



APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.
OSP – 0308 – 10

Check whether application is: NEW RENEWAL

1.0 Z Power & Distribution Raul Paez
Manufacturer *Manufacturer's Technical Representative*

1101 E. Truslow Ave., Fullerton, CA 92831
Mailing Address

(714) 269-0180 raulpaez@zpoweranddistribution.com
Telephone *E-mail Address*

2.0 Low Voltage Switchboards Switchboards
Product Name *Product Type*

400A to 6000A Distribution, Service and Pull Sections – See Product Range Summary attached
Product Model No. (List all unique product identification numbers and/or serial numbers)

General Description: Rigidly floor mounted 400A to 6000A Distribution, Service, and Pull Sections. Seismic enhancements made to the test units and modifications required to address anomalies observed during the tests shall be incorporated into the production units.

3.0 Z Power & Distribution Milton Rivera
Applicant Company Name *Contact Person*

1866 N. Carlsbad St., Orange, CA 92867
Mailing Address

(714) 307-9198 milrivera@be2sales.net
Telephone *E-mail Address*

I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review.

Signature of Applicant

11/29/2012

Date

Owner

Title

Z Power & Distribution

Company Name



Registered Design Professional Preparing the Report

4.0

Forell Elsesser Engineers, Inc.

Company Name

Caroline Tsang, SE

Contact Name

S5372

California License Number

160 Pine St., 6th Flr., San Francisco, CA 94111

Mailing Address

415-837-0700

Telephone

c.tsang@forell.com

E-mail Address

California Licensed Structural Engineer Review and Acceptance of the Report

5.0

Forell-Elsesser Engineers, Inc.

Company Name

Marco Scanu, SE

Contact Name

S4454

California License Number

160 Pine St., 6th Flr., San Francisco, CA 94111

Mailing Address

415-837-0700

Telephone

m.scanu@forell.com

E-mail Address

Anchorage Pre-Approval

6.0

Anchorage is pre-approved under OPA-
(Separate application for anchorage pre-approval is required)

Anchorage is not Pre-approved

Certification Method

7.0 Testing in accordance with: ICC-ES AC-156 Other (Please Specify):

Analysis

Experience data

Combination of Testing, Analysis, and/or Experience Data (Please Specify):

Testing Laboratory (if applicable)

8.0

Southwest Research Institute

Company Name

Mark Orłowski

Contact Name

6220 Culebra Road, San Antonio, Texas 78238

Mailing Address

(210) 684-5111

Telephone

mark.orłowski@swri.org

E-mail



Approval Parameters

9.0

Design in accordance with ASCE 7-05 Chapter 13: Yes No

Design Basis of Equipment or Components (F_p/W_p) = 1.875

S_{DS} (Spectral response acceleration at short period) = 2.5g

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

R_p (Equipment or component response modification factor) = 6.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component fundamental period(s) = See attachment, "Resonant Frequency Summary"

Building period limits (if any) = n/a

Overall dimensions and weight (or range thereof) = See attachment, "Product Range Summary"

Equipment or Components @ grade designed in accordance with ASCE 7-05 Chapter 15: Yes No

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

S_{DS} (Spectral response acceleration at short period) =

S_1 (Spectral response acceleration at 1 second period) =

R (Response modification coefficient) = 1.0

Ω_0 (System overstrength factor) = 1.0

C_d (Deflection amplification factor) = 1.0

I_p (Importance factor) = 1.5

Height to Center of Gravity above base =

Equipment or Component fundamental period(s) = Sec

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2007: Yes No

10.0 List of attachments supporting the special seismic certification of equipment or components:

- Test Report
- Drawings
- Manufacturer's Catalog
- Calculations
- Other (Please Specify): SE Acceptance Letter, Product Range Summary, CBC 2010 & AC156 Requirements Checklist

11.0 OSHPD Approval (For Office Use Only)

2/7/2013

December 31, 2019

Signature & Date

Approval Expiration Date

M. R. Karim. SHFR

S_{DS} (g) = **2.50**

z/h = **1.0**

Name & Title

Special Seismic Certification Valid Up to

Condition of Approval (if any):

Z Power & Distribution - Low Voltage Switchboard

Product Range Summary

Unit	Width	Depth	Height	Weight		Construction Material ^{1,2}	Notes	Test Status
				Min	Max			
Distribution, Service and Pull Sections								
400 A	18"-52"	18"-60"	90.0 in	300.0 lbs	1000.0 lbs	14 ga - 10 ga CFS	3	UUT-1, UUT-3, UUT-5
600 A	18"-52"	18"-60"	90.0 in	300.0 lbs	1000.0 lbs	14 ga - 10 ga CFS	3	Interpolated
800 A	18"-52"	18"-60"	90.0 in	300.0 lbs	1000.0 lbs	14 ga - 10 ga CFS	3	Interpolated
1000 A	18"-52"	18"-60"	90.0 in	300.0 lbs	1000.0 lbs	14 ga - 10 ga CFS	3	Interpolated
1200 A	18"-52"	18"-60"	90.0 in	300.0 lbs	1000.0 lbs	14 ga - 10 ga CFS	3	Interpolated
1600 A	18"-52"	18"-60"	90.0 in	300.0 lbs	1000.0 lbs	14 ga - 10 ga CFS	3	Interpolated
2000 A	18"-52"	18"-60"	90.0 in	300.0 lbs	1000.0 lbs	14 ga - 10 ga CFS	3	Interpolated
2500 A	18"-52"	18"-60"	90.0 in	300.0 lbs	1000.0 lbs	14 ga - 10 ga CFS	3	Interpolated
3000 A	18"-52"	18"-60"	90.0 in	300.0 lbs	1690.0 lbs	14 ga - 10 ga CFS	3	Interpolated
4000 A	18"-52"	18"-60"	90.0 in	300.0 lbs	1690.0 lbs	14 ga - 10 ga CFS	3	Interpolated
5000 A	18"-52"	18"-60"	90.0 in	1000.0 lbs	1690.0 lbs	14 ga - 10 ga CFS	3	Interpolated
6000 A	18"-52"	18"-60"	90.0 in	1000.0 lbs	1690.0 lbs	14 ga - 10 ga CFS	3	UUT-2, UUT-4

Notes

1. All enclosures are NEMA 1 or NEMA 3R rated.
2. CFS= cold-formed carbon steel
3. Floor mounted.

**Z Power & Distribution - Low Voltage Switchboard
Product Range Summary**

Internal Components	Manufacturer	Part #	Testing Status
Bus			
Aluminum Bus	SAPA Extrusions		UUT-1, UUT-2, UUT-3, UUT-4, UUT-5
Copper Bus	Revere Copper Products	C11000 / ASTM B-187	UUT-1, UUT-2, UUT-3, UUT-4, UUT-5
Circuit Breaker			
30A-150A Circuit Breaker	GE	SE	UUT-1
150A-250A Circuit Breaker	GE	SF	Interpolated
250A-600A Circuit Breaker	GE	SG	Interpolated
600A-1200A Circuit Breaker	GE	SK	UUT-1
800A-4000A Circuit Breaker	GE	PB II	UUT-2
Transformer			
Control Power Transformer (CPT)	GE	9T58	UUT-2
Current Transformer (CT)	GE	PLCT	UUT-2
Current Transformer (CT)	Flex-Core	Series 110	UUT-2
Potential Transformer (PT)	GE	PLPT	UUT-2
Relays			
10A-100A Relay	GE	CR306	UUT-1, UUT-2
Fuse Switch			
400A - 600A Fuse Switch	Boltswitch	Type J	UUT-3
800A - 4000A Fuse Switch	Boltswitch	Type L	UUT-4
30A-400A Fuse Switch	GE	ADS	UUT-1
Meters			
Meter Socket	Marwell	54HK	UUT-3, UUT-4
Multifunction Meter	Electro Industries	SHARK 100 & 200	UUT-2

Test Summary

UUT-1

400A Distribution Section

14-10 ga Cold-Formed Carbon Steel

42"W x 20"D x 90"H

Weight: 747 lbs

Floor mounted with (6) ½"-Grade 5 bolts



UUT-1 on the left

UUT-1 400A Distribution Section

Internal Components	Manufacturer	Part #
Copper Bus Bar	SAPA Extrusions	
Aluminum Bus Bar	Revere Copper Products	C11000 / ASTM B-187
30A Circuit Breaker	GE	TYPE SE
800A Circuit Breaker	GE	SK
30A Fusible Switch	GE	TYPE ADS
400A Fusible Switch	GE	TYPE ADS
100A Relay	GE	CR306

UUT-2

6000A Distribution Section
14-10 ga Cold-Formed Carbon Steel
52"W x 60"D x 95"H
Weight: 1422 lbs

Floor mounted with (6) ½"-Grade 5 bolts



UUT-2 6000A Distribution Section

Internal Components	Manufacturer	Part #
Copper Bus Bar	SAPA Extrusions	
Aluminum Bus Bar	Revere Copper Products	C11000 / ASTM B-187
800-2000A Circuit Breaker	GE	TYPE PB II
Multifunction Meter	Electro Industries	SHARK 200
Current Transformers	GE	Type PLCT
Control Power Transformer	GE	9T58K0042G09
Potential Transformers	GE	Type PLPT
Current Transformers	Flex-Core	Series 110
10A Relay	GE	CR306

UUT-3

400A Service Section
14-10 ga Cold-Formed Carbon Steel
32"W x 20"D x 90"H
Weight: 424 lbs

Floor mounted with (6) ½"-Grade 5 bolts



UUT-3 on the right

UUT-3 400A Service Section

Internal Components	Manufacturer	Part #
Copper Bus Bar	SAPA Extrusions	
Aluminum Bus Bar	Revere Copper Products	C11000 / ASTM B-187
400A Fuse Switch	Boltswitch	Type 'J'
Meter Socket	Marwell	54HK

UUT-4

6000A Service Section
14-10 ga Cold-Formed Carbon Steel
52"W x 60"D x 95"H
Weight: 1608 lbs

Floor mounted with (6) ½"-Grade 5 bolts



UUT-4 6000A Service Section

Internal Components	Manufacturer	Part #
Copper Bus Bar	SAPA Extrusions	
Aluminum Bus Bar	Revere Copper Products	C11000 / ASTM B-187
4000A Fusible Switch	Boltswitch	SL3615
Meter Socket	Marwell	54HK

UUT-5

400A Pull Section
14-10 ga Cold-Formed Carbon Steel
18"W x 20"D x 90"H
Weight: 241 lbs

Floor mounted with (4) ½"-Grade 5 bolts



UUT-5 in the middle

UUT-5 400A Pull Section

Internal Components	Manufacturer	Part #
Copper Bus Bar	SAPA Extrusions	
Aluminum Bus Bar	Revere Copper Products	C11000 / ASTM B-187

Z Power & Distribution - Low Voltage Switchboards Resonant Frequency Summary

Direction	UUT 1 400A Distribution Section		UUT 2 6000A Distribution Section		UUT 4 6000A Service Section	
	Frequency	Period	Frequency	Period	Frequency	Period
Front-Back	7.0 Hz	0.14 sec	8.5 Hz	0.12 sec	9.1 Hz	0.11 sec
Side-Side	13.6 Hz	0.07 sec	7.0 Hz	0.14 sec	6.6 Hz	0.15 sec
Vertical	37.1 Hz	0.03 sec	25.9 Hz	0.04 sec	N/A	N/A