



APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO. OSP - 0025-10
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Check whether application is: NEW RENEWAL

1.0 ABB Inc. Paul Weyandt
Manufacturer *Manufacturer's Technical Representative*

P.O. Box 38, 171 Industry Drive, Bland, VA 24315
Mailing Address

276-688-1614 Paul.Weyandt@us.abb.com
Telephone *E-mail Address*

2.0 Vacuum Cast Coil & Open Wound Coil Transformers 0-3,000 kVA Single & 3-Phase Dry Type Transformers
Product Name *Product Type*

ABB transformers are custom-built.
Product model No (List all unique product identification numbers and/or serial numbers)

General Description:

Floor mounted 0-3,000 kVA ABB VCC/OWC transformers are built with either copper or aluminum coils and are optionally braced within their enclosures with L-frames (Level 2) or A-frames (Level 3).

3.0 ABB Inc. Jarrett Terrell
Applicant Company Name *Contact Person*

P.O. Box 38, 171 Industry Drive, Bland, VA 24315
Mailing Address

(276) 688-1673 jarrett.t.terrell@us.abb.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.

Jarrett Terrell

Signature of Applicant

ABB Engineer

Title

9/13/2010

Date

ABB Inc.
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 Ron Thornberry
Company Name Contact Name

7800 Hwy 20, Huntsville, AL 35806
Mailing Address

(256) 837-4411 E-mail:
Telephone



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) = L1: 0.26; L2: 0.97; L3: 1.89

S_{DS} (Spectral response acceleration at short period) = L1: 0.36; L2: 1.35; L3: 2.63

a_p (In-structure equipment or component amplification factor) = 1.0

R_p (Equipment or component response modification factor) = 2.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component fundamental period(s) = See Attachment # 2

Building period limits (if any) = n/a

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

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

11.0 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, CAN2-1708A.5 & AC156 Requirements Checklist

11.0 OSHPD Approval (For Office Use Only)

<p style="text-align: center;">Signature & Date Chris Tokas, SHFR</p> <p style="text-align: center;">Name & Title</p>	<p style="text-align: center;">9/13/2010</p>	<p style="text-align: center;">December 31, 2016</p> <p style="text-align: center;">Approval Expiration Date</p>
<p>Condition of Approval (if any):</p>		<p>S_{DS} (g) = See Section 9.0 z/h = 1.0</p> <p style="text-align: center;">Special Seismic Certification Valid Up to</p>

OSP APPLICATION - ATTACHMENT #1
 ABB 0-30 MVA Single-Phase and 3-Phase Dry Type Transformers
 Product Range Summary

9/9/2010

ABB 0-3000 kVA Single-Phase & 3-Phase Dry Type Transformers Product Range Summary
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Type	Max. Service Wt.	Height	Width	Depth	Bracing (max. S _{DS} per type)		
					L1	L2	L3
					S _{DS}	S _{DS}	S _{DS}
Vacuum Cast Coil (VCC)	1,956 - 25,000 lbs	60 - 120"	48 - 138"	36 - 72"	0.36	1.35	2.63
Open Wound Coil (OWC)	1,956 - 25,000 lbs	60 - 120"	48 - 138"	36 - 72"			

Tested Units
3000 kVA VCC Transformer w/ copper coils 120" H x 138" W x 72" D - 25,000 lbs
112 kVA OWC Transformer w/ aluminum coils 60" H x 48" W x 36" D - 1,956 lbs

Bracing Types
Level 1 - two feet with core clamps and cross channel brackets (L1)
Level 2 - three feet with core clamps and cross channel brackets, two inverted 3/8" thick L-frames (L2)
Level 3 - three feet with core clamps and cross channel brackets, single-diagonal A-frame at each end (L3)
Please note that report T55769-1 has the same bracing types with different designations which are no longer in use.

Anchorage
Transformers are rigidly anchored to concrete pad or slab through mounting holes in bottom frame; holes are at corners and at intersection of cross channels and longitudinal angles in bottom frame. Lateral forces in direction of transformer's depth are resisted by structural steel bracing which transfers forces to the bottom frame and to concrete through anchorage. Lateral forces in direction of transformer's width are resisted by frame action, with anchorage acting in shear and tension to transfer loads to concrete.

Nameplate
ABB transformers are delivered to the project site with ABB, Eaton, Cutler Hammer, Square D, Siemens, or GE nameplates. Manufacturing location of Bland, VA, will identify them as ABB transformers.

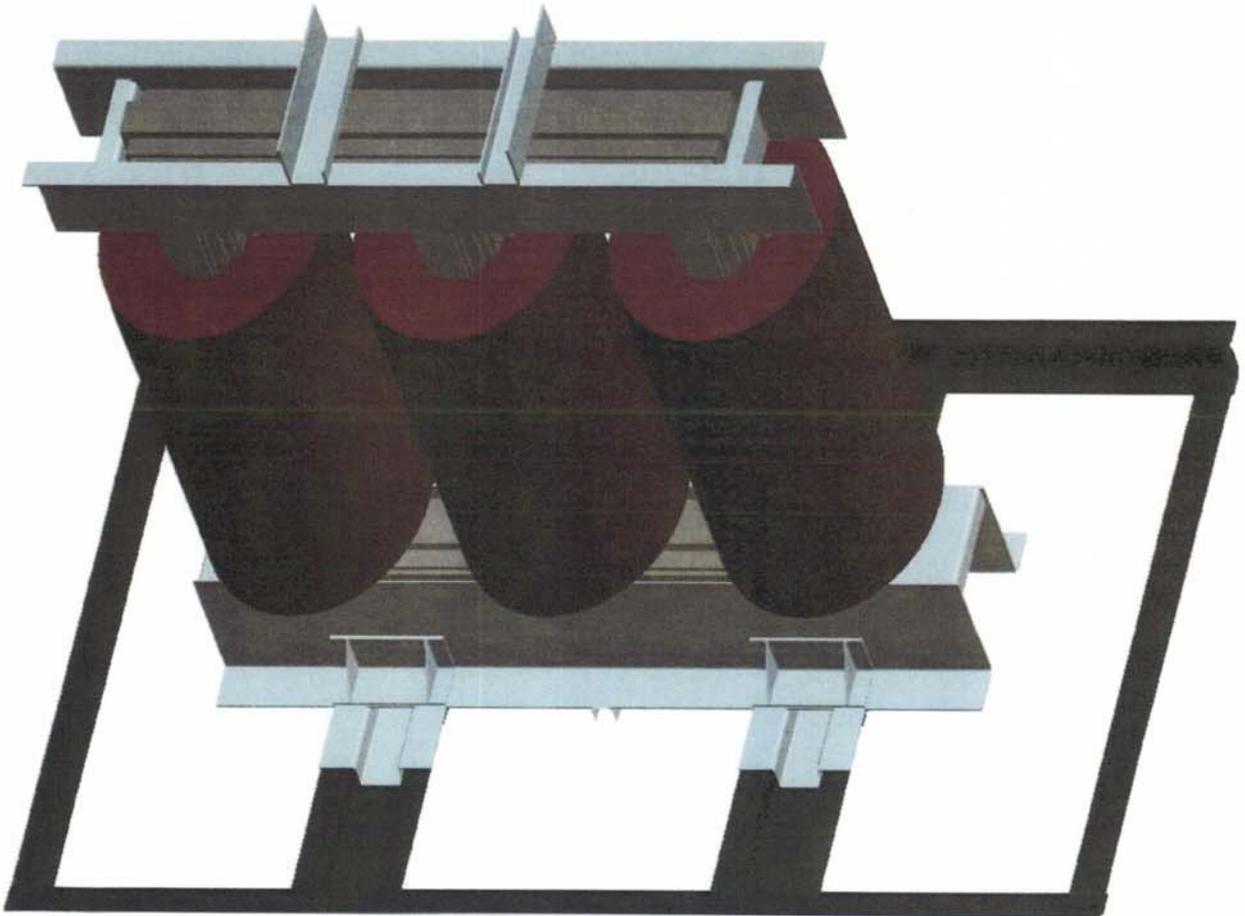
FORELL/ELSESSER ENGINEERS, INC.
 Structural Engineers
 160 Pine St., 6th Floor
 San Francisco, CA 94111

Ala

BRACING LEVEL 1
(L1)

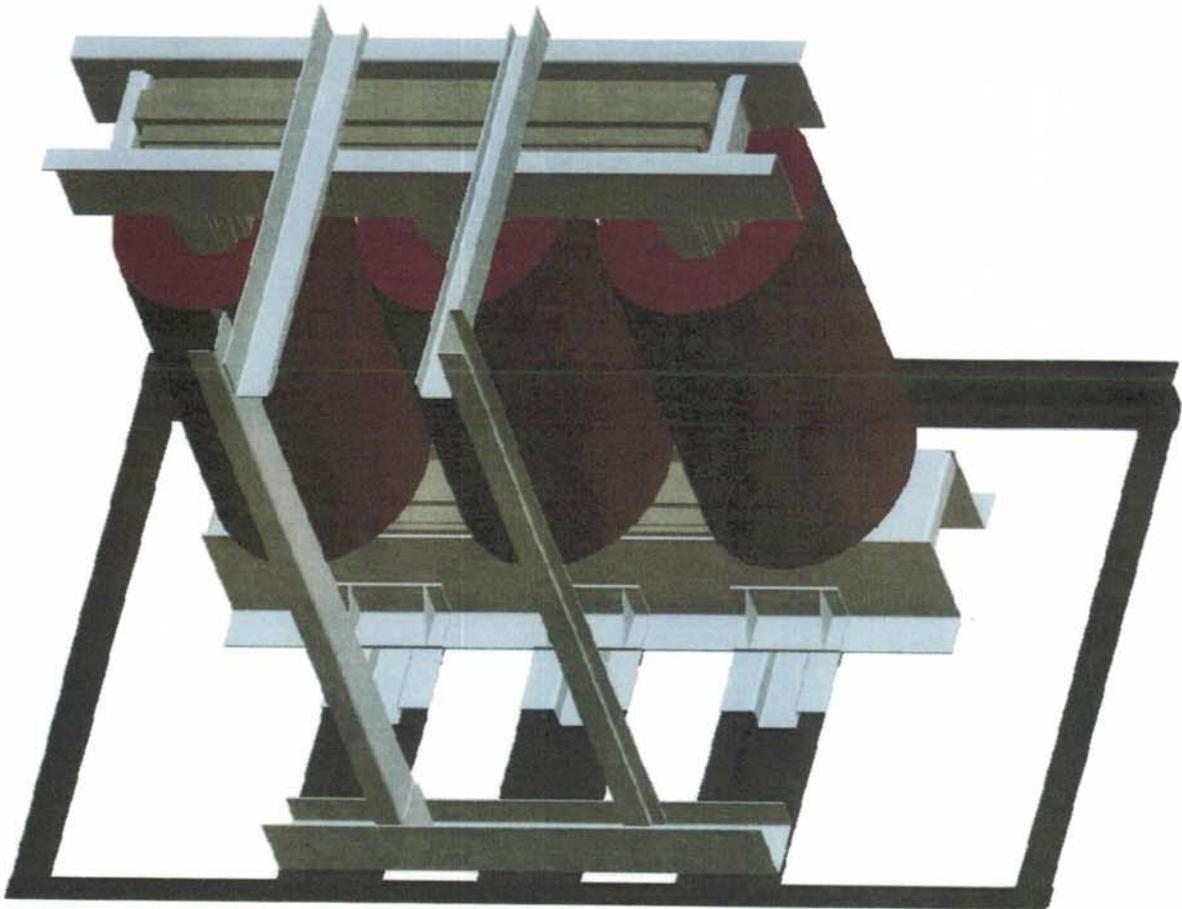
~~Test Level 1 (0.3125 Sp)~~

Two Feet with Core Clamp and Cross Channel Brackets
All clamp, bracket and base material .25" with the exception
Of Core Clamp and Cross Channel Brackets (.375")



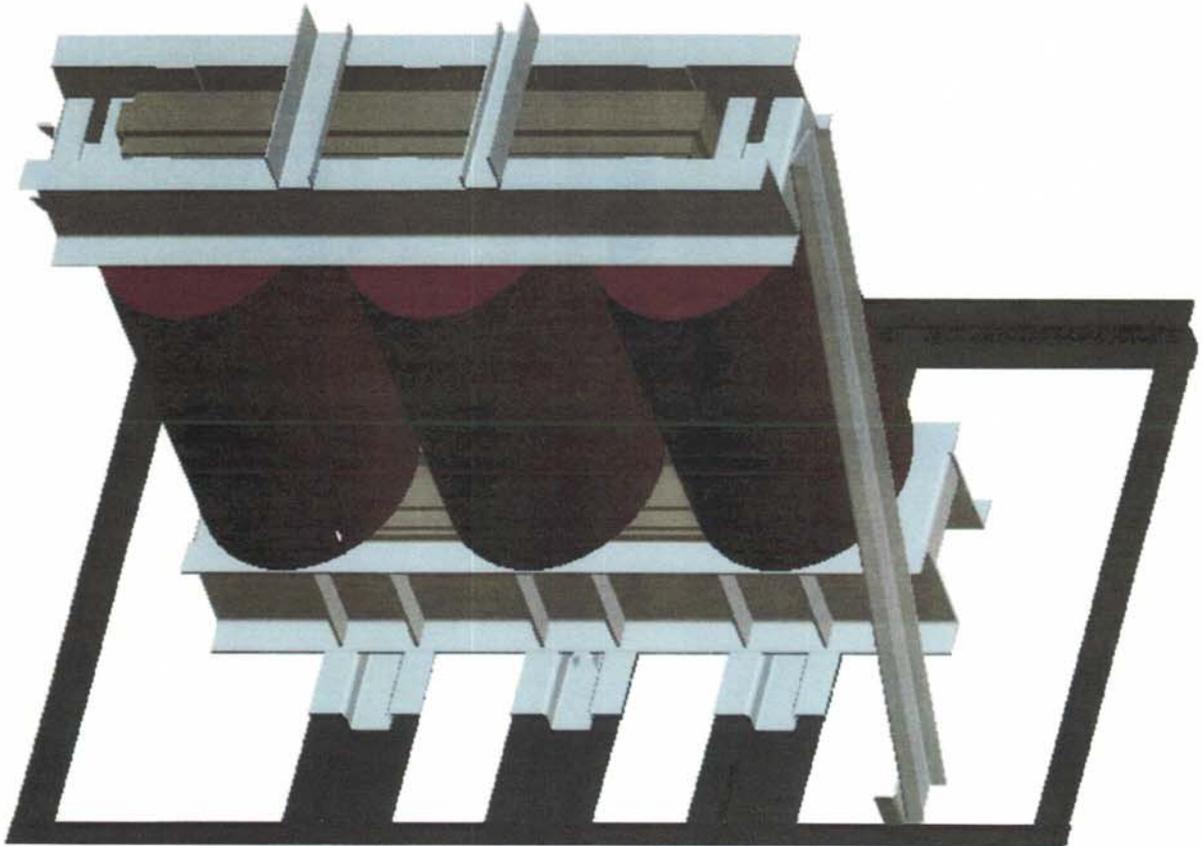
BRACING LEVEL 2
(L2)

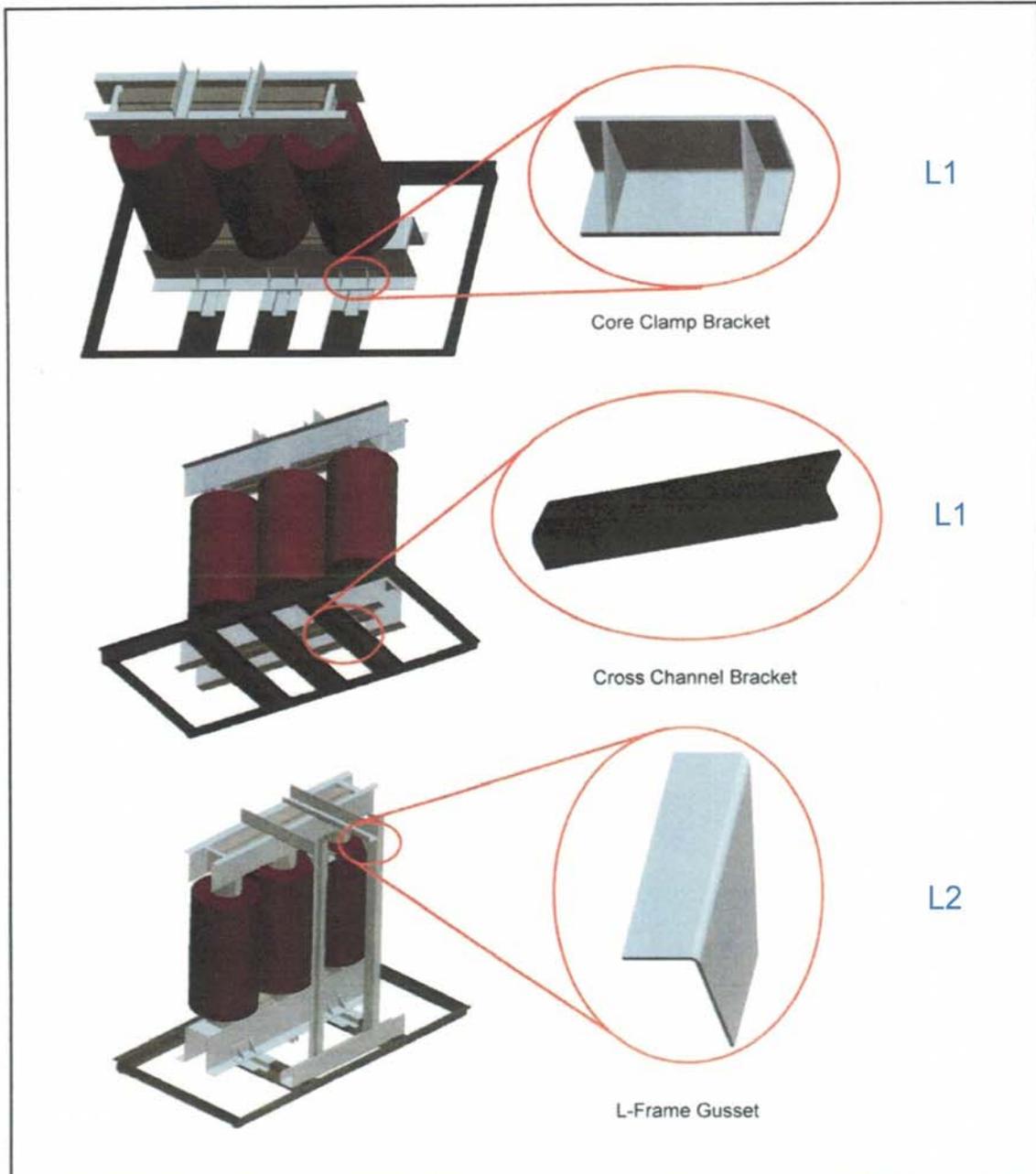
~~Test Level 3 (1,250 Sps)~~
*Three Feet with Core Clamp and Cross Channel Brackets,
L-Frames supports and L-Frame Gussets
All clamp, bracket and base material .375" with the exception
Of L-Frame Gussets(.250")*



BRACING LEVEL 3
(L3)

~~Test Level 4 (2-000-SBS)~~
*Three Feet with Structural Core Clamps, Core Clamp and
Cross Channel Brackets, Diagonal A-Frame Support
All bracket and base material .375"*





OSP APPLICATION - ATTACHMENT #2
 ABB 0-3000 kVA Single-Phase and 3-Phase Dry Type Transformers
 Resonant Frequency Summary

9/9/2010

**ABB 0-30 MVA Single-Phase & 3-Phase Dry Type Transformers
 Resonant Frequency Summary**

Direction	Specimen No. 1 VCC - 25,000 lbs Level 1 Bracing		Specimen No. 1 VCC - 25,000 lbs Level 2 Bracing ¹		Specimen No. 1 VCC - 25,000 lbs Level 3 Bracing ^{2,3}	
	f (Hz)	T (s)	f (Hz)	T (s)	f (Hz)	T (s)
Front-to-Back	1.7	0.59	5.4	0.19	4.5	0.22
Side-to-Side	6.4	0.16	4.3	0.23	5.7	0.18
Vertical	10.0	0.10	9.3	0.11	-	-

- Notes: 1. Designated "Level 3" configuration in test report T55769-1.
 2. Designated "Level 4" or "Level 6" configuration in test report T55769-1.
 3. Vertical resonance not tested for L3.

Direction	Specimen No. 2 OWC - 1,956 lbs Level 1 Bracing		Specimen No. 2 OWC - 1,956 lbs Level 2 Bracing		Specimen No. 2 OWC - 1,956 lbs Level 3 Bracing	
	f (Hz)	T (s)	f (Hz)	T (s)	f (Hz)	T (s)
Front-to-Back	9.1	0.11	9.2	0.11	8.6	0.12
Side-to-Side	16.0	0.06	17.0	0.06	27.0	0.04
Vertical	32.0	0.03	32.0	0.03	32.0	0.03

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