



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT**

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

OFFICE USE ONLY

APPLICATION #: OSP-0835

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: BCS Switchgear, Inc.

Manufacturer's Technical Representative: Cody Whisenhunt

Mailing Address: 506 US Hwy. 377, Pilot Point, TX 76258

Telephone: (888) 599-0486 Email: cody@bcswitchgear.com

Product Information

Product Name: Power Elite Type 1 and Type 3R

Product Model Number(s): See Attachment

Product Category: Switchgear/Switchboards

Product Sub-Category: Switchboards

General Description: Main and distribution Type 1 and Type 3R carbon steel enclosure switchboards using copper busbar.

Mounting Description: Base Mounted Rigid -

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: Manwill Engineering LLC

Contact Person: Derek Manwill

Mailing Address: PO Box 1194, Bend, OR 97709

Telephone: (541) 241-2102 Email: derek@manwillse.com

Title: President





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

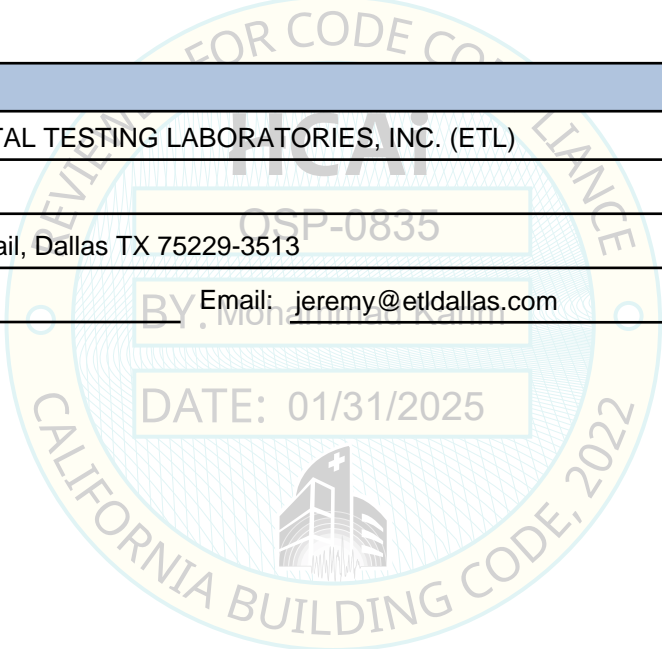
Company Name: MANWILL ENGINEERING LLC
Name: Derek Manwill California License Number: S6266
Mailing Address: PO Box 1194, Bend, OR 97709
Telephone: (541) 241-2102 Email: derek@manwillse.com

Certification Method

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

Testing Laboratory

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)
Contact Person: Jeremy Lange
Mailing Address: 11034 Indian Trail, Dallas TX 75229-3513
Telephone: (972) 247-9657 Email: jeremy@etldallas.com





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.50 (SDS=2.00, z/h=1), 1.13 (SDS=2.50, z/h=0)

SDS (Design spectral response acceleration at short period, g) = 2.00 (z/h=1), 2.50 (z/h=0)

a_p (Amplification factor) = 2.5

R_p (Response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1 and 0

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

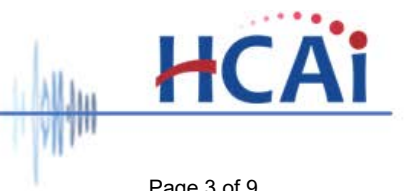
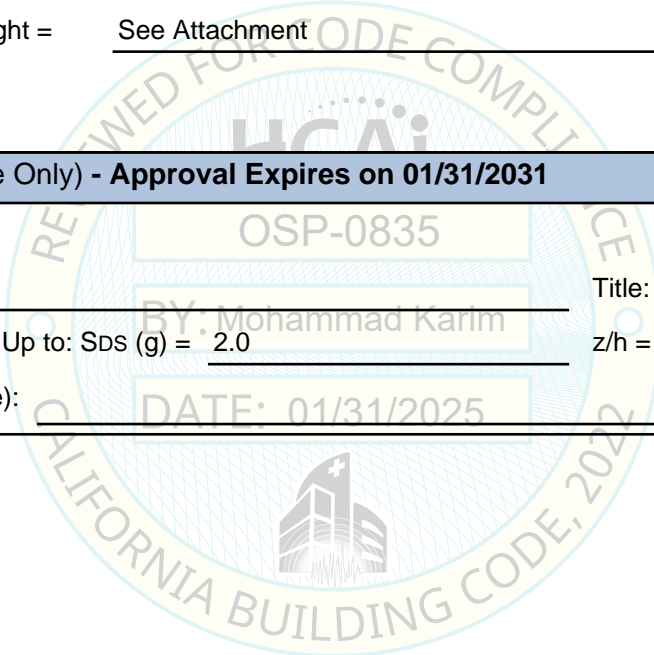
HCAI Approval (For Office Use Only) - Approval Expires on 01/31/2031

Date: 1/31/2025

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 2.0 z/h = 1

Condition of Approval (if applicable): DATE: 01/31/2025



ATTACHMENT 1: CERTIFIED COMPONENTS

SPECIAL SEISMIC CERTIFICATION

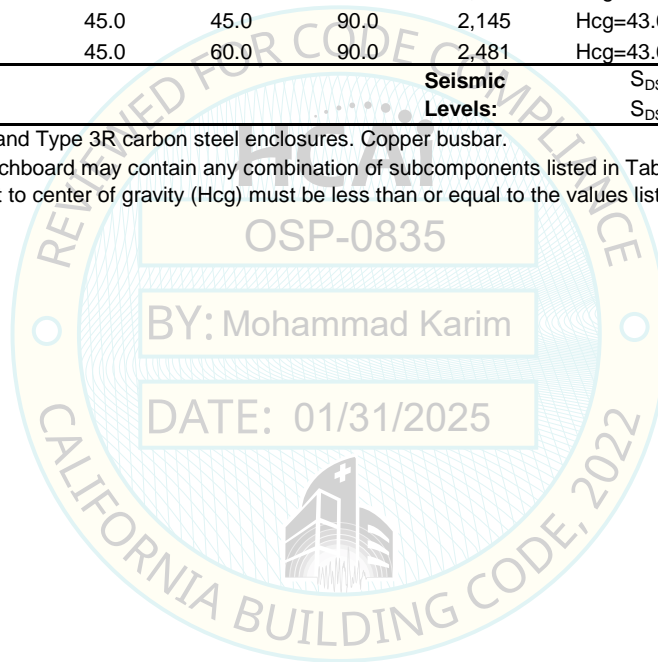
BCS SWITCHGEAR, INC.
Power Elite Type 1 and Type 3R

TABLE 1

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis	
	Depth	Width	Height				
Power Elite Type 1							
PEM40 Type 1	40.0	40.0	90.0	1,902	Hcg=38.8-in	UUT 1	
PED45 Type 1	40.0	45.0	90.0	1,950	Hcg=42.6-in	INTERP	
PED60 Type 1	40.0	60.0	90.0	2,092	Hcg=42.6-in	UUT 2	
Power Elite Type 3R							
PEM40 Type 3R	45.0	40.0	90.0	2,034	Hcg=40.5-in	UUT 3	
PED45 Type 3R	45.0	45.0	90.0	2,145	Hcg=43.0-in	INTERP	
PED60 Type 3R	45.0	60.0	90.0	2,481	Hcg=43.0-in	UUT 4	
Mounting: Base Mounted Rigid.				Seismic Levels:		$S_{DS} = 2.00g$ for $z/h = 1$	$I_p = 1.5$
						$S_{DS} = 2.50g$ for $z/h = 0$	

Product Construction: Type 1 and Type 3R carbon steel enclosures. Copper busbar.

Options/Subcomponents: Switchboard may contain any combination of subcomponents listed in Table 2 with appropriate busbar. Total combination of weight and height to center of gravity (Hcg) must be less than or equal to the values listed above.



ATTACHMENT 1: CERTIFIED SUBCOMPONENTS

SPECIAL SEISMIC CERTIFICATION

BCS SWITCHGEAR, INC.
Power Elite Type 1 and Type 3R

TABLE 2. SUBCOMPONENTS

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
Type: SACE Tmax XT Plug-In Circuit Breaker - Mfr: ABB						
XT1 125A 3-pole	2.8	3.0	5.1	6.3		UUT 2,4
XT2 125A 3-pole	3.3	3.5	5.1	6.3		INTERP
XT3 225A 3-pole	2.8	4.1	5.9	9.0		INTERP
XT4 250A 3-pole	3.3	4.1	6.3	12.2		UUT 2,4
XT5 400A 3-pole	4.1	5.5	8.1	14.7		UUT 2,4
XT5 600A 3-pole	4.1	5.5	8.1	14.7		UUT 2,4
XT6 800A 3-pole	4.1	8.3	10.6	32.0		UUT 2,4
XT7 800A 3-pole	6.6	8.3	10.6	40.0		INTERP
XT7 1000A 3-pole	6.6	8.3	10.6	40.0		INTERP
XT7 1200A 3-pole	6.6	8.3	10.6	40.0		UUT 2,4
Type: SACE Emax 2 Fixed Circuit Breaker - Mfr: ABB						
E2.2 1600A 3-pole	10.6	10.9	14.6	115		EXTRAP
E2.2 2000A 3-pole	10.6	10.9	14.6	115		UUT 1
E4.2 2500A 3-pole	10.6	15.1	14.6	201		INTERP
E4.2 3200A 3-pole	10.6	15.1	14.6	201		INTERP
E6.2 4000A 3-pole	10.6	30.0	14.6	314		UUT 1,3
Type: HPS Spartan Transformer - Mfr: Hammond						
SP750MQMJ	4.7	5.3	4.4	16		UUT 1,3
Type: Acuvim II Power Meter - Mfr: Accuenergy						
Acuvim-IIR-D-5A-P1V3	2.5	3.8	3.8	-		UUT 1,3
Type: AcuCT R Current Transformer - Mfr: Accuenergy						
AcuCT-4161R-2000:5A	1.8	7.3	9.3	-		UUT 1,3
AcuCT-4161R-4000:5A	1.8	7.3	9.3	-		UUT 1,3
Type: Power Supply - Mfr: ABB						
CP-D 24/1.3	2.3	2.1	3.6	<1		UUT 1,3
Type: Disconnect - Mfr: Eaton						
CCP2-2-30CC	3.9	1.4	3.1	<1		UUT 1,3
CCP2-3-30CC	3.9	2.1	3.1	<1		UUT 1,3
Type: Fuse Holder - Mfr: ABB						
E 91/30s CC	2.5	0.7	3.3	<1		UUT 1,3
E 92/30s CC	2.5	1.4	3.3	<1		UUT 1,3
Type: Terminal Block - Mfr: Eaton						
KUSC6-W	5.0	2.0	1.3	<1		UUT 1,3
Type: Selector Switch - Mfr: ABB						
P9MSLZ5L	3.2	1.2	1.8	<1		UUT 1,3
Mounting: Mounted within unit.				Seismic Levels:	S _{DS} = 2.00g for z/h = 1 S _{DS} = 2.50g for z/h = 0	I _p = 1.5

Construction/Options: Model number uniquely identifies manufacturer, materials, and configuration of subcomponents.

ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 1

Manufacturer: BCS Switchgear, Inc.
Model number: PEM40 Type 1
Unit function: Switchboard
Serial number: N/A



Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
40.0	40.0	90.0	1,902	4.9	8.0	>33

Code & criteria: 2022 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 24092TR1.2 (dated 1-24-25), tested on 10-17-24

S _{DS} (g)	z/h	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
2.00	1.00	3.20	2.40	1.68	0.68
2.50	0.00				

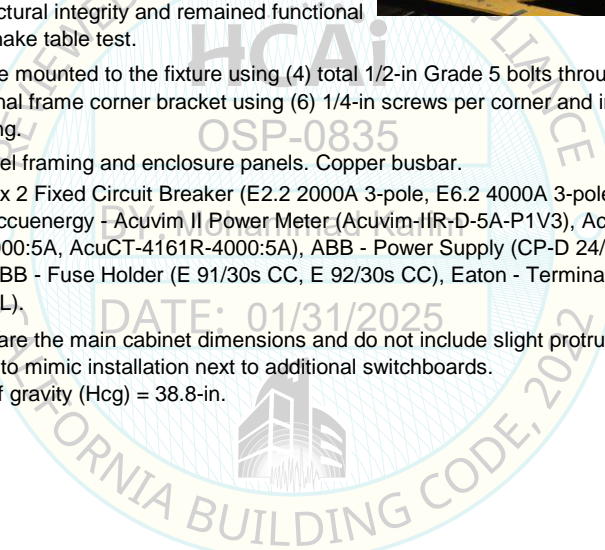
Importance Factor, I_p = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Unit was rigid base mounted to the fixture using (4) total 1/2-in Grade 5 bolts through the anchor plates. Anchor plates attach to the internal frame corner bracket using (6) 1/4-in screws per corner and include a welded spacer plate to eliminate anchor bolt bending.

Construction: Type 1 carbon steel framing and enclosure panels. Copper busbar.

Subcomponents: ABB - SACE Emax 2 Fixed Circuit Breaker (E2.2 2000A 3-pole, E6.2 4000A 3-pole), Hammond - HPS Spartan Transformer (SP750MQMJ), Accuenergy - Acuvim II Power Meter (Acuvim-IIR-D-5A-P1V3), Accuenergy - AcuCT R Current Transformer (AcuCT-4161R-2000:5A, AcuCT-4161R-4000:5A), ABB - Power Supply (CP-D 24/1.3), Eaton - Disconnect (CCP2-2-30CC, CCP2-3-30CC), ABB - Fuse Holder (E 91/30s CC, E 92/30s CC), Eaton - Terminal Block (KUSC6-W), ABB - Selector Switch (P9MSLZ5L).

Testing notes: Depth and height are the main cabinet dimensions and do not include slight protrusions such as bolt heads. Side panels were not installed to mimic installation next to additional switchboards. Height to center of gravity (Hcg) = 38.8-in.



ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 2

Manufacturer: BCS Switchgear, Inc.
 Model number: PED60 Type 1
 Unit function: Switchboard
 Serial number: N/A



Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
40.0	60.0	90.0	2,092	5.9	10.8	>33

Code & criteria: 2022 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 24092TR1.2 (dated 1-24-25), tested on 11-14-24

S _{DS} (g)	z/h	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
2.00	1.00	3.20	2.40	1.68	0.68
2.50	0.00				

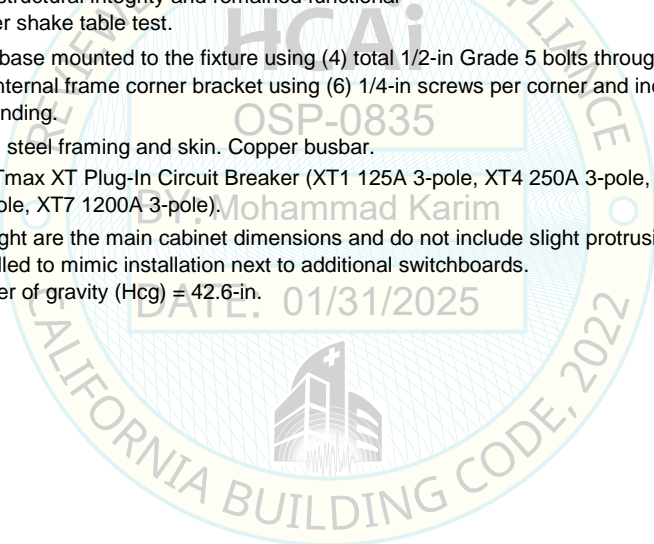
Importance Factor, I_p = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Unit was rigid base mounted to the fixture using (4) total 1/2-in Grade 5 bolts through the anchor plates. Anchor plates attach to the internal frame corner bracket using (6) 1/4-in screws per corner and include a welded spacer plate to eliminate anchor bolt bending.

Construction: Type 1 carbon steel framing and skin. Copper busbar.

Subcomponents: ABB - SACE Tmax XT Plug-In Circuit Breaker (XT1 125A 3-pole, XT4 250A 3-pole, XT5 400A 3-pole, XT5 600A 3-pole, XT6 800A 3-pole, XT7 1200A 3-pole).

Testing notes: Depth and height are the main cabinet dimensions and do not include slight protrusions such as bolt heads. Side panels were not installed to mimic installation next to additional switchboards.
 Height to center of gravity (H_{cg}) = 42.6-in.



ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 3

Manufacturer: BCS Switchgear, Inc.
 Model number: PEM40 Type 3R
 Unit function: Switchboard
 Serial number: N/A



Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
45.0	40.0	90.0	2,034	5.7	8.0	>33

Code & criteria: 2022 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 24092TR1.2 (dated 1-24-25), tested on 10-17-24

S _{DS} (g)	z/h	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
2.00	1.00	3.20	2.40	1.68	0.68
2.50	0.00				

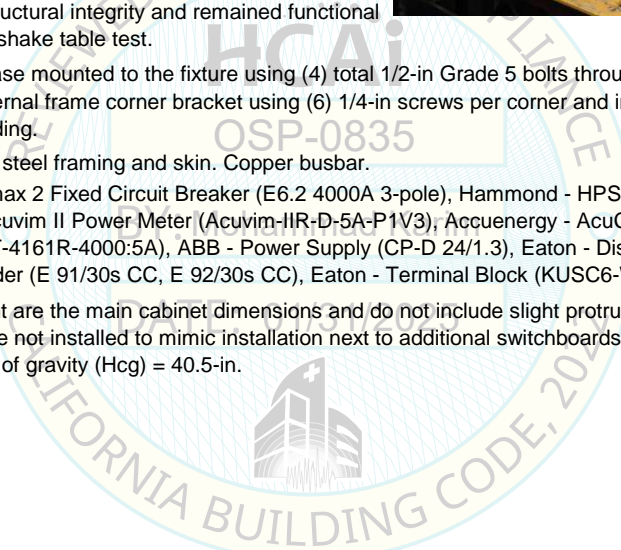
Importance Factor, I_p = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Unit was rigid base mounted to the fixture using (4) total 1/2-in Grade 5 bolts through the anchor plates. Anchor plates attach to the internal frame corner bracket using (6) 1/4-in screws per corner and include a welded spacer plate to eliminate anchor bolt bending.

Construction: Type 3R carbon steel framing and skin. Copper busbar.

Subcomponents: ABB - SACE Emax 2 Fixed Circuit Breaker (E6.2 4000A 3-pole), Hammond - HPS Spartan Transformer (SP750MQMJ), Accuenergy - Acuvim II Power Meter (Acuvim-IIR-D-5A-P1V3), Accuenergy - AcuCT R Current Transformer (AcuCT-4161R-2000:5A, AcuCT-4161R-4000:5A), ABB - Power Supply (CP-D 24/1.3), Eaton - Disconnect (CCP2-2-30CC, CCP2-3-30CC), ABB - Fuse Holder (E 91/30s CC, E 92/30s CC), Eaton - Terminal Block (KUSC6-W), ABB - Selector Switch (P9MSLZ5L).

Testing notes: Depth and height are the main cabinet dimensions and do not include slight protrusions such as the hood and bolt heads. Side panels were not installed to mimic installation next to additional switchboards. Height to center of gravity (Hcg) = 40.5-in.



ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 4

Manufacturer: BCS Switchgear, Inc.
Model number: PED60 Type 3R
Unit function: Switchboard
Serial number: N/A



Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
45.0	60.0	90.0	2,481	5.3	8.8	>33

Code & criteria: 2022 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 24092TR1.2 (dated 1-24-25), tested on 11-14-24

S _{DS} (g)	z/h	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
2.00	1.00	3.20	2.40	1.68	0.68
2.50	0.00				

Importance Factor, I_p = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Unit was rigid base mounted to the fixture using (4) total 1/2-in Grade 5 bolts through the anchor plates. Anchor plates attach to the internal frame corner bracket using (6) 1/4-in screws per corner and include a welded spacer plate to eliminate anchor bolt bending.

Construction: Type 3R carbon steel framing and skin. Copper busbar.

Subcomponents: ABB - SACE Tmax XT Plug-In Circuit Breaker (XT1 125A 3-pole, XT4 250A 3-pole, XT5 400A 3-pole, XT5 600A 3-pole, XT6 800A 3-pole, XT7 1200A 3-pole).

Testing notes: Depth and height are the main cabinet dimensions and do not include slight protrusions such as the hood and bolt heads. Side panels were not installed to mimic installation next to additional switchboards. Height to center of gravity (Hcg) = 43.0-in.

