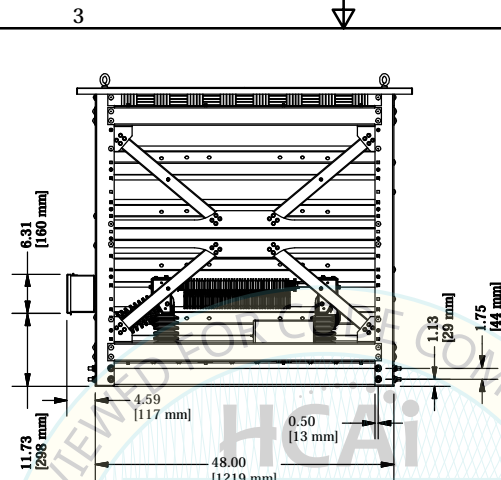
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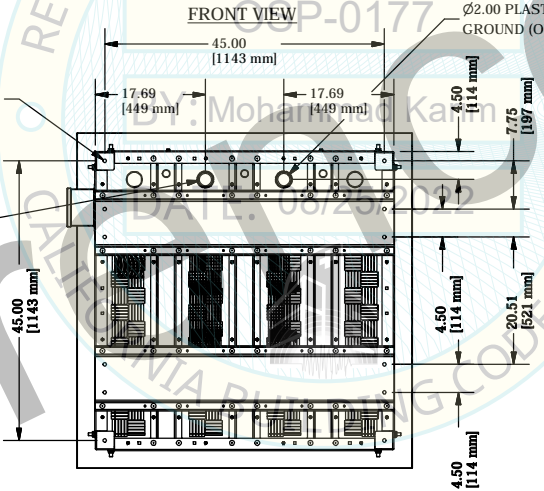
LEFT SIDE VIEW



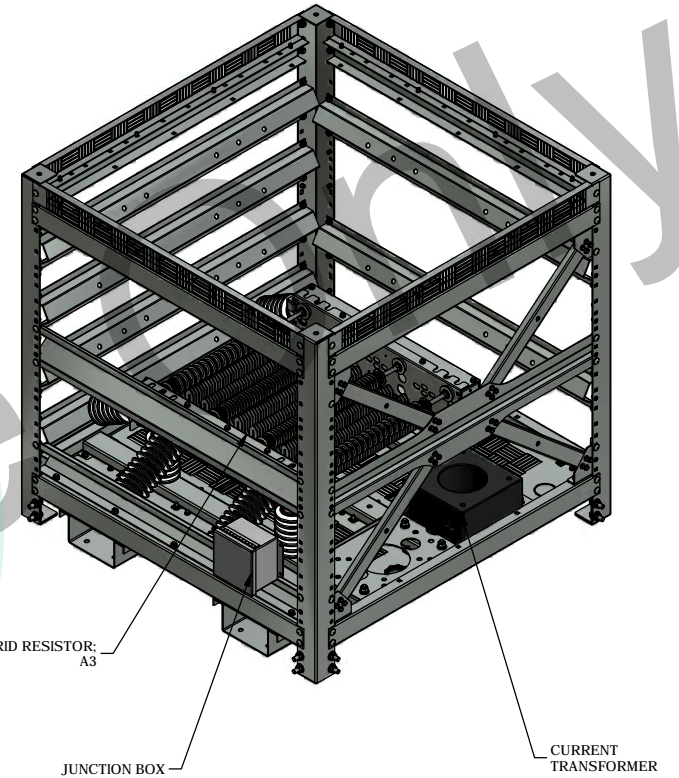
TOP VIEW



FRONT VIEW



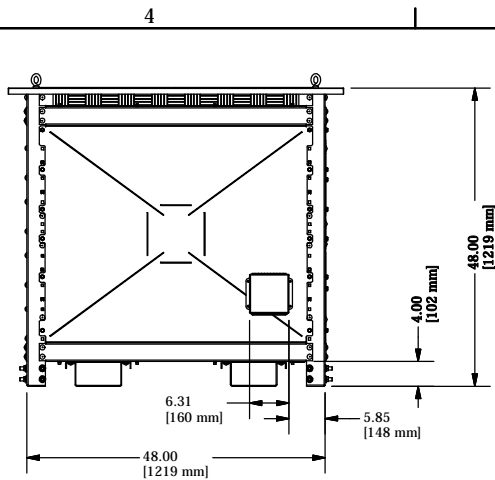
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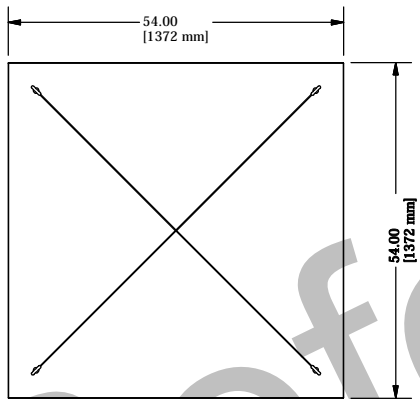
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			REVISION 00



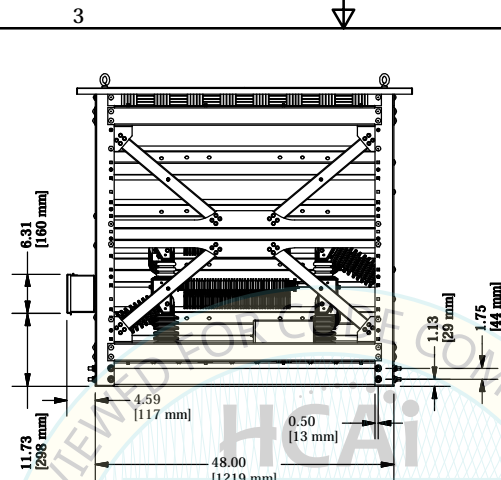
Approved Product Drawing



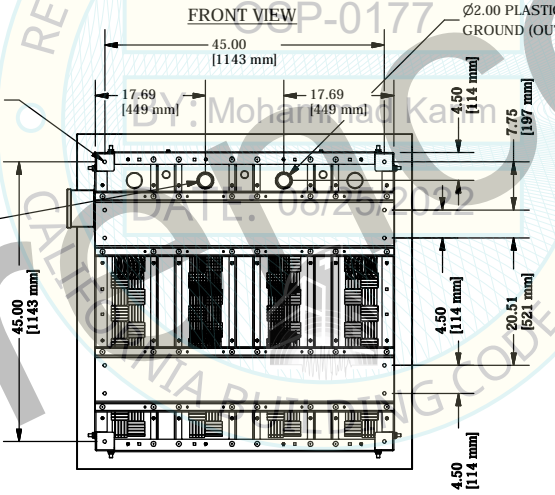
LEFT SIDE VIEW



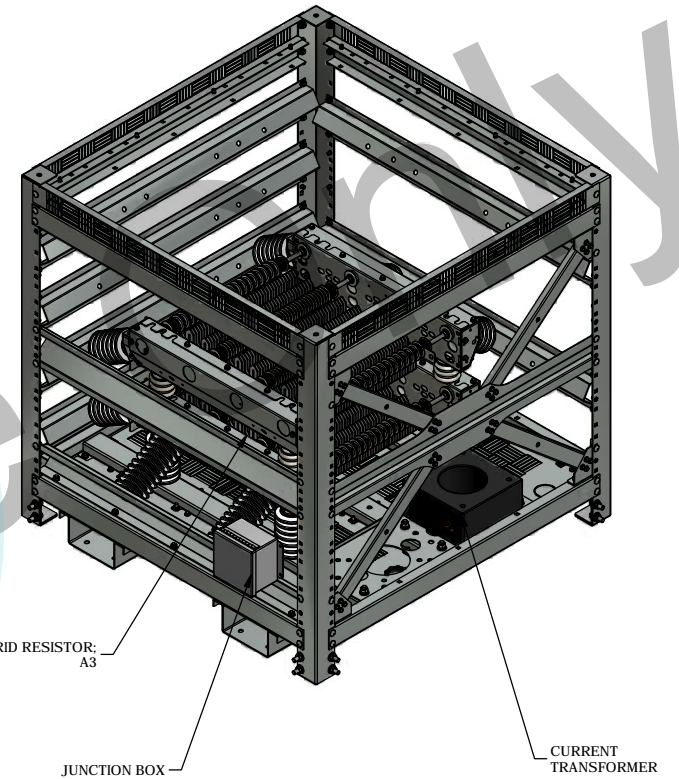
TOP VIEW



FRONT VIEW



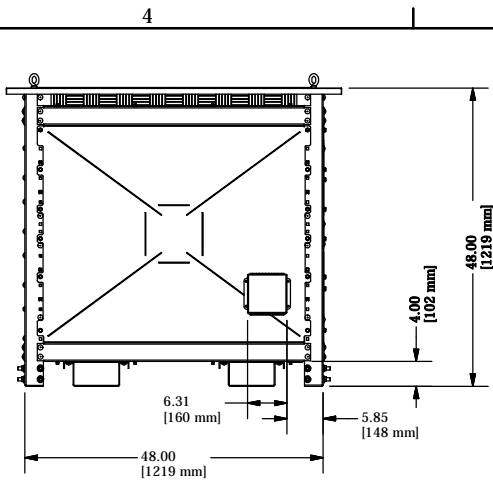
BOTTOM VIEW



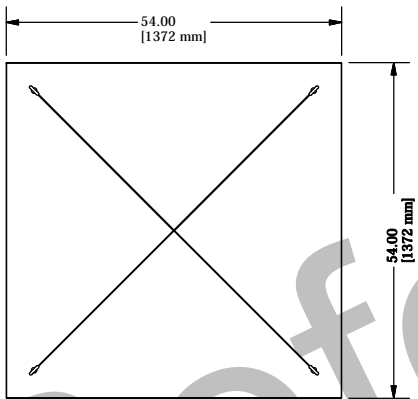
<p><b>Post Glover</b> "The Resistor Specialists"</p>	<p>4750 Olympic Blvd Erlanger, KY USA 41018 Phone: 800.537.6144 / 859.283.0778 Fax: 859.283.2978 www.postglover.com</p>	TITLE/DESCRIPTION: assembly, seismic NGR, (2) A3, SDS = 2.50		
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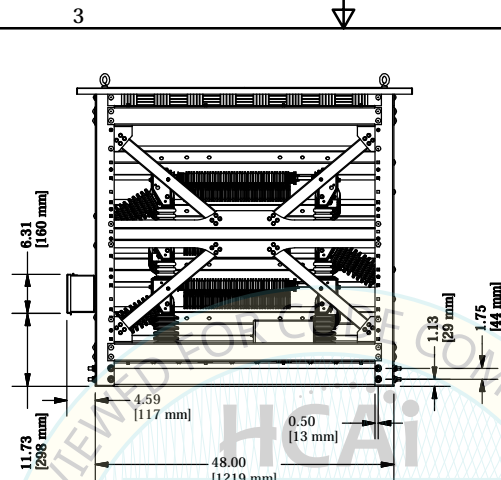
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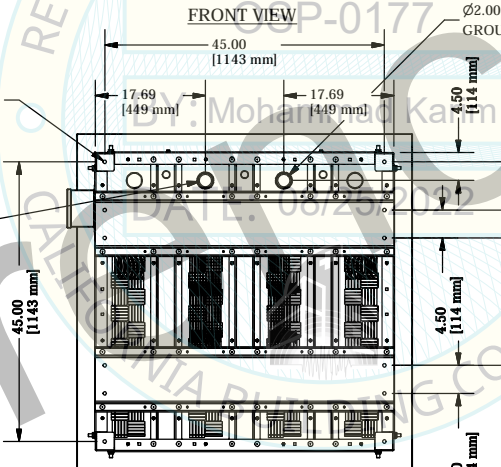
LEFT SIDE VIEW



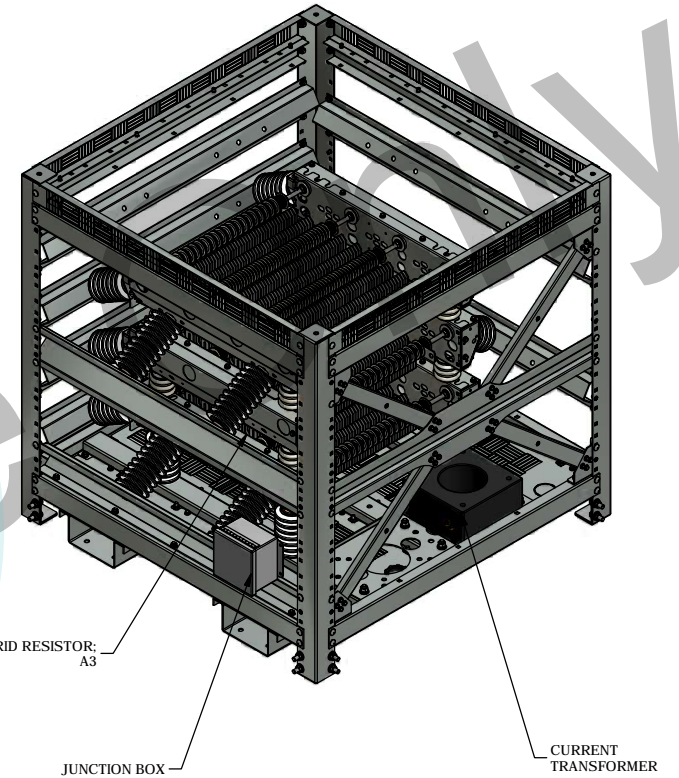
TOP VIEW



FRONT VIEW



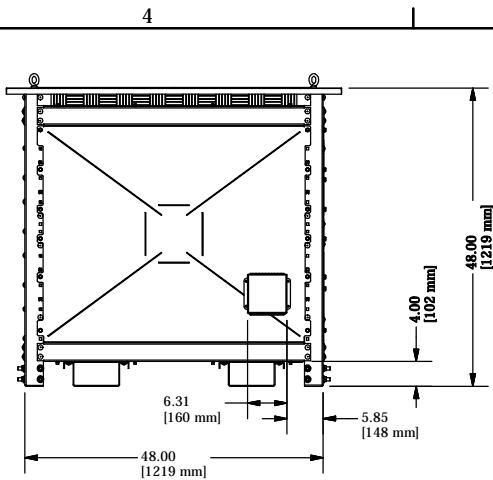
BOTTOM VIEW



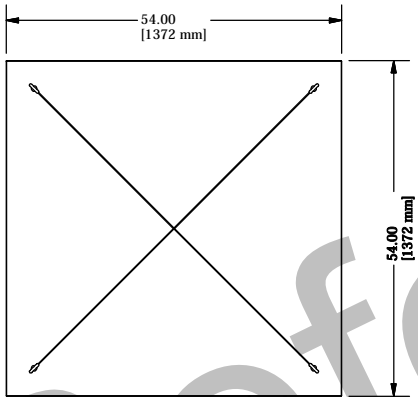
<p><b>Post Glover</b> "The Resistor Specialists"</p>	<p>4750 Olympic Blvd Erlanger, KY USA 41018 Phone: 800.537.6144 / 859.283.0778 Fax: 859.283.2978 www.postglover.com</p>	TITLE/DESCRIPTION: assembly, seismic NGR, (3) A3, SDS = 2.50	
		DATE: 2/17/2011	DRAWN MAB
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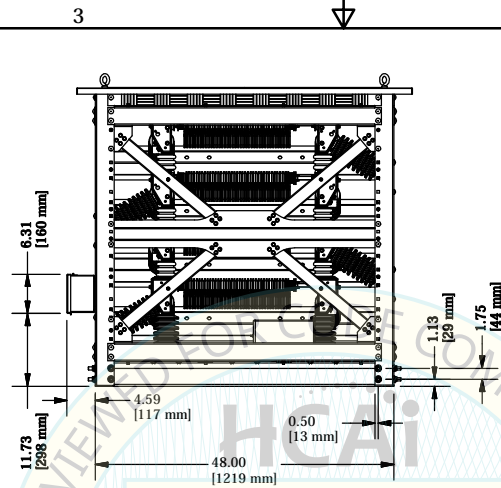
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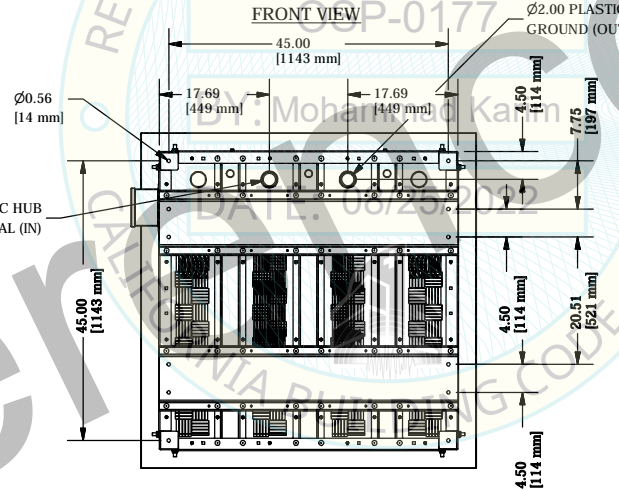
LEFT SIDE VIEW



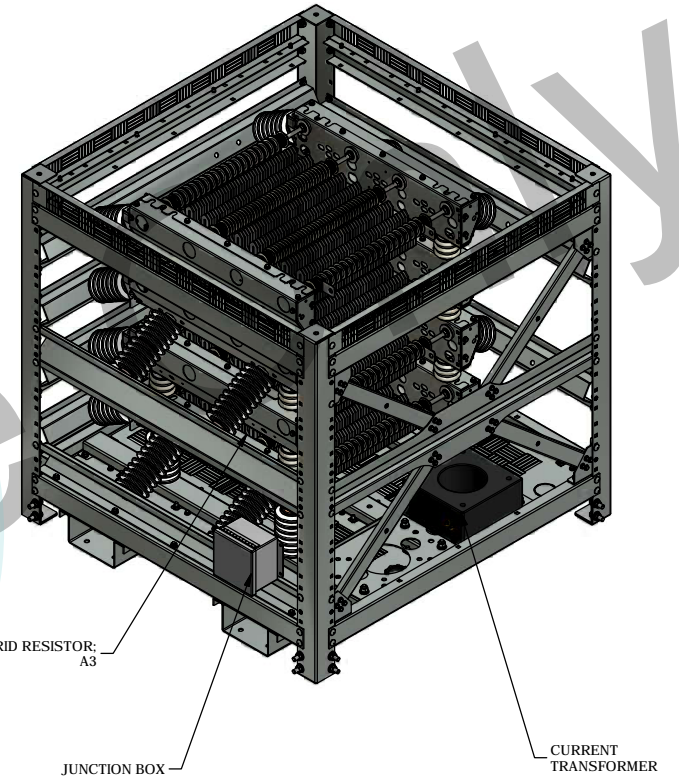
TOP VIEW



FRONT VIEW



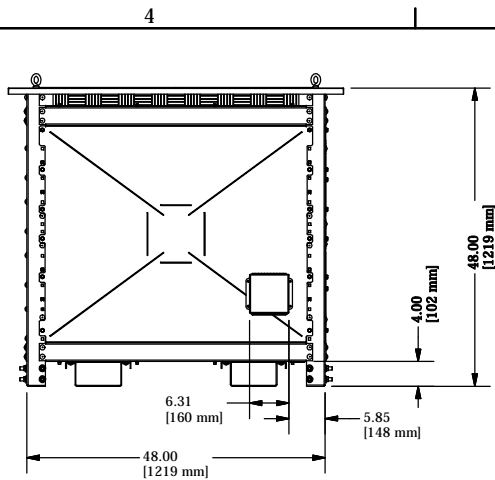
BOTTOM VIEW



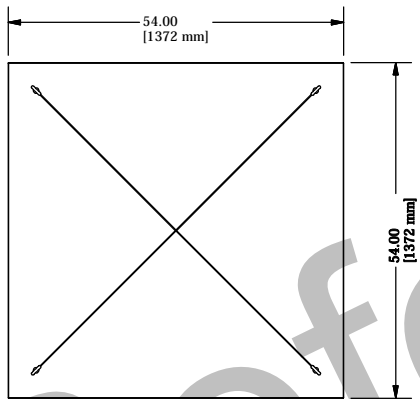
<p><b>Post Glover</b> "The Resistor Specialists"</p>	<p>4750 Olympic Blvd Erlanger, KY USA 41018 Phone: 800.537.6144 / 859.283.0778 Fax: 859.283.2978 www.postglover.com</p>	TITLE/DESCRIPTION: assembly, seismic NGR, (4) A3, SDS = 2.50	
		DATE: 2/17/2011	DRAWN MAB
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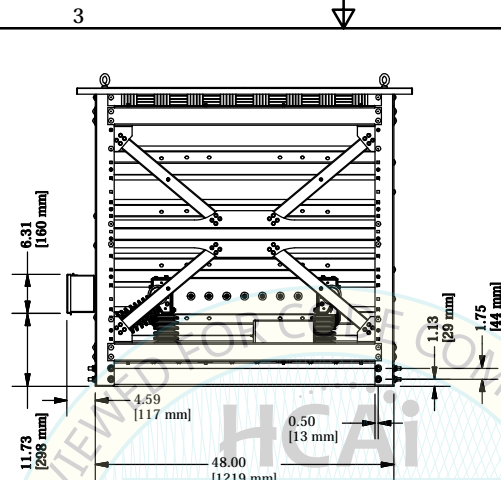
Approved Product Drawing



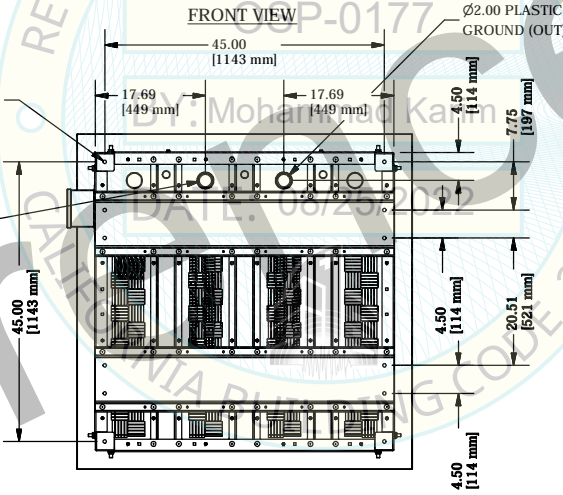
LEFT SIDE VIEW



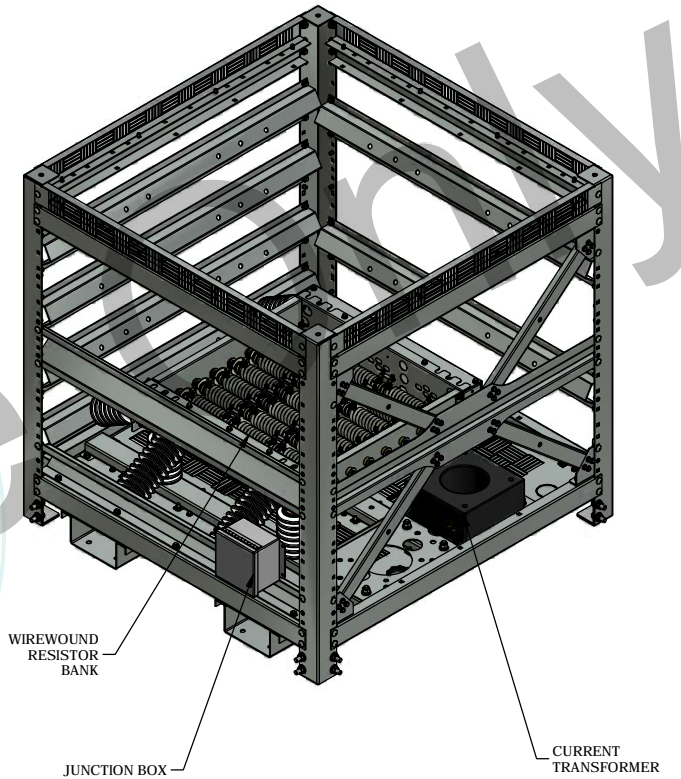
TOP VIEW



FRONT VIEW



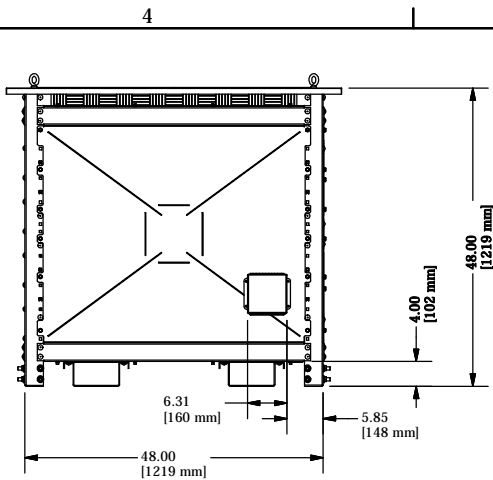
BOTTOM VIEW



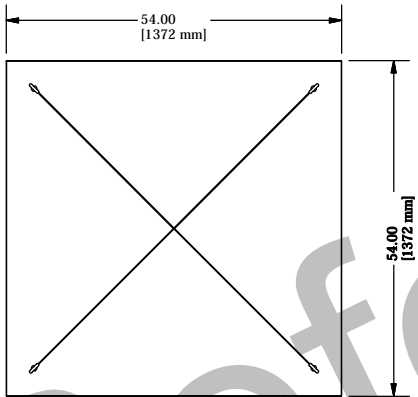
<p><b>Post Glover</b> "The Resistor Specialists"</p>	<p>4750 Olympic Blvd Erlanger, KY USA 41018 Phone: 800.537.6144 / 859.283.0778 Fax: 859.283.2978 www.postglover.com</p>	TITLE/DESCRIPTION: assembly, siesmic NGR, (1) FDL-A3, SDS = 2.50	
		DATE: 2/17/2011 SHEET: 1 OF 1	DRAWN MAB
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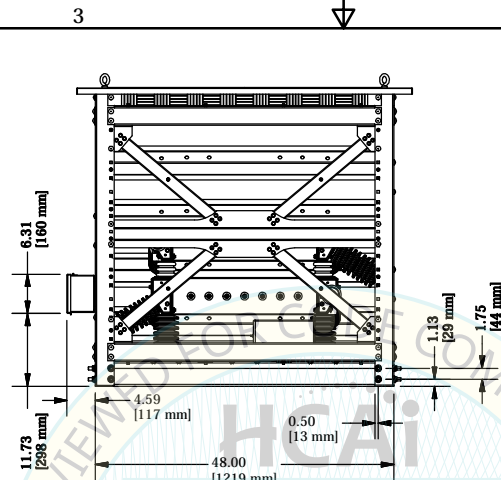
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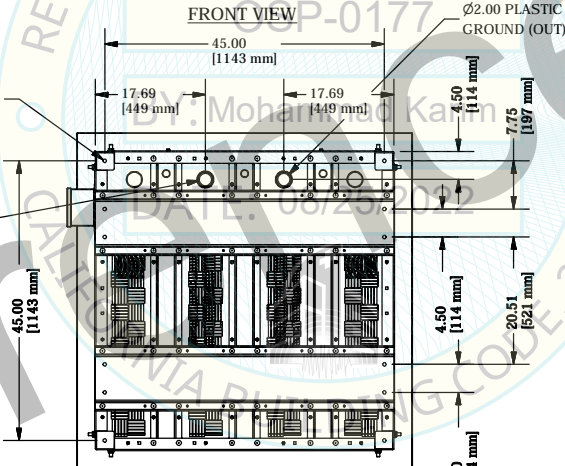
LEFT SIDE VIEW



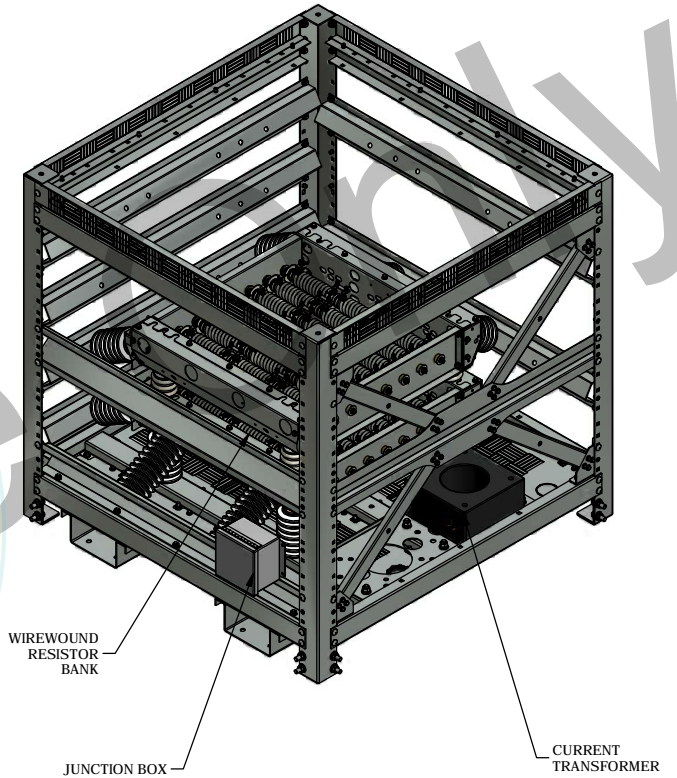
TOP VIEW



FRONT VIEW



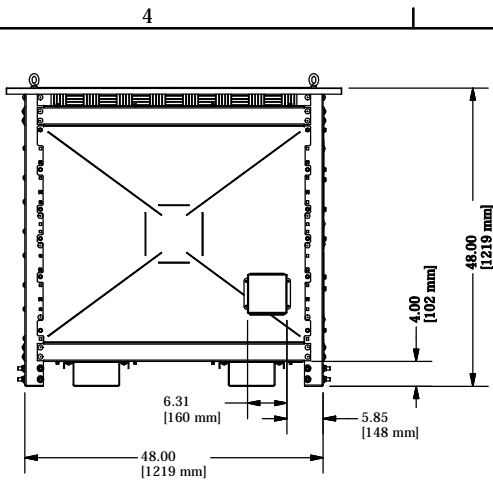
BOTTOM VIEW



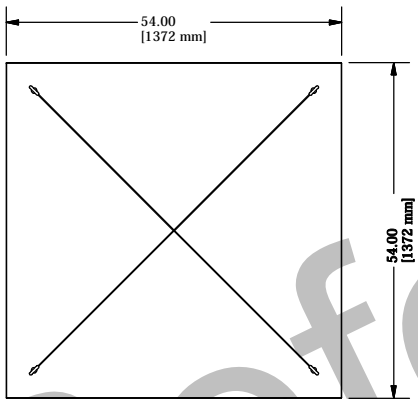
<p><b>Post Glover</b> "The Resistor Specialists"</p>	<p>4750 Olympic Blvd Erlanger, KY USA 41018 Phone: 800.537.6144 / 859.283.0778 Fax: 859.283.2978 www.postglover.com</p>	TITLE/DESCRIPTION: assembly, siesmic NGR, (2) FDL-A3, SDS = 2.50	
		DATE: 2/17/2011 SHEET: 1 OF 1	DRAWN MAB
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<small>UNLESS OTHERWISE SPECIFIED, ENGINEERING STANDARDS PER DRAWING #47849, AND ALL DIMENSIONS IN INCHES.</small>			REVISION 00



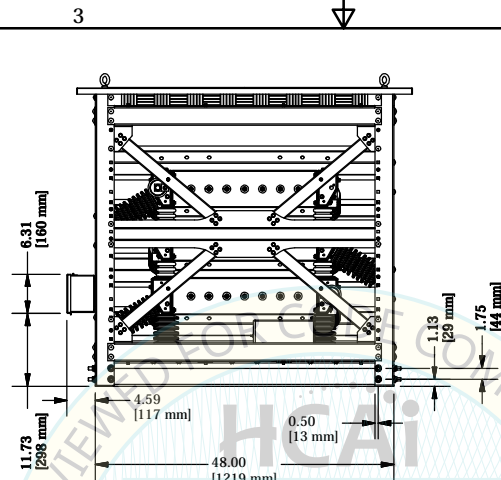
Approved Product Drawing



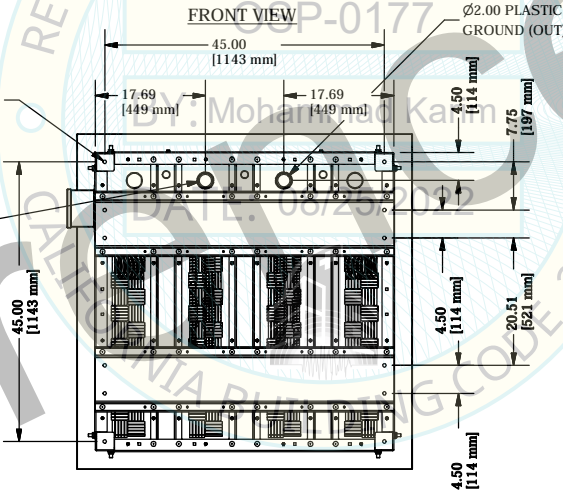
LEFT SIDE VIEW



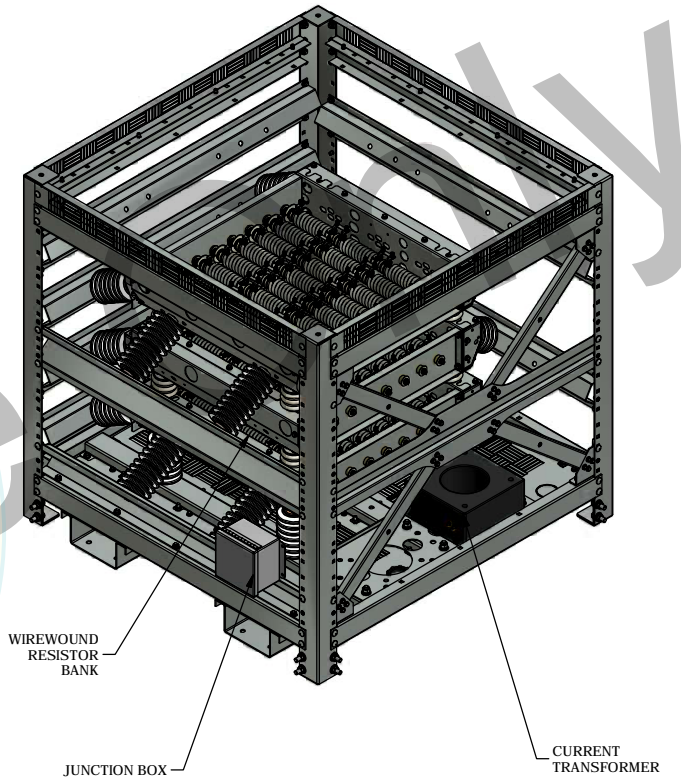
TOP VIEW



FRONT VIEW



BOTTOM VIEW

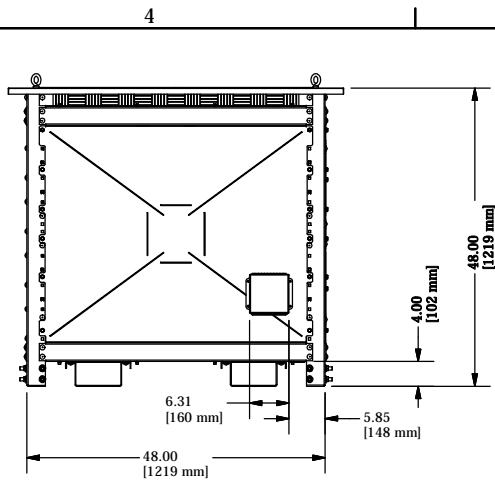


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		DATE: 2/17/2011 SHEET: 1 OF 1	DRAWN MAB
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<small>UNLESS OTHERWISE SPECIFIED, ENGINEERING STANDARDS PER DRAWING #47849, AND ALL DIMENSIONS IN INCHES.</small>			REVISION 00

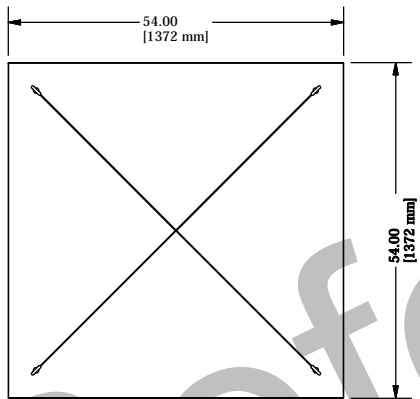




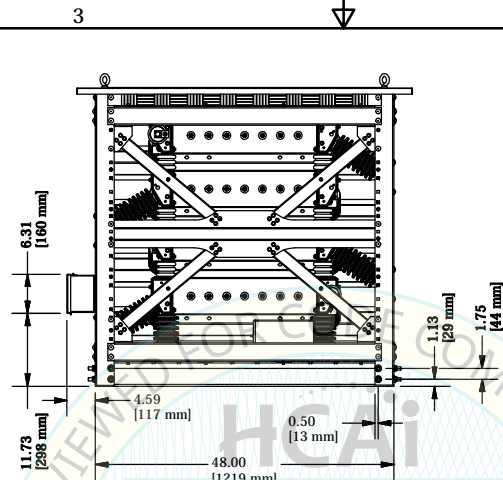
Approved Product Drawing



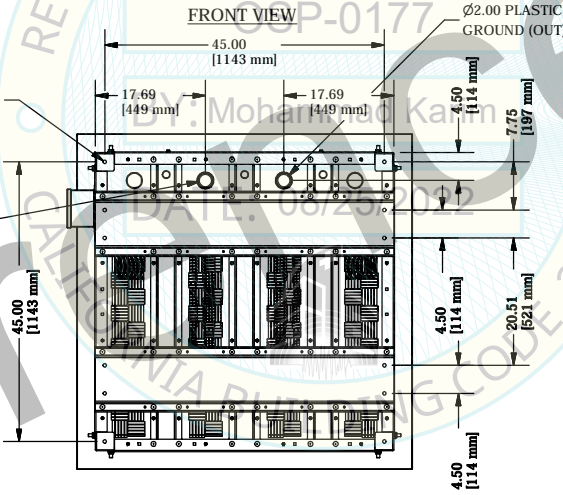
LEFT SIDE VIEW



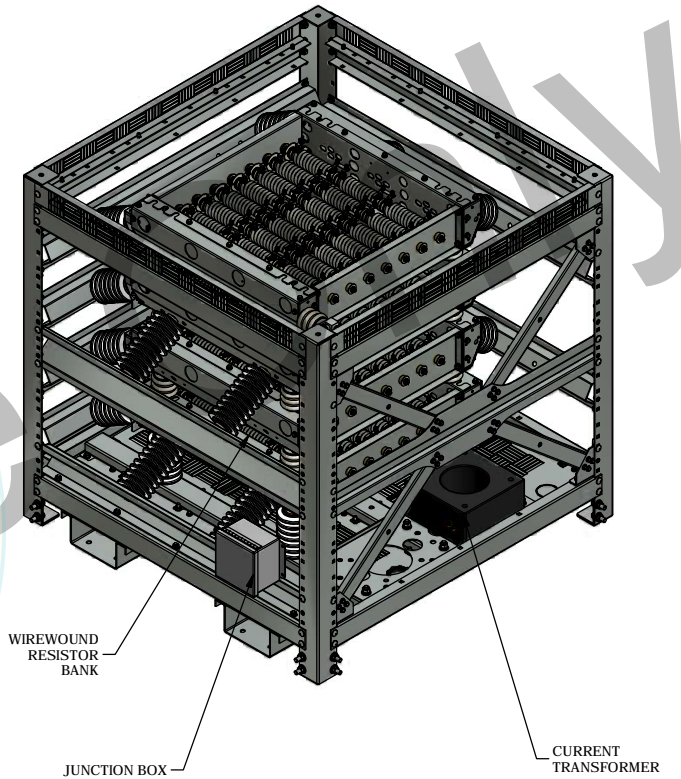
TOP VIEW



FRONT VIEW



BOTTOM VIEW



<p><b>Post Glover</b> "The Resistor Specialists"</p>	<p>4750 Olympic Blvd Erlanger, KY USA 41018 Phone: 800.537.6144 / 859.283.0778 Fax: 859.283.2978 www.postglover.com</p>	TITLE/DESCRIPTION: assembly, siesmic NGR, (4) FDL-A3, SDS = 2.50	
		DATE: 2/17/2011	APPROVED FLS
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		SHEET: 1 OF 1 DRAWING NUMBER NG444-S-JBL-FDL4	

