Facilities Development Division www.oshpd.ca.gov/fdd
400 R Street. Suite 200, Sacramento, California 95811-6213 Phone (916) 440-8300 Fax (916) 654-2973

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.

OSP – 0020 – 10

Check whether application is: NEW [ ] RENEWAL [X]

1.0

Square D by Schneider Electric North America	Philip Caldwell
Manufacturer	*Manufacturer's Technical Representative*

1990 Sandifer Blvd, Seneca, SC 29678
Mailing Address

864-886-1471	philip.caldwell@us.schneider-electric.com
Telephone	*E-mail Address*

2.0

M-Flex, S-Flex, E-Flex, PowerGard, ATS-48	Packaged AC Drives & Soft Starts
Product Name	*Product Type*

See attached Product Range Summary
Product Model No (List all unique product identification numbers and/or serial numbers)

General Description: Drives and soft-starts use power electronic solid state switching devices to control speed or torque of common industrial squirrel case induction motors.

3.0

Square D by Schneider Electric North America	Philip Caldwell
Applicant Company Name	*Contact Person*

1990 Sandifer Blvd, Seneca, SC 29678
Mailing Address

864-886-1471	philip.caldwell@us.schneider-electric.com
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.

Philip J. Caldwell	2/3/2011
Signature of Applicant	*Date*
Edison Expert	Schneider Electric
Title	*Company Name*

Registered Design Professional Preparing the Report

4.0

University of Alabama - Birmingham
Company Name

Lee Gholamreza Moradi | C41383
Contact Name | *California License Number*

4824 Sulphur Springs Rd, Hoover, AL 35226
Mailing Address

205-975-2718 | moradi@uab.edu
Telephone | *E-mail Address*

California Licensed Structural Engineer Review and Acceptance of the Report

5.0

Forell-Elsesser Engineers, Inc.
Company Name

Marco Scanu, SE | S4454
Contact Name | *California License Number*

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

415-837-0700 | m.scanu@forell.com
Telephone | *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

Wyle Laboratories | Rod Thornberry
Company Name | *Contact Name*

7800 Hwy 20, Huntsville, AL 35806
Mailing Address

(256) 837-4411 | mark.orlowski@swri.org
Telephone | 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) = Floor-mounted: 1.43g;
Floor Mounted w/ Top Restraints: 1.88g
Wall-mounted: 1.88g

S_{DS} *(Spectral response acceleration at short period)* = Floor-mounted: 1.91g;
Floor Mounted w/ Top Restraints: 2.50g
Wall-mounted: 2.50g

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 Attachments

Building period limits (if any) = n/a

Overall dimensions and weight = See Attachments

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.

11.0 ***OSHPD Approval*** *(For Office Use Only)*

Signature & Date **2/3/20111**	**December 31, 2016** *Approval Expiration Date*
Chris Tokas, SHFR *Name & Title*	S_{DS} (g) = **See Section 9.0** z/h = **1.0** *Special Seismic Certification Valid Up to*

Condition of Approval (if any):

3/17

Table 1A – Product Range Summary Drives & Soft Starts Wall Mounted

Square D by Schneider Electric – Packaged AC Drives & Soft Starts HP Rated Product Range Summary Rigid Wall Mounted					
HP	**Width (in)**	**Depth (in)**	**Height (in)**	**Service Weight (lbs)**	**Notes**
S-Flex Enclosed Drive Controller					
1 – 100	8 - 16	7 - 12	40 - 65	52 - 206	1, 2, 3
M-Flex Enclosed Drive Controller					
1 – 25	20 - 25	15	49 - 63	175 - 243	1, 2, 3, 4
E-Flex Enclosed Drive Controller					
1 – 100	14 - 36	13 - 17	35 - 67	83 - 247	1, 2, 3, 5, 6
ATS-48 Enclosed Soft Start Motor Controller					
3 – 150	18 - 25	14	33 - 63	110 - 200	1, 2, 3, 5, 6

Notes:
1. Mild steel sheet metal construction
2. Rigid wall mounted
3. NEMA Type 1 enclosure
4. NEMA Type 1A gasket/filtered enclosure
5. NEMA Type 3R outdoor enclosure
6. NEMA Type 12 dust/drip enclosure

Table 1B – Product Range Summary Drives & Soft Starts Floor Mounted

Square D by Schneider Electric – Packaged AC Drives & Soft Starts HP Rated Product Range Summary Rigid Floor Mounted					
HP	**Width (in)**	**Depth (in)**	**Height (in)**	**Service Weight (lbs)**	**Notes**
M-Flex Enclosed Drive Controller					
15 - 500	20 - 35	21	95	170 - 969	1, 2, 3, 4, 6
PowerGard 18-Pulse Enclosed Drive Controller					
50 - 500	36 - 102	25	95	1603 - 3148	1, 2, 3, 4
ATS-48 Enclosed Soft Start Motor Controller					
60 – 600	20 – 63	20 – 33	95	200 - 1050	1, 2, 3, 5, 6

Notes:
1. Mild steel sheet metal construction
2. Rigid floor anchored – top-restraints are optional
3. NEMA Type 1 enclosure
4. NEMA Type 1A gasket/filtered enclosure
5. NEMA Type 3R outdoor enclosure
6. NEMA Type 12 dust/drip enclosure

FOREL/ELSESSER ENGINEERS, INC.
Structural Engineers
160 Pine Street, 6th Floor
San Francisco, CA 94111

Table 2 – Resonant Frequency Summary

						Resonant Frequency Summary		
Test Size (HP)	**Width (in)**	**Depth (in)**	**Height (in)**	**Tested Weight (lbs)**	**Dynamic Test**	**F-B (Hz)**	**S-S (Hz)**	**V (Hz)**
500	85	20	91.5	2724	Test 52651-1 UUT	8.6	9.1	9.2
100	25	20	90	513	Test 54869R07 UUT3	8.4	8.8	8.8
500	65	20	91.5	1930	Test 51551-1 UUT1	7.6	7.8	22.0
500	48	27	95	3226	Test 53850-1 UUT3	5.3	5.2	7.1

Note: Resonant frequencies are shown only for units tested floor-mounted without top restraints.

Table 3 – Test Summary

Test Size (HP)	Width (in)	Depth (in)	Height (in)	Tested Weight (lbs)	Dynamic Test	Mounting	S_{DS}
500	85	20	91.5	2724	Test 52651-1 UUT	Floor	1.91
100	25	16	66	354	Test 52651-2 UUT	Wall	2.50
40	14	12	64	200	Test 54869R07 UUT1	Wall	2.50
40	12	11	60	132	Test 54869R07 UUT2	Wall	2.58
100	25	20	90	513	Test 54869R07 UUT3	Floor	2.08
100	25	20	90	513	Test 54869R07 UUT3A	Floor w/ Top Restraints	2.50
20	12	13	40	80	Test 53850-1 UUT2	Wall	2.50
60	18	13	62	210	Test 51551-3 UUT1	Wall	2.50
100	35	16	66	296	Test 51551-3 UUT2	Wall	2.50
500	65	20	91.5	1930	Test 51551-1 UUT1	Floor	2.10
500	48	27	95	3226	Test 53850-1 UUT3	Floor	2.07
500	48	27	95	3226	Test 53850-1 UUT3A	Floor w/ Top Restraints	2.75

Floor Mount			
Test Size (HP)	**Tested Weight (lbs)**	**Dynamic Test**	**Enclosure System**
100	513	54869R07 UUT3	M-Flex Drive
450 & 40	2724	52651-1 UUT	MCC & E-Flex
500	1930	51551-1 UUT1	MCC & E-Flex
500	3226	53850-1 UUT3	PowerGuard Series C 18 Pulse Drive

Wall Mount			
Test Size (HP)	**Tested Weight (lbs)**	**Dynamic Test**	**Enclosure System**
20	80	53850-1 UUT2	S-Flex Drive
40	200	54869R07 UUT1, UUT2	S-Flex Drive
60	210	51551-3 UUT1	ATS48 Soft-Start, N1 (envelops ATS22)
100	296	51551-3 UUT2	E-Flex Drive, N3R
100	354	52651-2 UUT	E-Flex, N12

Wall mounted enclosed drives and soft-starts were shake table tested at or above an $S_{DS} = 2.46\ g$ *for* $z/h = 1$. Floor mounted equipment is rigidly seismically anchored and was shake table tested at or above an $S_{DS} = 1.78\ g$ *for* $z/h = 1$. In some floor mount cases a top lateral restraint was installed and the equipment shake table tested at or above an $S_{DS} = 2.46\ g$ *for* $z/h = 1$.

Photo 3 - Addition of top lateral restraints for high level test demand.

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Model 6 MCC-RSX Lineup

TEST REPORT #52651-1

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EFlex-RSX Enclosure

TEST REPORT # 52651-2

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UUT1 (RIGHT) AND UUT4 (LEFT) TEST SETUP

4/1/01

UUT2 TEST SETUP

11/17

UUT3 TEST SETUP

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UUT3A TEST SETUP
TWO TOP SUPPORTS

4/1/17

configuration (P/N: 22[illegible]). The UUT configurations are shown below:

UUT1 (Left) and UUT2 (Right) Configuration

UUT3 Configuration

TEST REPORT #53850-1

14/17

UUT1 – ATS 48 (Right)
UUT2 – Drive 8839 (Left)

6/1/91

TEST REPORT #51551-3

UUT1 and UUT2 are shown below and were tested concurrently.

Series I
UUT1 (Right) and UUT2 (Left)

4/1/91

TEST REPORT #51551-1

UUT3 TEST SETUP WITH TOP RESTRAINTS

17/17