



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP- 0320

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: ABB, Inc.

Manufacturer's Technical Representative: Dhirendra Tiwari

Mailing Address: 41 Woodford Ave, Plainville, CT 06062

Telephone: (860) 747-7935

Email: Dhirendra.Tiwari@us.abb.com

Product Information

Product Name: Spec Setter and EverGold Solar Safety Switches

Product Type: Safety Switches

Product Model Number: See Attachment for full identification numbers

(List all unique product identification numbers and/or part numbers)

General Description: 30A to 1200A General Duty, Heavy Duty, Mill Duty, Double Throw, and Solar Duty Safety Switches.

Seismic enhancements/modifications were made to the test units which shall be incorporated into the production units.

Mounting Description: Rigid wall mounted

Applicant Information

Applicant Company Name: W.E. Gundy & Associates, Inc.

Contact Person: Travis Soppe SE

Mailing Address: 1199 Shoreline Dr, Ste 300, Boise, ID 83702

Telephone: (208) 342-5898 Ext.115

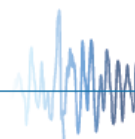
Email: tsoppe@wegai.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant:  Date: 8/29/2019

Title: President Company Name: W.E. Gundy & Associates Inc.

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

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

Company Name: W.E. Gundy & Associates, Inc.

Name: Travis Soppe, SE

California License Number: S6115

Mailing Address: 1199 Shoreline Dr, Suite 310, Boise, ID 83702

Telephone: (208) 342-5898 Ext. 115

Email: tsoppe@wegai.com

Supports and Attachments Preapproval

- ☐ Supports and attachments are preapproved under OPM-
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- ☒ Supports and attachments are not preapproved

Certification Method

☒ Testing in accordance with: ☒ ICC-ES AC156

☐ Other (Please Specify): _____

Testing Laboratory

Company Name: Clark Dynamic Test Laboratory

Contact Name: Devon Lohr

Mailing Address: 1801 Route 51 South, Jefferson Hills, PA 15025

Telephone: 412-387-1027

Email: dlohr@clarktesting.com



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = See Attachments

S_{DS} (Design spectral response acceleration at short period, g) = See Attachments

a_p (In-structure equipment or component amplification factor) = 2.5

R_p (Equipment or component response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See Attachments

Overall dimensions and weight (or range thereof) = See Attachments

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: ☐ Yes ☒ No

Design Basis of Equipment or Components (V/W) = See Attachments

S_{DS} (Design spectral response acceleration at short period, g) = See Attachments

S_{D1} (Design spectral response acceleration at 1 second period, g) = See Attachments

R (Response modification coefficient) = See Attachments

Ω_0 (System overstrength factor) = See Attachments

C_d (Deflection amplification factor) = See Attachments

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = See Attachments

Equipment or Component Natural Frequencies (Hz) = See Attachments

Overall dimensions and weight (or range thereof) = See Attachments

Tank(s) designed in accordance with ASME BPVC, 2010: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

☒ Test Report(s) ☐ Drawings ☐ Calculations ☒ Manufacturer's Catalog

☒ Other(s) (Please Specify): OSP Listing Documents, Subcomponent Certification Letter, SE Certification Letter

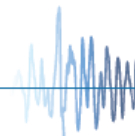
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2025

Signature: M. Aliari Date: August 11, 2020

Print Name: Mohammad Aliari Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = See Above z/h = See Above

Condition of Approval (if applicable): See Above



ABB, INC. SPEC SETTER AND EVERGOLD SOLAR SAFETETY SWITCHES CERTIFIED PRODUCT LINE MATRICES



ID/Catalog Number ¹	Ampere Rating	NEMA ² Rating	Equipment Dimensions (in)			Weight (lbs)	Representative UUT	
			Width	Depth	Height			
Table 1: 30-600A NEMA 1/3R/5/12 Safety Switches Product Line - Max SDS = 1.50 at z/h = 1.0 and SDS = 2.4g at z/h = 0								
TGxxx, THxxx, TCxxx, TSxxx	30-100	1 / 3R / 5 / 12	6.0 - 13.4	3.0 - 5.7	10.0 - 23.4	12 - 38	Interpolated	
TGN3323R	100	3R	9.0	5.0	16.0	12	UUT-1	
TGxxx, THxxx, TCxxx, TSxxx	100-600	1 / 3R / 5 / 12	13.4 - 25.0	5.2 - 8.0	10.0 - 60.0	38 - 200	Interpolated	
TH3366JR	600	1	25.0	8.0	60.0	200	UUT-2	
Table 2: 800-1200A NEMA 1/3R/5/12 Safety Switches Product Line - Max SDS = 1.20 at z/h = 1.0 and SDS = 1.92g at z/h = 0								
TC36367	800	1	31.0	11.0	52.0	245	UUT-5	
TGxxx, THxxx, TCxxx, TSxxx	800-1200	1 / 3R / 5 / 12	31.0 - 47.0	11.0 - 13.0	52.0 - 77.0	245-530	Interpolated	
TC72368R	1200	3R	47.0	13.0	77.0	528	UUT-6	
Table 3: 30-600A NEMA 4/4X Safety Switches Product Line - Max SDS = 1.20 at z/h = 1.0 and SDS = 1.92g at z/h = 0								
TGxxx, THxxx, TCxxx, TSxxx SS/SS316	30-200	4 / 4X	7.0 - 13.4	5.0 - 5.7	11.0 - 35.0	12 - 50	Interpolated	
TH3224SS	200	4X	15.0	5.0	35.0	45	UUT-3	
TGxxx, THxxx, TCxxx, TSxxx SS/SS316	200-600	4 / 4X	7.0 - 25.0	5.0 - 8.4	11.0 - 60.0	110 - 205	Interpolated	
TH3366SS	600	4X	25.0	8.0	60.0	204	UUT-4	
General Notes:								
¹ All components are manufactured by ABB, Inc. unless noted. The part numbers listed uniquely identify the type of component, manufacturer, and material of construction for each sub-component with the tested units. All stainless steel enclosures include the "SS" or "SS316" suffix in the ID/Catalog Number.								
² NEMA 1/3R/5/12 enclosures are constructed of carbon steel and NEMA 4/4X enclosures are constructed of stainless steel.								
³ The maximum seismic certification limits presented for the product lines are limited to the maximum achieved seismic level of the tested units. Some units achieved higher seismic ratings however the product line is limited to the lowest seismic rating.								
SEISMIC CERTIFICATION LIMITS								
Product Line	Code	S _{DS} (g)	z / h	I _p	a _p	R _p	Ω ₀	F _p / W _p
30-600A NEMA 1/3R/5/12	CBC 2016	1.50	1.0	1.50	2.50	6.00	2.50	1.13
		2.40	0.0					1.08
800-1200A NEMA 1/3R/5/12	CBC 2016	1.20	1.0	1.50	2.50	6.00	2.50	0.90
		1.92	0.0					0.86
30-600A NEMA 4/4X	CBC 2016	1.20	1.0	1.50	2.50	6.00	2.50	0.90
		1.92	0.0					0.86

**ABB, INC. SPEC SETTER AND EVERGOLD SOLAR
SAFETY SWITCHES
CERTIFIED SUBCOMPONENT MATRICES**



Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT
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Table 4: 30-600A NEMA 1/3R/5/12 SAFETY SWITCHES

Switch Base Assembly				
139C5071Gxx	GE	30A	1.6	Extrapolated
139C5072Gxx	GE	60A	2.7	Extrapolated
139C5072G6	GE	100A	2.7	UUT-1
139C4030Gxx	GE	200A	6.1	Interpolated
455C412Gxx	GE	400A	15.7	Interpolated
455C412G23	GE	600A	19.2	UUT-2
Mechanism Assembly				
139C3768Gxx	GE	30A	1.1	Extrapolated
139C3768Gxx	GE	60A	1.2	Extrapolated
139C3768G3	GE	100A	1.2	UUT-1
567B769Gxx	GE	200A	1.6	Interpolated
455C412Gxx	GE	400A	7.8	Interpolated
455C412G23	GE	600A	7.8	UUT-2
Load Base Assembly				
569B384Gxx	GE	30A	0.6	Extrapolated
569B392Gxx	GE	60A	1.4	Extrapolated
569B392G6	GE	100A	1.4	UUT-1
192A8146Gxx	GE	200A	1.4	Interpolated
192A6858Gxx	GE	400A	3.7	Interpolated
565B898G32	GE	600A	5.8	UUT-2

Table 5: 800-1200A NEMA 1/3R/5/12 SAFETY SWITCHES

Switch Base Assembly				
139C3700G18	GE	800A	27.9	UUT-5
139C3700G20	GE	1200A	43.5	UUT-6
Mechanism Assembly				
315A7092G1	GE	800A	6.6	UUT-5
315A7092G1	GE	1200A	6.6	UUT-6
Load Base Assembly				
139C3700G18	GE	800A	11.1	UUT-5
139C3700G20	GE	1200A	19.1	UUT-6

General Notes:

**ABB, INC. SPEC SETTER AND EVERGOLD SOLAR
SAFETY SWITCHES
CERTIFIED SUBCOMPONENT MATRICES**



Identification Number	Manufacturer	Description	Approximate Weights (lbs)	Representative UUT
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Table 6: 30-600A NEMA 4/4x SAFETY SWITCHES

Switch Base Assembly

139C5071Gxx	GE	30A	1.6	Extrapolated
139C5072Gxx	GE	60A	2.7	Extrapolated
139C5072Gxx	GE	100A	2.7	Extrapolated
139C4030G31	GE	200A	6.1	UUT-3
455C412Gxx	GE	400A	15.7	Interpolated
455C412G23	GE	600A	19.2	UUT-4

Mechanism Assembly

139C3768Gxx	GE	30A	1.1	Extrapolated
139C3768Gxx	GE	60A	1.2	Extrapolated
139C3768Gxx	GE	100A	1.2	Extrapolated
567B769G1	GE	200A	1.6	UUT-3
455C412Gxx	GE	400A	7.8	Interpolated
455C412G23	GE	600A	7.8	UUT-4

Load Base Assembly

569B384Gxx	GE	30A	0.6	Extrapolated
569B392Gxx	GE	60A	1.4	Extrapolated
569B392Gxx	GE	100A	1.4	Extrapolated
192A8146G1	GE	200A	1.4	UUT-3
192A6858Gxx	GE	400A	3.7	Interpolated
565B898G32	GE	600A	5.8	UUT-4

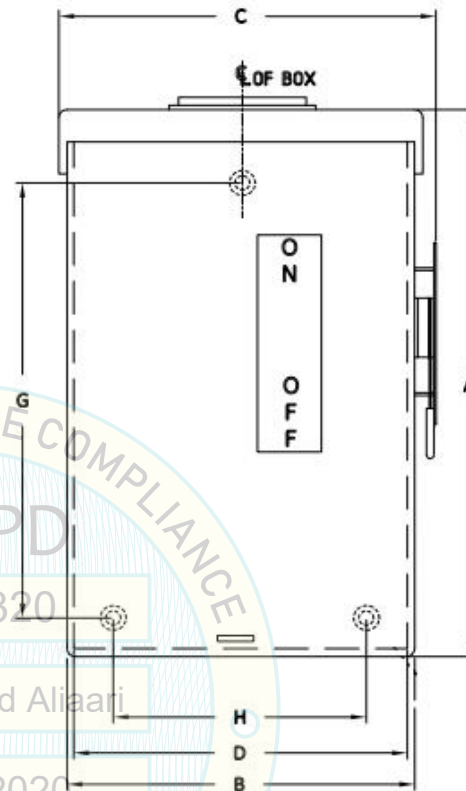
General Notes:

UUT-1

UNIT UNDER TEST (UUT) SUMMARY SHEET



Mounting Details: Wall through bolt mounted with (3) 10-32 grade 5 bolts



BY: Mohammad Aliaari

DATE: 08/11/2020

Manufacturer: ABB, Inc. (Formerly GE) **Test Location:** Clark Testing Laboratory

Product Line: Spec Setter and Evergold Solar Safety Switch **Report Number:** 10282

Identification Number: TGN3323R **UUT No. in Test Report:** UUT-1

UUT Function: General Duty Safety Switch

UUT Description: The unit is a through bolt wall mounted general duty safety switch with a NEMA type 3R enclosure and a rating of 100A.

UUT Component Description:

NEMA 3R 16ga Carbon Steel Enclosure with 100A mechanism assembly, 100A switch base assembly, and 100A load base assembly.

UUT PROPERTIES

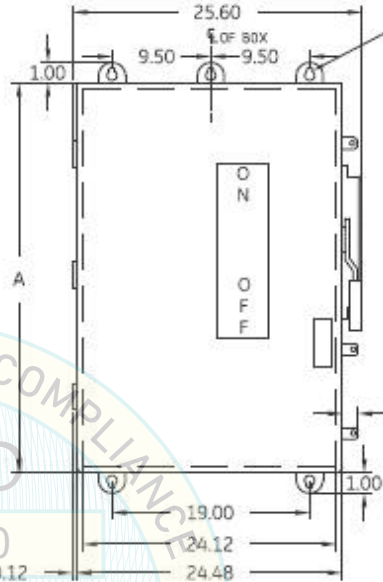
Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
12	9.0"	5.0"	16.0"	NA	NA	NA

SEISMIC TEST PARAMETERS - Run #3

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	2.50	1.00	1.50	4.00g	3.00g	1.67g	0.67g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Wall through bolt mounted with (5) 5/16" diameter grade 5 bolts



BY: Mohammad Aliaari

DATE: 08/11/2020

Manufacturer: ABB, Inc. (Formerly GE)	Test Location: Clark Testing Laboratory
Product Line: Spec Setter and Evergold Solar Safety Switch	Report Number: 10282
Identification Number: TH3366JR	UUT No. in Test Report: UUT-2
UUT Function: Heavy Duty Safety Switch	

UUT Description: The unit is a through bolt wall mounted heavy duty safety switch with a NEMA type 1 enclosure and a rating of 600A.

UUT Component Description:

NEMA1 14ga Carbon Steel Enclosure with 600A mechanism assembly, 600A switch base assembly, and 600A load base assembly.

UUT PROPERTIES

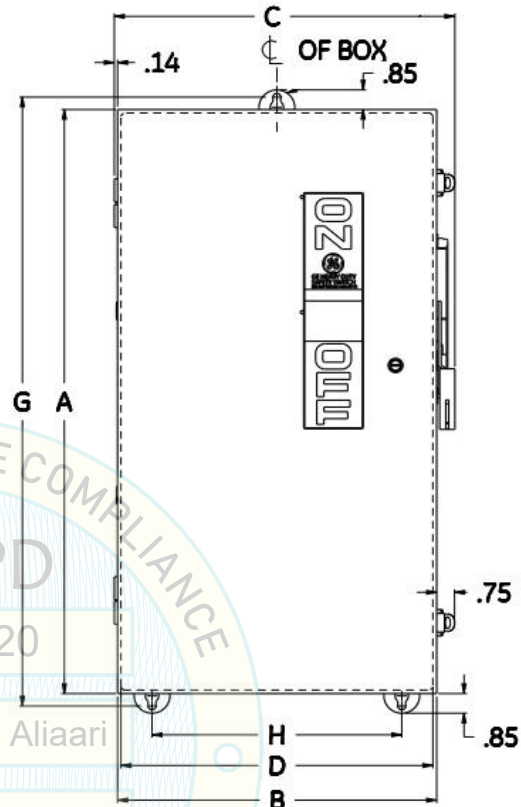
Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
200	25.0"	8.0"	60.0"	NA	NA	NA

SEISMIC TEST PARAMETERS - Run #5

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.50	1.00	1.50	2.40g	1.80g	-	-
	2.40	0.0	1.50	-	-	1.61g	0.65g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Wall rivet bolt mounted with (3) 1/4" diameter grade 5 bolts



Manufacturer: ABB, Inc. (Formerly GE)	Test Location: Clark Testing Laboratory
Product Line: Spec Setter and Evergold Solar Safety Switch	Report Number: 10282
Identification Number: TH3224SS	UUT No. in Test Report: UUT-3
UUT Function: Heavy Duty Safety Switch	

UUT Description: The unit is a through rivet bolt wall mounted heavy duty safety switch with a NEMA type 4X enclosure and a rating of 200A.

UUT Component Description:

NEMA 4X 16ga Carbon Steel Enclosure with 200A mechanism assembly, 200A switch base assembly, and 200A load base assembly.

UUT PROPERTIES

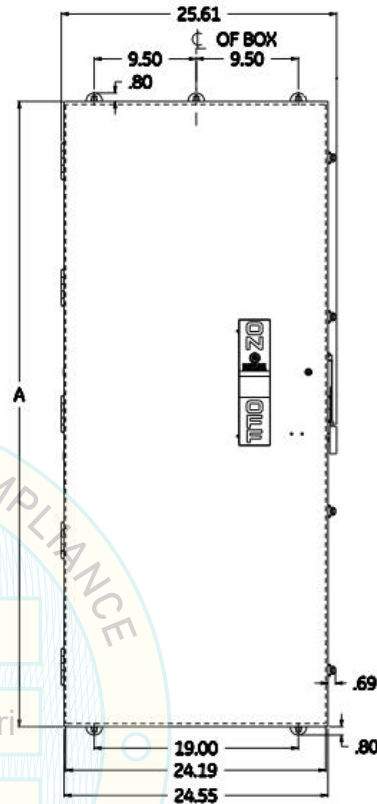
Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
45	15.0"	5.0"	35.0"	NA	NA	NA

SEISMIC TEST PARAMETERS - Run #4

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.20	1.00	1.50	1.92g	1.44g	-	-
	1.92	0.0	1.50	-	-	1.28g	0.52g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Wall rivet bolt mounted with (5) 5/16" diameter grade 5 bolts



Manufacturer: ABB, Inc. (Formerly GE)	Test Location: Clark Testing Laboratory
Product Line: Spec Setter and Evergold Solar Safety Switch	Report Number: 10282
Identification Number: TH3366SS	UUT No. in Test Report: UUT-4
UUT Function: Heavy Duty Safety Switch	

UUT Description: The unit is a rivet bolt wall mounted heavy duty safety switch with a NEMA type 4X enclosure and a rating of 600A.

UUT Component Description:

NEMA4X 14ga Stainless Steel Enclosure with 600A mechanism assembly, 600A switch base assembly, and 600A load base assembly.

UUT PROPERTIES

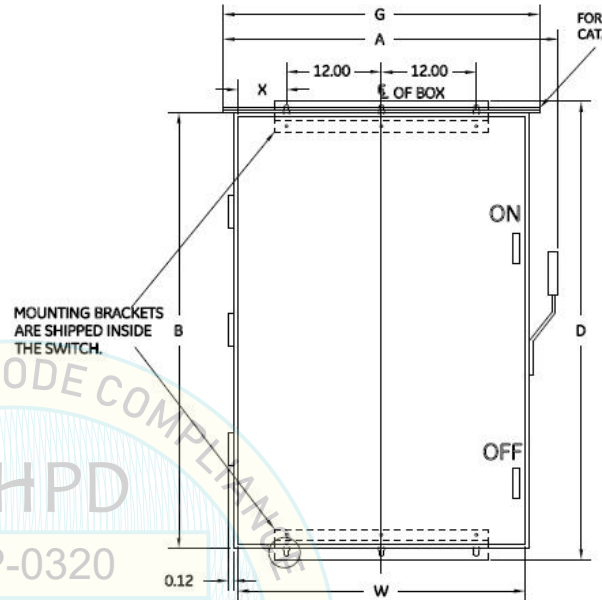
Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
204	25.0"	8.0"	60.0"	NA	NA	NA

SEISMIC TEST PARAMETERS - Run #4

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.20	1.00	1.50	1.92g	1.44g	-	-
	1.92	0.0	1.50	-	-	1.28g	0.52g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

Mounting Details: Wall bolted bracket mounted with (6) 3/8" diameter grade 5 bolts



BY: Mohammad Aliaari

DATE: 08/11/2020

Manufacturer: ABB, Inc. (Formerly GE)	Test Location: Clark Testing Laboratory
Product Line: Spec Setter and Evergold Solar Safety Switch	Report Number: 10282
Identification Number: TC36367	UUT No. in Test Report: UUT-5
UUT Function: Heavy Duty Safety Switch	

UUT Description: The unit is a bolted bracket wall mounted heavy duty safety switch with a NEMA type 1 enclosure and a rating of 800A.

UUT Component Description:

NEMA1 14ga Carbon Steel Enclosure with 800A mechanism assembly, 800A switch base assembly, and 800A load base assembly.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
245	31.0"	11.0"	52.0"	NA	NA	NA

SEISMIC TEST PARAMETERS - Run #8

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.20	1.00	1.50	1.92g	1.44g	-	-
	1.92	0.0	1.50	-	-	1.28g	0.52g

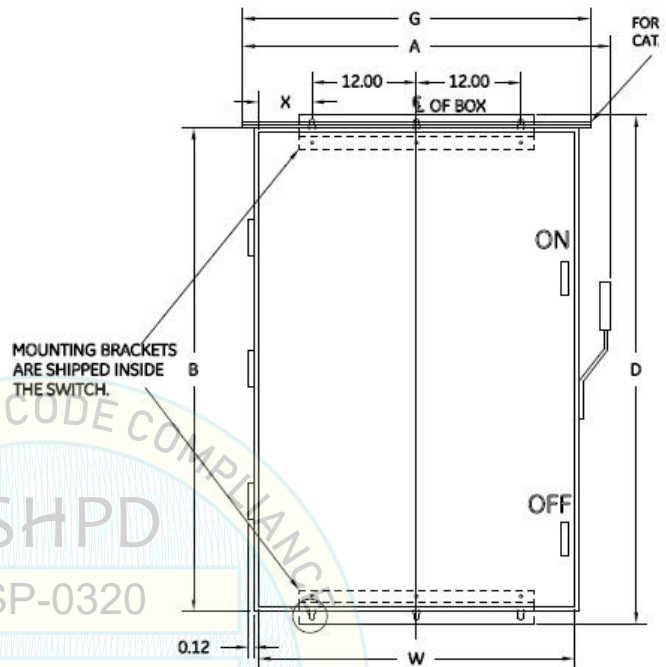
Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT-6

UNIT UNDER TEST (UUT) SUMMARY SHEET



Mounting Details: Wall bolted bracket mounted with (6) 3/8" diameter grade 5 bolts



BY: Mohammad Aliaari

DATE: 08/11/2020

Manufacturer: ABB, Inc. (Formerly GE) **Test Location:** Clark Testing Laboratory

Product Line: Spec Setter and Evergold Solar Safety Switches **Report Number:** 10282

Identification Number: TC72368R **UUT No. in Test Report:** UUT-6

UUT Function: Heavy Duty Safety Switch

UUT Description: The unit is a bolted bracket wall mounted heavy duty safety switch with a NEMA type 3R enclosure and a rating of 1200A.

UUT Component Description:

NEMA 3R 12ga Carbon Steel Enclosure with 1200A mechanism assembly, 1200A switch base assembly, and 1200A load base assembly.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
528	47.0"	13.0"	77.0"	NA	NA	NA

SEISMIC TEST PARAMETERS - Run #1

Test Criteria	S _{DS} (g)	z / h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
CBC 2016 / ICC-ES-AC156	1.50	1.00	1.50	2.40g	1.80g	-	-
	2.40	0.0	1.50	-	-	1.61g	0.65g

Note: The unit was full of contents during testing and remained functional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.