



APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.

OSP -0056-10

Check whether application is: NEW RENEWAL

1.0 MGM Transformer Company Mike Iman
Manufacturer *Manufacturer's Technical Representative*

5701 Smithway Street, City of Commerce, CA 90040

Mailing Address

323-726-0888

Telephone

miman@mgmtransformer.com

E-mail Address

2.0 Transformer Product Family Dry-Type Transformer
Product Name *Product Type*

General Purpose & Unit Substation Transformers

Product model No (List all unique product identification numbers and/or serial numbers)

General Description:

3.0 Tobolski Watkins Engineering, Inc. Derrick A. Watkins, S.E.
Applicant Company Name *Contact Person*

3710 Ruffin Road, San Diego, CA 92123

Mailing Address

858-381-5843

Telephone

dwatkins@tobolskiwatkins.com

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.

Derrick Watkins

Signature of Applicant

1/21/2011

Date

Vice President

Title

Tobolski Watkins Engineering, Inc.

Company Name



Registered Design Professional Preparing the Report

4.0

Tobolski Watkins Engineering Inc.

Company Name

Matthew J. Tobolski, Ph.D, P.E.

Contact Name

C 72806

California License Number

3710 Ruffin Road, San Diego, CA 92123

Mailing Address

858-381-5843

Telephone

mtobolski@tobolskiwatkins.com

E-mail Address

California Licensed Structural Engineer Review and Acceptance of the Report

5.0

Tobolski Watkins Engineering Inc.

Company Name

Derrick A. Watkins, S.E.

Contact Name

S 5257

California License Number

3710 Ruffin Road, San Diego, CA 92123

Mailing Address

858-381-5843

Telephone

mtobolski@tobolskiwatkins.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
Analysis
Experience data
Combination of Testing, Analysis, and/or Experience Data (Please Specify):

Testing Laboratory (if applicable)

8.0

Clark Dynamic Test Laboratory, Inc.

Company Name

J.R. Antenucci

Contact Name

1801 Route 51 South, Building 8, Jefferson Hills, PA 15025

Mailing Address

412-387-1001

Telephone

jrantenucci@clarkdynamic.com

E-mail:

2/13



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 Attachments**
- S_{DS} (Spectral response acceleration at short period) = **See Attachments**
- 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**
- Building period limits (if any) = **None**
- Overall dimensions and weight (or range thereof) = **See Attachment**

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

Design Basis of Equipment or Components (VW) =

- 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 Others (Please Specify): **Attachment A: Product Matrix**

11.0 OSHPD Approval (For Office Use Only)

<p style="text-align: center; margin: 0;">Signature & Date</p> <p style="text-align: center; margin: 0;">Chris Tokas, SHFR</p> <p style="text-align: center; margin: 0;">Name & Title</p>	<p>2/3/2011</p>	<p>December 31, 2016</p> <p style="font-size: small;">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="font-size: small;">Special Seismic Certification Valid Up to</p>

3/13

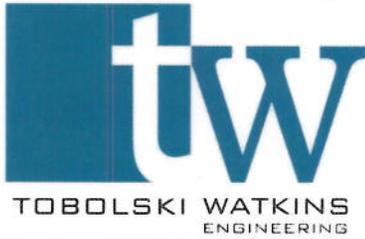


Table 1

Special Seismic Certification Certified Product Matrix

TWEI Project No.: 2010-0110-CO-001

Manufacturer: MGM Transformer Company

Model Line: Unit Substation Transformers

Certified Product Construction Summary:

NEMA 1 & NEMA3R. Painted carbon steel enclosure. Open wound coil construction.

Certified Options Summary:

MGM transformers are delivered to the project site with MGM, GE Energy Industrial Solutions, Eaton, Square D Company / Schneider Electric, Siemens Energy & Automation, or On Line Power nameplates. Manufacturing locations of City of Commerce, CA and Tijuana, Mexico will identify them as MGM transformers. Copper and aluminum windings are included for all items listed below. All items listed below are available as single or three phase transformers.

Certified Mounting Summary:

All equipment is to be non-isolated floor-mounted. Anchorage is to be designed per project SEOR.

Building Code: IBC 2009/CBC 2010 $S_{DS} = 1.93g$ $z/h = 1.0$ $I_p = 1.5$ $a_p = 1.0$ $R_p = 2.5$ $F_p/W_p = 1.39$

Model Line	Model	Dimension (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Unit Substation Transformers	US56	50	56	90	5,000	0.6,2.5,5,8.7,15,25 or 35KV Class 500KVA Max	
	US64	50	64	90	6,000	0.6,2.5,5,8.7,15,25 or 35KV Class 750KVA Max	1A,3B
	US72	50	72	90	7,000	0.6,2.5,5,8.7,15,25 or 35KV Class 1,000KVA Max	
	US80	50	80	90	8,000	0.6,2.5,5,8.7,15,25 or 35KV Class 1,500KVA Max	
	US90	50	90	90	1,000	0.6,2.5,5,8.7,15,25 or 35KV Class 2,000KVA Max	
	US90L	60	90	100			
	US90K	60	90	90			
	US90M	50	90	100			
	US100	60	100	100	12,000	0.6,2.5,5,8.7,15,25 or 35KV Class 3,000KVA Max	
	US100M	60	100	108			
	US108L	60	108	100	14,000	0.6,2.5,5,8.7,15,25 or 35KV Class 3,000KVA Max	2A
US108	60	108	108				

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4/13



Table 3

Special Seismic Certification Product Model Numbering

TWEI Project No.: 2010-0110-CO-001

Manufacturer: MGM Transformer Company

Model Line: General Purpose & Unit Substation Transformers

Description:
Table 3 is meant to illustrate the model numbering scheme for the certified units in order to readily identify those that are within the scope of this certification.

Column 1 Always letter "A"

Column 2 "D" = Aluminum
"C" = Copper

Column 3 "2" = Single Phase
"3" = Three Phase

Column 4 A code that indicates voltage class per the following table:

Voltage Class	
Voltage class code	Voltage class
70	600 V Class
72	2.5 KV Class
74	5 KV Class
76	8.7 KV Class
78	15 KV Class
79	25 KV Class
81	35 KV Class

Column 5 Letter code for kVA rating per the following table:

kVA Rating	
Max. kVA	Letter Codes
15	A-B
30	A-E
50	A-H
75	A-J
112.5	A-L
150	A-N
225	A-Q
300	A-S
500	A-U
750	A-V
1,000	A-W
1,500	A-X
2,000	A-Y
3,000	A-Z

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6/13



Table 3

**Special Seismic Certification
Product Model Numbering**

TWEI Project No.: 2010-0110-CO-001

Manufacturer: MGM Transformer Company

Model Line: General Purpose & Unit Substation Transformers

Description:

Table 3 is meant to illustrate the model numbering scheme for the certified units in order to readily identify those that are within the scope of this certification.

Column 6	Enclosure Size per the following table:			
	Enclosure Size			
	Enclosure	D (in)	W (in)	H (in)
GENERAL PURPOSE ENCLOSURE	GPA	21	14	28
	GPB	26.5	17	32
	GPB+	28.5	20	38.5
	GPC	31.5	21.8	40.5
	GPC+	36.5	21.8	40.5
	GPD	40.5	26.5	51.5
	GPE	50.5	32	66
UNIT SUBSTATION	US56	50	56	90
	US64	50	64	90
	US72	50	72	90
	US80	50	80	90
	US90	50	90	90
	US90L	60	90	100
	US90K	60	90	90
	US90M	50	90	100
	US100	60	100	100
	US100M	60	100	108
	US108	60	108	108
	US108L	60	108	100
	US108M	60	108	120

Notes:

- Please refer to Tables 1 & 2 for a description of available voltage classes and kVA ratings for each enclosure.
- All Transformers certified for copper or aluminum windings.
- All transformers available as single or three phase.

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7/13

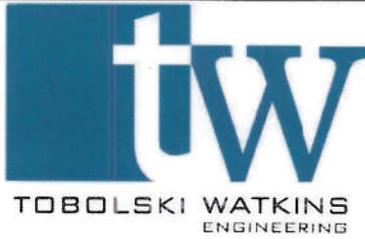


Table 4

**Special Seismic Certification
Alternate Product Model Numbering**

TWEI Project No.: 2010-0110-CO-001

Manufacturer: MGM Transformer Company

Model Line: General Purpose & Unit Substation Transformers

Description:

Table 4 is meant to illustrate an alternate model numbering scheme for the certified units in order to readily identify those that are within the scope of this certification.

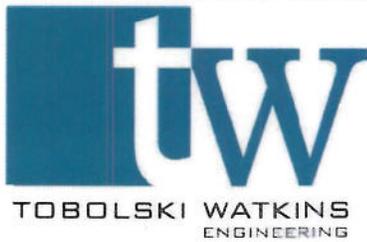
Insulation system	Three phase	Single phase	KVA	Primary or input voltage designation			Taps	Secondary or output voltage designation			Conductor material		Suffix
	T	S		Number	Letter	3 Phase		1 Phase	Letter	3 Phase	1 Phase	Copper 1	
H (220 ^o C)	Tor S	9 to 1500	A	480 Delta	480	1 thru 8	A	480 Delta	480	1 or 2	SH		
			B	208Y/120	120/240		B	208Y/120	120/240				
			C	240 Delta	240/480		C	240 Delta	240/480				
			D	480Y/277	240		D	480Y/277	240				
			E	120 Delta	120		E	120 Delta	120				
			F	600 Delta	600		F	600 Delta	600				
			G	208 Delta	208		G	208 Delta	208				
			H	230 Delta	230/460		H	230 Delta	230/460				
			J	460 Delta	460		J	460 Delta	460				
			K	240/120 4W	-		K	240/120 4W	-				
			L	240Y/139	-		L	240Y/139	-				
			M	380 Delta	-		M	380 Delta	-				
			N	575 Delta	-		N	575 Delta	-				
			P	230Y/133	230/115		P	230Y/133	230/115				
			R		-		R		-				
			T		-		T		-				
			U		-		U		-				
			V		-		V		-				
			W		230		W		230				
			X	440Y/254	-		X	440Y/254	-				
AZ		-	AZ		-								
BZ		-	BZ		-								
CZ		-	CZ		-								
DZ		-	DZ		-								
EZ		-	EZ		-								

Notes:

- Please refer to Tables 1 & 2 for a description of available voltage classes and KVA ratings for each enclosure.
- All Transformers certified for copper or aluminum windings.
- All transformers available as single or three phase.

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8/13



UUT – 1A

**UNIT UNDER TEST (UUT)
Summary Sheet**

TWEI Project No.: 2010-0110-CO-001

Manufacturer: MGM Transformer Company

Model Line: Unit Substation Transformer

Model Number: AC378-V0280

Product Construction Summary:

US 64 Enclosure. NEMA 1. Painted carbon steel enclosure. Open wound coil construction. Assembled in City of Commerce, CA.

Options/Subcomponent Summary:

750 kVA. 15KV class. Copper Windings. 3 phase.

UUT Properties

Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
5,850	50.0	64.0	90.0	6.4	8.6	20.6

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
IBC 2009	ICC-ES AC 156	1.93g	1.0	1.5	3.09g	2.32g	1.29g	0.51g

Test Mounting Details:



Unit is non-isolated floor mounted using (4) 5/8"-11 grade 5 bolts, washers, and lock washers.

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9/13



UUT – 2A

**UNIT UNDER TEST (UUT)
Summary Sheet**

TWEI Project No.: 2010-0110-CO-001

Manufacturer: MGM Transformer Company

Model Line: Unit Substation Transformer

Model Number: AC374-Z0222

Product Construction Summary:

US 108 Enclosure. NEMA 1. Painted carbon steel enclosure. Open wound coil construction. Assembled in City of Commerce, CA.

Options/Subcomponent Summary:

3,000 KVA. 5KV Class. Copper Windings. 3 Phase

UUT Properties

Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
14,000	60.0	108.0	108.0	4.7	46.1	20.6

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
IBC 2009	ICC-ES AC 156	1.93g	1.0	1.5	3.09g	2.32g	1.29g	0.51g

Test Mounting Details:



Unit is non-isolated floor mounted using (4) 3/4"-10 grade 5 bolts, washers, and lock washers.

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10/13



UUT – 1B

**UNIT UNDER TEST (UUT)
Summary Sheet**

TWEI Project No.: 2010-0110-CO-001

Manufacturer: MGM Transformer Company

Model Line: General Purpose Transformer

Model Number: AC370-U0388

Product Construction Summary:

GPE Enclosure. NEMA 3R. Painted carbon steel enclosure. Open wound coil construction. Assembled in City of Commerce, CA.

Options/Subcomponent Summary:

500 KVA. 600V class. Copper Windings. 3 phase.

UUT Properties

Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
3,700	50.5	32	66.0	11.4	8.7	21.5

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
IBC 2009	ICC-ES AC 156	2.00g	1.0	1.5	3.20g	2.40g	1.33g	0.53g

Test Mounting Details:

UUT 1B



Unit is non-isolated floor mounted using (4) 1/2"-13 grade 5 bolts, washers, and lock washers.

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11/13



UUT – 2B

**UNIT UNDER TEST (UUT)
Summary Sheet**

TWEI Project No.: 2010-0110-CO-001

Manufacturer: MGM Transformer Company

Model Line: General Purpose Transformer

Model Number: AD270-K0159

Product Construction Summary:

GPC Enclosure. NEMA 1. Painted carbon steel enclosure. Open wound coil construction. Assembled in City of Commerce, CA.

Options/Subcomponent Summary:

100 kVA. 600V class. Aluminum Windings. Single phase.

UUT Properties

Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
720	31.5	21.75	40.5	14.7	5.9	17.8

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
IBC 2009	.ICC-ES AC 156	2.00g	1.0	1.5	3.20g	2.40g	1.33g	0.53g

Test Mounting Details:

UUT-2B



Unit is non-isolated floor mounted using (4) 1/2"-13 grade 5 bolts, washers, and lock washers.

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12/13



UUT – 3B

**UNIT UNDER TEST (UUT)
Summary Sheet**

TWEI Project No.: 2010-0110-CO-001

Manufacturer: MGM Transformer Company

Model Line: Unit Substation Transformer

Model Number: AD374-Q0224

Product Construction Summary:

US 64 Enclosure. NEMA 3R. Painted carbon steel enclosure. Open wound coil construction. Assembled in City of Commerce, CA.

Options/Subcomponent Summary:

225 kVA. 5KV class. Aluminum Windings. 3 phase.

UUT Properties

Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2,500	50.0	64.0	90.0	12.7	14.2	19.1

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS}	z/h	I _p	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
IBC 2009	ICC-ES AC 156	2.00g	1.0	1.5	3.20g	2.40g	1.33g	0.53g

Test Mounting Details:



Unit is non-isolated floor mounted using (4) 5/8"-11 grade 5 bolts, washers, and lock washers.

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13/13