



# APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

**APPLICATION NO.**

**OSP – 0092 – 10**

Check whether application is: NEW  RENEWAL

1.0 **OTIS ELEVATOR COMPANY** Bruce Horne  
*Manufacturer* *Manufacturer's Technical Representative*

5 Farm Springs Road, Farmington, CT 06032  
*Mailing Address*

(860) 676-5335 E-mail Address  
*Telephone*

2.0 **SEE ATTACHMENT 1** **ELEVATOR EQUIPMENT**  
*Product Name* *Product Type*

**SEE ATTACHMENT 1**  
*Product model No (List all unique product identification numbers and/or serial numbers)*

*General Description:* Selected components for Elevator controllers for use with traction and hydraulic elevators.

3.0 **EQUIPMENTANCHORAGE.COM** JONATHAN ROBERSON, S.E.  
*Applicant Company Name* *Contact Person*

5877 Pine Ave, Suite 210, Chino Hills, CA. 91709  
*Mailing Address*

(406) 541-EASE (3273) [jon@easeco.com](mailto:jon@easeco.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.

  
*Signature of Applicant*

**PRINCIPAL ENGINEER**  
*Title*

October 08, 2011  
*Date*

**EQUIPMENTANCHORAGE.COM**  
*Company Name*

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Registered Design Professional Preparing the Report

4.0 EQUIPMENTANCHORAGE.COM

Company Name

Jonathan Roberson, S.E.

S4197

Contact Name

California License Number

5877 Pine Ave, Suite 210, Chino Hills, CA. 91709

Mailing Address

909-606-7622

jon@easeco.com

Telephone

E-mail Address

California Licensed Structural Engineer Review and Acceptance of the Report

5.0 EQUIPMENTANCHORAGE.COM

Company Name

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Anchorage Pre-Approval

6.0

- Unchecked: Anchorage is pre-approved under OPA- (Separate application for anchorage pre-approval is required)
Checked: Anchorage is not Pre-approved

Certification Method

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

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

Testing Laboratory (if applicable)

8.0 Environmental Testing Laboratory, Inc. Brady Richard

Company Name

Contact Name

11034 Indian Trail, Dallas, TX 75229-3513

Mailing Address

972-247-9657

brady@etldallas.com

Telephone

E-mail:

Handwritten signature/initials



**Approval Parameters**

9.0

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

Design Basis of Equipment or Components ( $F_p/W_p$ ) = **SEE ATTACHMENT 1 TABLE 2**

$S_{DS}$  (Spectral response acceleration at short period) = **SEE ATTACHMENT 1 TABLE 2**

$a_p$  (In-structure equipment or component amplification factor) = **1.0 (Transformer) / 2.5 (Drive & Controller)**

$R_p$  (Equipment or component response modification factor) = **2.5 (Transformer) / 6.0 (Drive & Controller)**

$I_p$  (Importance factor) = **1.5**

$z/h$  (Height factor ratio) = **1.0**

Equipment or Component fundamental period(s) = **SEE ATTACHMENT 1**

Building period limits (if any) = **NO LIMIT**

Overall dimensions and weight (or range thereof) = **SEE ATTACHMENT 1**

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**

$\Omega_0$  (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
- Others (Please Specify): **ATTACHMENT 1**

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

<p style="text-align: center; margin: 0;">Signature &amp; Date</p> <p style="text-align: center; margin: 0;"><b>M. R. Karim, SHFR</b></p> <p style="text-align: center; margin: 0;">Name &amp; Title</p>	<p>10/10/2011</p>	<p><b>December 31, 2016</b></p> <p style="text-align: center; margin: 0;">Approval Expiration Date</p> <p><math>S_{DS}</math> (g) = <b>See Section 9.0</b>    <math>z/h</math> = <b>1.0</b></p> <p style="text-align: center; margin: 0;">Special Seismic Certification Valid Up to</p>
<p>Condition of Approval (if any):</p>		

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# APPLICATION FOR PREAPPROVAL

## SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

### ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS

**TABLE 1: OTIS ELEVATOR DRIVES & CONTROLLERS**

Component	Model No. <sup>1</sup>	Dimensions (in)			Max Wt. (lb)	UUT
		Width	Depth	Height		
<b>GLOBAL CONTROL SYSTEM (GCS)</b>						
Global Control System (GCS) Elevator Controller w/ 20A, 30A, 40A or 60A Drive & Transformer Box	Axx21310AD Axx21310AF	45.6	13.6	69.6	685	A1
Global Control System (GCS) Elevator Controller w/ 120A Drive <sup>4</sup> & Transformer Box	Axx21310AD Axx21310AF	45.6	13.6	69.6	586	
Global Control System (GCS) Elevator Controller w/ 20A, 30A, 40A or 60A Drive & w/o Transformer Box	Axx21310AD Axx21310AF	45.6	13.6	52	375	1
Global Control System (GCS) Elevator Controller w/ 120Amp Drive <sup>3</sup> & w/o Transformer Box	Axx21310AD Axx21310AF	45.6	13.6	52	276	
GCS Drive Cabinet – 120A Drive w/ Stand	Axx21305DD Gxx21310EC + Axx471LJ	21.1	9.4	53.6	254	A2
<b>TRACTION ELEVATORS</b>						
Elevonic R-Series Controller Assembly w/ structurally separate drive cabinet	Axx21305CA	27.5	16.5	71.25	381	A7
Elevonic R-Series DSD-412 Drive w/ Legs : 300Amp	Axx21305CG	31.25	16.8	52	258	A3
E411 MMS Controller w/ 193A Drive & 173A Motor	Axx21255V	50	15.5	68	626	2
E311VF Controller w/ 210A drive	Axx21290R	50	15	75	725	3
<b>HYDRAULIC ELEVATORS</b>						
211M Controller	ABA21241U	37	11	50.25	195	4
211 Controller w/ 140 Gallon Tank	ABA21241U	79	40.5	76.5	1547	5
<b>TRANSFORMERS</b>						
GCS 26.2kVA 3-Phase Dry Type Autotransformer <sup>4</sup>	Axx225LY	---	---	---	---	A1
3-Phase Autotransformer : 66.5kVA	Axx21799L	36	24	34	470	A4
Isolation Transformer (DC Drives): 80kVA	Axx21799B	36	30.3	43.2	701	A6
Ripple Filter : 190A	Axx21799E	36.12	24.31	34	570	A5
<b>STRUCTURAL FEATURES</b>						
Enclosures are galvanized steel & comply with CSA B44.1/ASME A17.5 requirements						
<b>MOUNTING</b>						
Rigid Base Mount (Floor Mounted): components are Seismically certified when the unit is anchored in a free-standing, base-mounted condition with the component rigidly attached to a supporting structure and no lateral support above the base.						
<b>NOTES</b>						
1. <b>MODEL:</b> "xx" in the model numbers listed above represent variable characters that document minor revision that do not affect functionality or makeup of the controller. For additional information see "Otis Part Number Description" in Appendix 1. 2. <b>BASIS:</b> <ul style="list-style-type: none"> <li>• UUT#: Indicates that a test specimen matching these characteristics was tested.</li> <li>• No entry indicates a model that was not actually tested, and by which seismic qualification was established through evaluation of testing of other, similar models.</li> </ul> 3. Drive is a standalone, structurally separate cabinet. 4. Located within GCS transformer Box. 5. Transformers include copper winding and open core coil.						

# APPLICATION FOR PREAPPROVAL

## SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

### ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS

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**TABLE 2: ASCE 7-05 SEISMIC DESIGN PARAMETERS FOR CERTIFICATION AND ATTACHMENTS**

UNIT	$E_h$	$E_v$	$z/h$	$S_{DS}$	$I_p$	$a_p$	$R_p$
GCS CONTROLLER	1.61 $W_p$	.43 $W_p$	1.0	2.15	1.5	2.5	6.0
GCS 120A DRIVE W/ STAND	1.61 $W_p$	.43 $W_p$	1.0	2.15	1.5	2.5	6.0
ELEVONIC R SERIES CONTROLLER	1.50 $W_p$	0.4 $W_p$	1.0	2.00	1.5	2.5	6.0
ELEVONIC R SERIES DSD-412 DRIVE	1.61 $W_p$	.43 $W_p$	1.0	2.15	1.5	2.5	6.0
411MMS CONTROLLER	1.50 $W_p$	0.4 $W_p$	1.0	2.00	1.5	2.5	6.0
311VF CONTROLLER	1.50 $W_p$	0.4 $W_p$	1.0	2.00	1.5	2.5	6.0
211 CONTROLLER	1.50 $W_p$	0.4 $W_p$	1.0	2.00	1.5	2.5	6.0
211 CONTROLLER W/ TANK	1.50 $W_p$	0.4 $W_p$	1.0	2.00	1.5	2.5	6.0
3 PHASE AUTO TRANSFORMER	1.51 $W_p$	.42 $W_p$	1.0	2.09	1.5	1.0	2.5
ISOLATION TRANSFORMER	1.61 $W_p$	.45 $W_p$	1.0	2.23	1.5	1.0	2.5
RIPPLE FILTER	1.51 $W_p$	.42 $W_p$	1.0	2.09	1.5	1.0	2.5

### APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS ATTACHMENT 2: SCHEDULE OF TEST SPECIMENS

#### UUT: 1

**Manufacturer:** OTIS ELEVATOR COMPANY  
**Model:** GCS (Global Control System) Elevator Controller  
**Identification:** AAA21310AD  
**UUT Function:** Provides the operational control, motion control, and motor drive to control the operation of a traction elevator within a building.  
**Description:** Includes controller, 60A Drive & brake control sections  
**Mounting:** Floor Mounted: a free-standing, base mounted condition with no lateral support above the base and a direct connection between unit base and supporting structure

**UUT Properties:**

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
41	12	52	375	10.05	14.57	> 50	---

#### UUT: 2

**Manufacturer:** OTIS ELEVATOR COMPANY  
**Model:** 411 MMS Controller  
**Identification:** Axx21255V  
**UT Function:** Provides the operational control, motion control, and motor drive to control the operation of a traction elevator within a building.  
**Description:** 193A Drive & 173A Motor  
**Mounting:** Floor Mounted

**UUT Properties:**

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
50	15.5	68	626	18.8	14.3	> 50	---



### APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS ATTACHMENT 2: SCHEDULE OF TEST SPECIMENS

**UUT: 3**

Manufacturer: OTIS ELEVATOR COMPANY  
Model: E311VF Controller  
Identification: AHB21290R  
UUT Function: Provides the operational control, motion control, and motor drive to control the operation of a traction elevator within a building.  
Description: Includes 210A Drive  
Mounting: Floor Mounted

UUT Properties:

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
50	15	75	725	7.05	8.7	> 50	---



## APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS ATTACHMENT 2: SCHEDULE OF TEST SPECIMENS

### UUT: 4

**Manufacturer:** OTIS ELEVATOR COMPANY  
**Model:** 211 Controller w/ 140 Gallon Tank  
**Identification:** ABA21241U  
**UUT Function:** Hydraulic elevator controller primarily used for new equipment applications  
**Description:** Controller mounted to the wall of the 140 gallon hydraulic reservoir tank .  
 Tank is sheet metal construction with hinged lid. Tabulated weight includes 788lb hydraulic fluid  
**Mounting:** Floor Mounted

**UUT Properties:**

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
42	40.5 <sup>B</sup>	40.6	1547	14.43	27.53	> 50	---

### UUT: 5

**Manufacturer:** OTIS ELEVATOR COMPANY  
**Model:** 211M Controller  
**Identification:** ABA21241U  
**UUT Function:** Hydraulic elevator controller primarily used for modernization applications  
**Description:**  
**Mounting:** Floor Mounted

**UUT Properties:**

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
37	11	50.25	195	3.8	25.9	> 50	---



### APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS ATTACHMENT 2: SCHEDULE OF TEST SPECIMENS

**UUT: A1**

Manufacturer: OTIS ELEVATOR COMPANY  
Model: GCS (Global Control System) Elevator Controller  
Identification: AAA21310AD  
UUT Function: Provides the operational control, motion control, and motor drive to control the operation of a traction elevator within a building.  
Description: Includes controller section, 60A Drive, brake control section, Transformer Box (Up-Stand Box) & 26.2kVA transformer manufactured by Grand Transformer Inc.  
Mounting: Floor Mounted : a free-standing, base mounted condition with no lateral support above the base and a direct connection between unit base and supporting structure

UUT Properties:

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
45.6	13.6	69.6	685	10.4	15.0	30.1	9.0



## APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS ATTACHMENT 2: SCHEDULE OF TEST SPECIMENS

**UUT: A2**

Manufacturer: OTIS ELEVATOR COMPANY  
 Model: GCS 120A Drive Assembly with Stand  
 Identification: Axx21305DD  
 UUT Function: Variable Voltage Variable Frequency (VVVF) Motor drive  
 Description: Component of the Global Control System  
 The Otis Axx21305DD drive assembly contains the following two items:  
 • Gxx21310EC 120A drive manufactured by Otis Germany  
 Axx471LJ drive stand with integral mounting flanges, manufactured by Otis North America  
 Mounting: Rigid Base Mount via integral cabinet flange

UUT Properties:

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
21.1	9.4	53.6	254	25.2	8.3	>50	2.5

**UUT: A3**

Manufacturer: OTIS ELEVATOR COMPANY  
 Model: Elevonic R-Series DSD-412 Drive, w/ legs  
 Identification: Model No.: AAA21305CG  
 UUT Function: 300A DC Motor drive  
 Description:  
 Mounting: Rigid Base

UUT Properties:

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
31.25	16.8	52	258	5.2	9.8	48	9.6



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### APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

#### ATTACHMENT 2: SCHEDULE OF TEST SPECIMENS

**UUT: A4**

Manufacturer: Warner Power  
 Model: 3 Phase Auto Transformer, 66.5 kVA  
 Identification: AAA21799L7  
 UUT Function: The Auto-Transformer is used to step-up/down the utility voltage to provide 480Vac to the elevator controller.  
 Description: The Auto-transformer complies with CSA C22.2 No. 66 and clause 32 overload test of UL Standard 506 and meets the requirements of CSA B44.1/ASME A17.5 for elevator electrical equipment  
 Mounting: Rigid Base Mount

UUT Properties:

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
36	24	34	470	32.9	10.0	13.0	37.6

**UUT: A5**

Manufacturer: Warner Power  
 Model: Ripple Filter  
 Identification: Model No.: AAA21799E222122  
 UUT Function: The Ripple Filter is used to filter out the AC component of the SCR DC drive output to the DC elevator motor.  
 Description: The ripple filter complies with CSA C22.2 No. 66 and clause 32 overload test of UL Standard 506 and meets the requirements of CSA B44.1/ASME A17.5 for elevator electrical equipment.  
 Mounting: Rigid Base

UUT Properties:

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
36.12	24.31	34	570	8.9	10.8	>50	9.1



### APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS ATTACHMENT 2: SCHEDULE OF TEST SPECIMENS

**UUT: A6**

Manufacturer: Warner Power  
 Model: Isolation Transformer (DC Drives)  
 Identification: Model No.: AAA21799B10233  
 UUT Function: The Isolation Transformer is used to step-up/down the utility voltage to provide isolated 480Vac to the elevator controller with SCR drives..  
 Description: 3-Phase dry type transformer. Copper winding. Open core coil. The isolation transformer complies with CSA C22.2 No. 66 and clause 32 overload test of UL Standard 506 and meets the requirements of CSA B44.1/ASME A17.5 for elevator electrical equipment.  
 Mounting: Rigid Base Mount

UUT Properties:

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
36	30.3	43.2	701	45.9	9.5	>50	27.8

**UUT: A7**

Manufacturer: OTIS ELEVATOR COMPANY  
 Model: Elevonic R-Series Controller  
 Identification: Model No.: AAA21305CA  
 UUT Function: Provides the operational control, motion control, and motor drive that controls the operation of an elevator within a building.  
 Description: Controller Assembly complies with CSA B44.1/ASME A17.5 requirements. The assembly includes primary controller, brake controller, and transformer box/up stand. Assembly includes integral lifting hooks.  
 Mounting: Rigid Base

UUT Properties:

DIMENSIONS (in.)			WEIGHT (lb.)	LOWEST RESONANT FREQUENCY (Hz.)			
WIDTH	DEPTH	HEIGHT		F/B	S/S	VERT	OFF-AXIS
27.5	16.5	71.25	381	13	13	27.6	---



UUT-A6

UUT-A7

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