



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC  
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP – 0399 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type:  New  Renewal

Manufacturer Information

Manufacturer: Howard Industries, Inc.

Manufacturer's Technical Representative: Joey Brown

Mailing Address: P.O. Box 1588 Laurel, MS 39441

Telephone: (601) 422-1408 Email: joeybrown@howard-ind.com

Product Information

Product Name: Horizontal Subsurface, Round Subsurface, Pad Mount, Three Phase Pad Mount, Three Phase UCD

Product Type: Distribution Transformers

Product Model Number: See Attached

(List all unique product identification numbers and/or part numbers)

General Description: Multiple distribution transformer designs that are oil filled and constructed of both carbon and stainless steel tanks with copper wound core and coils, bushings, fuses, and other electrical subcomponents.

Mounting Description: Rigid Floor Mounted

Applicant Information

Applicant Company Name: W.E. Gundy & Associates, Inc.

Contact Person: Travis Soppe, SE

Mailing Address: 250 Bobwhite Ct, Suite 100, Boise, ID 83706

Telephone: (208) 342-5898 Ext. 115 Email: tsoppe@wegai.com

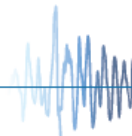
I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

Signature of Applicant:  Date: 5/19/14

Title: Vice President Company Name: W.E. Gundy & Associates, Inc.

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY  
OSH-FD-759 (REV 6/14/13)



osHPD

"Equitable Healthcare Accessibility for California"  
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**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)**

Company Name: W.E. Gundy & Associates, Inc.

Name: Travis Soppe, SE California License Number: S6115

Mailing Address: 250 Bobwhite Ct, Suite 100, Boise, ID 83706

Telephone: (208) 342-5898 Ext. 115 Email: tsoppe@wegai.com

**Supports and Attachments Preapproval**

- Supports and attachments are preapproved under OPM- \_\_\_\_\_  
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- Supports and attachments are not preapproved

**Certification Method**

- Testing in accordance with:  ICC-ES AC156
- Other (Please Specify): \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

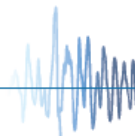
**Testing Laboratory**

Company Name: Clark Dynamic Test Laboratory

Contact Name: J.R. Antenucci, Test Manager

Mailing Address: 1801 Route 51 South, Jefferson Hills, PA 15025

Telephone: (412) 387-1004 Email: jrantenucci@clarktesting.com





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
FACILITIES DEVELOPMENT DIVISION**

**Seismic Parameters**

Design in accordance with ASCE 7-10 Chapter 13:  Yes  No

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.125

$S_{DS}$  (Design spectral response acceleration at short period, g) = 2.50

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

$R_p$  (Equipment or component response modification factor) = 2.5

$\Omega_0$  (System overstrength factor) = 2.5

$I_p$  (Importance factor) = 1.5

$z/h$  (Height factor ratio) = 0.0

Equipment or Component Natural Frequencies (Hz) = See Attachments

Overall dimensions and weight (or range thereof) = See Attachments

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15:  Yes  No

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

$S_{DS}$  (Design spectral response acceleration at short period, g) = \_\_\_\_\_

$S_{D1}$  (Design spectral response acceleration at 1 second period, g) = \_\_\_\_\_

$R$  (Response modification coefficient) = \_\_\_\_\_

$\Omega_0$  (System overstrength factor) = \_\_\_\_\_

$C_d$  (Deflection amplification factor) = \_\_\_\_\_

$I_p$  (Importance factor) = 1.5

Height to Center of Gravity above base = \_\_\_\_\_

Equipment or Component Natural Frequencies (Hz) = \_\_\_\_\_

Overall dimensions and weight (or range thereof) = \_\_\_\_\_


Tank(s) designed in accordance with ASME BPVC, 2010:  Yes  No

**List of Attachments Supporting Special Seismic Certification**

Test Report(s)  Drawings  Calculations  Manufacturer's Catalog

Other(s) (Please Specify): \_\_\_\_\_

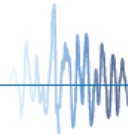
**OSHDP Approval (For Office Use Only) – Approval Expires on December 31, 2019**

Signature:  Date: December 5, 2014

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to :  $S_{DS}$  (g) = 2.50  $z/h$  = 1

Condition of Approval (if applicable): \_\_\_\_\_



**HOWARD INDUSTRIES**  
**HORIZONTAL SUBSURFACE DISTRIBUTION TRANSFORMER**  
**CERTIFIED PRODUCT LINE MATRIX**



Identification Number	kVA Rating	High Voltage (kV) Range	Low Voltage (kV) Range	Width (in)	Depth (in)	Height (in)	Max Weight (lbs)	Representative UUT	
Single Phase	40 - 15kVA	15	12.0 - 20.8	0.24	23.5	44.0	31.5	1174	extrapolated
	40 - 25kVA	25	12.0 - 20.8	0.24	23.5	44.0	31.5	1281	UUT-1
	40 - 37.5kVA	37.5	12.0 - 20.8	0.24	23.0	44.0	31.5	1316	interpolated
	40 - 50kVA	50	12.0 - 20.8	0.24	23.0	44.0	31.5	1418	interpolated
	40 - 75kVA	75	12.0 - 20.8	0.24	23.0	44.0	31.5	1579	interpolated
	40 - 100kVA	100	12.0 - 20.8	0.24	23.5	44.0	31.5	1710	interpolated
	40 - 167kVA	167	12.0 - 20.8	0.24	23.5	44.0	41.5	2257	interpolated
Duplex	80 - 25/10	25/10	12.0 - 20.8	0.24	24.0	56.0	27.5	1555	interpolated
	80 - 50/10	50/10	12.0 - 20.8	0.24	24.0	56.0	31.5	1658	interpolated
	80 - 75/15	75/15	12.0 - 20.8	0.24	24.0	56.0	31.5	1801	interpolated
	80 - 100/25	100/25	12.0 - 20.8	0.24	30.0	56.0	37.5	2463	interpolated
	80 - 100/50	100/50	12.0 - 20.8	0.24	30.0	56.0	37.5	2663	UUT-2

Notes:

- 1) The duplex transformers have a tank that is constructed similar (shape, sizes, wall thickness, material, anchorage) to that of the single phase transformer with two separate core-coil assemblies mounted within the tank instead of a single core-coil assembly.
- 2) Core-coil assemblies are constructed of aluminum windings.
- 3) Welded Tanks are constructed of stainless steel.

**HOWARD INDUSTRIES**  
**SINGLE PHASE ROUND SUBSURFACE DISTRIBUTION TRANSFORMER**  
**CERTIFIED PRODUCT LINE MATRIX**



Identification Number	kVA Rating	High Voltage (kV) Range	Low Voltage (kV) Range	Diameter (in)	Height (in)	Max Weight (lbs)	Representative UUT
48/49 - 5kVA	5	2.4 - 20.78	.120 - .480	17-29	24.5-45.5	770	extrapolated
48/49 - 10kVA	10	2.4 - 20.78	.120 - .480	17-29	24.5-45.5	842	extrapolated
48/49 - 15kVA	15	2.4 - 20.78	.120 - .480	17-29	28-45.5	914	extrapolated
48/49 - 25kVA	25	2.4 - 20.78	.120 - .480	17-29	28-45.5	1057	UUT-3
48/49 - 37.5kVA	37.5	2.4 - 20.78	.120 - .480	17-29	33.5-37.5	866	interpolated
48/49 - 50kVA	50	2.4 - 20.78	.120 - .480	17-36	28-47.5	1410	interpolated
48/49 - 75kVA	75	2.4 - 20.78	.120 - .480	19.25-39	29.5-47.5	1798	interpolated
48/49 - 100kVA	100	2.4 - 20.78	.120 - .480	20.5-39	37.5-47.5	1804	interpolated
48/49 - 167kVA	167	2.4 - 20.78	.120 - .480	22-39	37.5-47.5	2948	interpolated
48/49 - 250kVA	250	2.4 - 20.78	.120 - .480	27-39	47.5	3516	UUT-4

Notes:  
 1) Core-coil assemblies are constructed of aluminum windings.  
 2) Welded Tanks are constructed of stainless steel.

**HOWARD INDUSTRIES**  
**PAD MOUNT DISTRIBUTION TRANSFORMER**  
**CERTIFIED PRODUCT LINE MATRIX**



ID/Catalog Number	kVA Rating	High Voltage (kV) Range	Low Voltage (kV) Range	Width (in)	Depth (in)	Height (in)	Max Weight (lbs)	Representative UUT	
Single Phase Dead Front	61/62/63/65/66/69/71/72/73/75/76 - 5kVA	5	2.4 - 20.78	0.12 - 0.48	23-42	28.5-43.75	24-35	1037	extrapolated
	61/62/63/65/66/69/71/72/73/75/76 - 10kVA	10	2.4 - 20.78	0.12 - 0.48	23-42	28.5-50	24-40	1147	extrapolated
	61/62/63/65/66/69/71/72/73/75/76 - 15kVA	15	2.4 - 20.78	0.12 - 0.48	23-42	28.5-53.75	24-42	1687	extrapolated
	61/62/63/65/66/69/71/72/73/75/76 - 25kVA	25	2.4 - 20.78	0.12 - 0.48	23-44	28.5-61	24-42	2240	UUT-5
	61/62/63/65/66/69/71/72/73/75/76 - 37.5kVA	37.5	2.4 - 20.78	0.12 - 0.48	23-44	28.5-59	24-42	1741	interpolated
	61/62/63/65/66/69/71/72/73/75/76 - 50kVA	50	2.4 - 20.78	0.12 - 0.48	23-45.25	28.5-59	24-42	2247	interpolated
	61/62/63/65/66/69/71/72/73/75/76 - 75kVA	75	2.4 - 20.78	0.12 - 0.48	30-45.25	35.75-59	24-42	2157	interpolated
	61/62/63/65/66/69/71/72/73/75/76 - 100kVA	100	2.4 - 20.78	0.12 - 0.48	30-45.25	35.75-59	24-42	2357	interpolated
	61/62/63/65/66/69/71/72/73/75/76 - 167kVA	167	2.4 - 20.78	0.12 - 0.48	30-45.25	41.25-59	24-42	3606	interpolated
61/62/63/65/66/69/71/72/73/75/76 - 250kVA	250	2.4 - 20.78	0.12 - 0.48	30-45.25	41.25-70.25	31.5-42	3344	interpolated	
Single Phase Live Front	64/74 - 25kVA	25	2.4 - 20.78	0.12 - 0.48	33-38	31.5-53.75	35	927	interpolated
	64/74 - 37.5kVA	37.5	2.4 - 20.78	0.12 - 0.48	36	52.75	35	1061	interpolated
	64/74 - 50kVA	50	2.4 - 20.78	0.12 - 0.48	36-44	32.75-62	31.5-40	1451	interpolated
	64/74 - 75kVA	75	2.4 - 20.78	0.12 - 0.48	36-42	35.75-67.75	35-40	2204	interpolated
	64/74 - 100kVA	100	2.4 - 20.78	0.12 - 0.48	36-44	35.75-68	32-40	1903	interpolated
	64/74 - 167kVA	167	2.4 - 20.78	0.12 - 0.48	36-45.25	37.75-68	32-42	2668	interpolated
Duplex - Dead Front	67 - 25/10	25/10	2.4 - 20.78	0.12 - 0.48	44-45.25	41.75-55.75	42	2400	interpolated
	67 - 25/15	25/15	2.4 - 20.78	0.12 - 0.48	44	53.75	42	2378	interpolated
	67 - 25/25	25/25	2.4 - 20.78	0.12 - 0.48	44	47.75	42	1789	interpolated
	67 - 50/10	50/10	2.4 - 20.78	0.12 - 0.48	44-45.25	41.75-55.75	42	2810	interpolated
	67 - 75/25	75/25	2.4 - 20.78	0.12 - 0.48	44	53.75	42	2419	interpolated
	67 - 75/50	75/50	2.4 - 20.78	0.12 - 0.48	44	51.25	42	2388	interpolated
	67 - 75/75	75/75	2.4 - 20.78	0.12 - 0.48	44	51.25	42	2698	interpolated
	67 - 100/25	100/25	2.4 - 20.78	0.12 - 0.48	44-45.25	45.75-58	42	3332	interpolated
	67 - 100/50	100/50	2.4 - 20.78	0.12 - 0.48	45.25	45.75-58	42	3490	UUT-6

**HOWARD INDUSTRIES**  
**PAD MOUNT DISTRIBUTION TRANSFORMER**  
**CERTIFIED PRODUCT LINE MATRIX**



ID/Catalog Number		kVA Rating	High Voltage (kV) Range	Low Voltage (kV) Range	Width (in)	Depth (in)	Height (in)	Max Weight (lbs)	Representative UUT
Space Saver	97 - 15kVA	15	4.16 - 34.5	0.12 - 0.48	45.3	47.75	42	2000	interpolated
	97 - 25kVA	25	4.16 - 34.5	0.12 - 0.48	45.3	47.75	42	2500	interpolated
	97 - 45kVA	45	4.16 - 24.94	0.208 - 0.480	45.3	47.75	42	2900	interpolated
	97 - 75kVA	75	4.16 - 24.94	0.208 - 0.480	45.3	47.75	42	3200	interpolated
	97 - 112.5kVA	112.5	4.16 - 24.94	0.208 - 0.480	45.3	47.75	42	3300	interpolated
	97 - 150kVA	150	4.16 - 24.94	0.208 - 0.480	45.3	47.75	42	3400	UUT-7

Notes:

- 1) The duplex and space saver transformers have a tank that is constructed similar (shape, sizes, wall thickness, material, anchorage) to that of the single phase transformer with two/three separate core-coil assemblies mounted within the tank instead of a single core-coil assembly.
- 2) The tank construction of the dead and live front transformers are similar (shape, sizes, wall thickness, material, anchorage). The difference between the two transformers is the connection of leads and whether or not they are insulated (dead) or open (live) in the front space of the transformer.
- 3) Core-coil assemblies are constructed of aluminum windings.
- 4) Welded tanks are constructed of mild and stainless rolled steel.

**HOWARD INDUSTRIES**  
**THREE PHASE PAD MOUNT DISTRIBUTION TRANSFORMER**  
**CERTIFIED PRODUCT LINE MATRIX**



ID/Catalog Number	kVA Rating	High Voltage (kV) Range	Low Voltage (kV) Range	Width (in)	Depth (in)	Height (in)	Max Weight (lbs)	Representative UUT	
Dead Front Single/Dual Voltage	91/95 - 45kVA	45	4.16 - 34.5	0.208 - 0.480	48 - 84	42 - 64	46 - 76	3800	UUT-8
	91/95 - 75kVA	75	4.16 - 34.5	0.208 - 0.480	48 - 84	42 - 65	46 - 76	4100	interpolated
	91/95 - 112.5kVA	112.5	4.16 - 34.5	0.208 - 0.480	48 - 85	43 - 66	47 - 77	4600	interpolated
	91/95 - 150kVA	150	4.16 - 34.5	0.208 - 0.480	48 - 85	43 - 66	47 - 77	5000	interpolated
	91/95 - 225kVA	225	4.16 - 34.5	0.208 - 0.480	50 - 86	45 - 68	48 - 78	5700	interpolated
	91/95 - 300kVA	300	4.16 - 34.5	0.208 - 0.480	50 - 86	46 - 69	48 - 78	6400	interpolated
	91/95 - 500kVA	500	4.16 - 34.5	0.208 - 0.480	52 - 88	49 - 73	50 - 80	8300	interpolated
	91/95 - 750kVA	750	4.16 - 34.5	0.208 - 4.8	54 - 91	52 - 78	52 - 82	10100	interpolated
	91/95 - 1000kVA	1000	4.16 - 34.5	0.208 - 4.8	56 - 93	55 - 84	54 - 84	12000	interpolated
	91/95 - 1500kVA	1500	4.16 - 34.5	0.208 - 4.8	60 - 98	62 - 93	58 - 87	16000	interpolated
	91/95 - 2000kVA	2000	4.16 - 34.5	0.480 - 4.8	64 - 103	69 - 103	62 - 91	22000	interpolated
91/95 - 2500kVA	2500	4.16 - 34.5	0.480 - 4.8	68 - 108	76 - 110	66 - 94	22000	interpolated	
Live Front Single/Dual Voltage	93/96 - 75kVA	75	4.16 - 34.5	0.208 - 0.480	46 - 82	43 - 60	48 - 68	3400	interpolated
	93/96 - 112.5kVA	112.5	4.16 - 34.5	0.208 - 0.480	46 - 82	44 - 62	48 - 70	3900	interpolated
	93/96 - 150kVA	150	4.16 - 34.5	0.208 - 0.480	46 - 82	44 - 64	49 - 74	4400	interpolated
	93/96 - 225kVA	225	4.16 - 34.5	0.208 - 0.480	50 - 83	45 - 68	50 - 77	5100	interpolated
	93/96 - 300kVA	300	4.16 - 34.5	0.208 - 0.480	50 - 83	47 - 70	50 - 80	5800	interpolated
	93/96 - 500kVA	500	4.16 - 34.5	0.208 - 0.480	52 - 84	51 - 75	51 - 83	7300	interpolated
	93/96 - 750kVA	750	4.16 - 34.5	0.208 - 4.8	54 - 85	55 - 80	53 - 86	8800	interpolated
	93/96 - 1000kVA	1000	4.16 - 34.5	0.208 - 4.8	56 - 86	59 - 85	55 - 89	10500	interpolated
	93/96 - 1500kVA	1500	4.16 - 34.5	0.208 - 4.8	61 - 88	68 - 95	59 - 96	14000	interpolated
	93/96 - 2000kVA	2000	4.16 - 34.5	0.480 - 4.8	65 - 90	76 - 99	62 - 98	16800	interpolated
93/96 - 2500kVA	2500	4.16 - 34.5	0.480 - 4.8	70 - 92	85 - 104	66 - 100	20000	UUT-9	

Notes:

- 1) The tank construction of the dead and live front transformers are similar (shape, sizes, wall thickness, material, anchorage). The difference is the connection of leads and if they are insulated (dead) or not (live) in the front space of the transformer.
- 2) Core-coil assemblies are constructed of aluminum windings.
- 3) Welded Tanks are constructed of mild cold rolled steel.



**HOWARD INDUSTRIES  
THREE PHASE UCD DISTRIBUTION TRANSFORMER  
CERTIFIED PRODUCT LINE MATRIX**



Identification Number	kVA Rating	High Voltage (kV) Range	Low Voltage (kV) Range	Width (in)	Depth (in)	Height (in)	Max Weight (lbs)	Representative UUT
98 - 150	150	12.0 - 20.87	.208 - .480	71 - 75	33 - 37	51 - 60	4400	UUT-10
98 - 300	300	12.0 - 20.87	.208 - .480	71 - 75	33 - 37	56 - 62	5300	interpolated
98 - 750	750	12.0 - 20.87	.208 - .480	75 - 79	34 - 39	71 - 80	9500	interpolated
98 - 1000	1000	12.0 - 20.87	.208 - .480	77 - 82	34 - 39	76 - 82	9500	UUT-11

Notes:  
 1) Core-coil assemblies are constructed of aluminum windings.  
 2) Welded Tanks are constructed of stainless steel.

**HOWARD INDUSTRIES  
HORIZONTAL SUBSURFACE DISTRIBUTION TRANSFORMER  
CERTIFIED SUBCOMPONENT MATRIX**



Identification Number	Manufacturer	Description	Anchorage	Width (in) Diameter	Depth (in)	Weight (lbs)	Representative UUT
<b>HV Bushings</b>							
702233-51	Central Maloney	200 Amp 150kV BIL HV Bushing Well	Weld-in	3.7	11.3	3.5	UUT-1 / UUT-2
K1601-PC-T1	Elastimold	200 Amp 125kV BIL HV Bushing Well	Weld-in	3.6	11.3	3.0	UUT-1 / UUT-2
<b>LV Bushings</b>							
702811-50	Central Maloney	30kV BIL 1/2" LV Bushing (Weld-in)	Weld-in	3.3	7.0	1.5	UUT-1
702831-50	Central Maloney	30kV BIL 1" LV Bushing (Weld-in)	Weld-in	3.5	7.8	3.5	UUT-2
<b>Non Load Break Switches</b>							
2237932C53M	Cooper Power	150 Amp 125kV Series Multiple Switch	Nut Mount	6.8	12.0	2.0	UUT-1/UUT-2
<b>Load Break Switches</b>							
LS2W338H3S1B	Cooper Power	300 Amp 200kV BIL 3 Deck Load Break Switch	-	8.3	16	10	UUT-1 / UUT-2
<b>Fuses</b>							
ABB592B581G07	ABB	Weaklink Fuse	Nut Mount	0.75	16	1	UUT-2
<b>Breakers</b>							
7561ZD9699	Ermco	Low Voltage Circuit Breakers	Bolt	6.00	9.8	10.0	UUT-2
MX2BN1MDE03	Cooper Power	High Voltage Circuit Breakers (Magnex)	Nut Mount	9.8	12.6	5.0	UUT-1

Notes:  
1)

**HOWARD INDUSTRIES**  
**SINGLE PHASE ROUND SUBSURFACE DISTRIBUTION TRANSFORMER**  
**CERTIFIED SUBCOMPONENT MATRIX**



Identification Number	Manufacturer	Description	Anchorage	Width (in) Diameter	Depth (in)	Weight (lbs)	Representative UUT
<b>HV Bushings</b>							
702233-51	Central Maloney	200 Amp 150kV BIL HV Bushing Well	Weld-in	3.7	11.3	3.5	UUT-3 / UUT-4
K1601-PC-T1	Elastimold	200 Amp 125kV BIL HV Bushing Well	Weld-in	3.6	11.3	3.0	UUT-3 / UUT-4
<b>LV Bushings</b>							
702811-50	Central Maloney	30kV BIL 1/2" LV Bushing (Weld-in)	Weld-in	3.3	7.0	1.5	UUT-3
702833-50	Central Maloney	30kV BIL 1" LV Bushing (Weld-in)	Weld-in	3.5	7.8	3.5	UUT-4
<b>Non Load Break Switches</b>							
2237932C53M	Cooper Power	150 Amp 125kV Series Multiple Switch	Nut Mount	6.8	12.0	2.0	UUT-3
<b>Load Break Switches</b>							
70341162	Central Maloney	300 Amp 150kV BIL 1 Deck Load Break Switch	Weld-in	7.5	14.0	5.5	UUT-4
<b>Fuses</b>							
HTDS242100	Hi-Tech	Current Limiting Fuse	Hose Clamp	2.2	16.5	4.8	UUT-4
ABB592B581G03	ABB	Weaklink Fuse	Nut Mount	0.8	3.5	1.0	UUT-3
<b>Breakers</b>							
7561ZM2799	Ermco	Low Voltage Circuit Breakers	Bolt	4.75	6.0	4.5	UUT-3

Notes:

**HOWARD INDUSTRIES  
PAD MOUNT DISTRIBUTION TRANSFORMER  
CERTIFIED SUBCOMPONENT MATRIX**



Identification Number	Manufacturer	Description	Anchorage	Width (in) Diameter	Depth (in)	Weight (lbs)	Representative UUT
<b>HV Bushings</b>							
2638372C01	Cooper Power	200 Amp 125kV BIL HV Bushing Well	Clamp	3.6	4.6	2.0	UUT-5/UUT-6/UUT-7
701918-52	Central Maloney	200 Amp 150kV BIL HV Bushing Well	Clamp	3.8	4.5	2.0	UUT-5/UUT-6/UUT-7
0066-100272-400	Howard Industries	200 Amp 150kV BIL HV Bushing Well	Clamp	3.6	4.6	2.0	UUT-5/UUT-6/UUT-7
<b>LV Bushings</b>							
0061-100389-320	Howard Industries	30kV BIL 1" LV Bushing (Clamp)	Clamp	3.4	7.2	3.0	UUT-5/UUT-6/UUT-7
<b>Non Load Break Switches</b>							
2237501C11	Cooper Power	50 Amp 125kV Series Multiple Switch	Nut Mount	4.2	3.4	1.0	UUT-5/UUT-6/UUT-7
<b>Load Break Switches</b>							
70341663	Central Maloney	300 Amp 150kV BIL 1 Deck Load Break Switch	Nut Mount	7.5	10.6	6.0	UUT-7
70342662	Central Maloney	300 Amp 150kV BIL 2 Deck Load Break Switch	Nut Mount	7.5	11.5	7.0	UUT-5
70343669	Central Maloney	300 Amp 150kV BIL 3 Deck Load Break Switch	Nut Mount	7.5	15.5	8.0	UUT-6
<b>Fuses</b>							
4000358C03M	Cooper Power	Bayonet Fuse Links	-	0.4	3.9	0.5	UUT-5
4000358C05M	Cooper Power	Bayonet Fuse Links	-	0.4	3.9	0.5	interpolated
4000358C08M	Cooper Power	Bayonet Fuse Links	-	0.4	3.9	0.5	UUT-6
4000358C10M	Cooper Power	Bayonet Fuse Links	-	0.4	3.9	0.5	UUT-7
HTSS240030	Hi-Tech	Partial Range Current Limiting Fuse	Hose Clamp	2.2	9.2	2.8	UUT-5
HTSS240040	Hi-Tech	Partial Range Current Limiting Fuse	Hose Clamp	2.2	9.2	2.8	interpolated
HTSS240050	Hi-Tech	Partial Range Current Limiting Fuse	Hose Clamp	2.2	9.2	2.8	interpolated
HTSS240065	Hi-Tech	Partial Range Current Limiting Fuse	Hose Clamp	2.2	12.1	3.8	interpolated
HTSS242080	Hi-Tech	Partial Range Current Limiting Fuse	Hose Clamp	2.2	12.1	3.8	UUT-6
HTSS242100	Hi-Tech	Partial Range Current Limiting Fuse	Hose Clamp	2.2	12.1	3.8	UUT-7

Notes:

**HOWARD INDUSTRIES  
THREE PHASE PAD MOUNT DISTRIBUTION TRANSFORMER  
CERTIFIED SUBCOMPONENT MATRIX**



Identification Number	Manufacturer	Description	Anchorage	Width (in) Diameter	Depth (in)	Weight (lbs)	Representative UUT
<b>HV Bushings</b>							
702212-82	Central Moloney	200 Amp 150 BIL Bushing Well	Bolted Clamp	3.6	4.3	2	UUT-8
701918-52	Central Moloney	200 Amp 150 BIL Bushing Well	Bolted Clamp	3.8	4.5	2	UUT-8
702611-55	Central Moloney	600 Amp 125 BIL Integrated Bushing	Bolted Clamp	3.8	8.8	3	UUT-9
702612-55	Central Moloney	600 Amp 150 BIL Integrated Bushing	Bolted Clamp	3.8	10	4	UUT-9
2603973B02T	Cooper Power	200 Amp 125 BIL Bushing Well	Bolted Clamp	3.4	4.6	2	UUT-8
2638372C01	Cooper Power	200 Amp 125 BIL Bushing Well	Bolted Clamp	3.6	4.6	2	UUT-8
AS1422-001	HJ	125 Amp 95 BIL 7/16" Eye Bolt Porcelain Bushing	Bolted Clamp	3.7	11.8	7	UUT-9
AS1421-001	HJ	125 Amp 125 BIL 7/16" Eye Bolt Porcelain Bushing	Bolted Clamp	3.7	12.7	7	interpolated
AS1527-011	HJ	307 Amp 95 BIL 6-Hole Spade Porcelain Bushing	Bolted Clamp	3.7	17.5	10	UUT-9
0066-100272-400	Howard Industries	200 Amp 150 BIL Bushing Well	Bolted Clamp	4.6	3.6	2	UUT-8
0066-100272-451	Howard Industries	200 Amp 150 BIL Bushing Well	Bolted Clamp	4.6	3.6	2	UUT-8
36A0002110	Warco	95 BIL Porcelain Bushing	Bolted Clamp	3.3	8.6	4	UUT-9
38A003007E	Warco	125 BIL 7/16" Eye Bolt Porcelain Bushing	Bolted Clamp	3.3	17.5	8	interpolated
38A3224-3E	Warco	110 Amp 125 BIL 2-Hole Spade Porcelain Bushing	Bolted Clamp	3.3	21	10	interpolated
99A0269CHI	Warco	294 Amp 200 BIL 4-Hole Spade Porcelain Bushing	Bolted Clamp	3.5	34.4	18	UUT-9
<b>LV Bushings</b>							
720001-58	Central Moloney	Tri-Clamp Bushing, 1" Stud, Spade Inside	Bolted	3.5	6.6	3	UUT-8
701333-52	Central Moloney	1500 Amp 30 BIL 1" Stud Molded Tri-Clamp Bushing	Bolted	3.5	7.3	3	interpolated
701315-61	Central Moloney	600 Amp 30 BIL 5/8" Stud Molded Tri-Clamp Bushing	Bolted	3.5	7.5	3	interpolated
701334-82	Central Moloney	1500 Amp 30 BIL 1" Stud Molded Tri-Clamp Bushing	Bolted	3.5	7.5	3	UUT-8

**HOWARD INDUSTRIES**  
**THREE PHASE PAD MOUNT DISTRIBUTION TRANSFORMER**  
**CERTIFIED SUBCOMPONENT MATRIX**



Identification Number	Manufacturer	Description	Anchorage	Width (in) Diameter	Depth (in)	Weight (lbs)	Representative UUT
2690286D06P	Cooper Power	600 Amp 30 BIL 5/8" Stud Molded Tri-Clamp Bushing	Bolted	3.5	6.9	3	UUT-8
2690286D08	Cooper Power	1400 Amp 30 BIL 1" Stud Molded Tri-Clamp Bushing	Bolted	3.5	7.1	3	UUT-9
2690476D21	Cooper Power	3010 Amp 45 BIL 6-Hole Molded Spade Bushing	Bolted Clamp	5.3	17.6	6	UUT-9
2690476D22	Cooper Power	3010 Amp 45 BIL 8-Hole Molded Spade Bushing	Bolted Clamp	5.3	19.3	6.5	interpolated
2690476D23	Cooper Power	3010 Amp 45 BIL 10-Hole Molded Spade Bushing	Bolted Clamp	5.3	21.1	7	interpolated
2690130D13	Cooper Power	4515 Amp 45 BIL 16-Hole Molded Spade Bushing	Bolted Clamp	5.3	28	24.5	UUT-9
10-507-000 0A E01T	EPC / HJ	1600 Amp 30 BIL 4-Hole Molded Spade Bushing	Bolted Clamp	3.5	11.63	14.5	UUT-9
10-504-101E01T-01	EPC / HJ	3010 Amp 45 BIL 6-Hole Molded Spade Bushing	Bolted Clamp	4	17.6	6	interpolated
10-504-102E01T-01	EPC / HJ	3010 Amp 45 BIL 8-Hole Molded Spade Bushing	Bolted Clamp	4	19.3	6.5	interpolated
10-504-103E01T-01	EPC / HJ	3010 Amp 45 BIL 10-Hole Molded Spade Bushing	Bolted Clamp	4	21.1	7	interpolated
10-507-210 0A E01T	EPC / HJ	3500 Amp 30 BIL 22-Hole Molded Spade Bushing	Bolted Clamp	4.5	31	29	UUT-9
0061-100389-300	Howard Industries	30 BIL 5/8" Stud Molded Tri-Clamp Bushing	Bolted	3.4	7.2	3	UUT-8
0061-100389-320	Howard Industries	30 BIL 1" Stud Molded Tri-Clamp Bushing	Bolted	3.4	7.2	3	interpolated
0061-100389-330	Howard Industries	30 BIL 1" Stud Molded Tri-Clamp Bushing	Bolted	3.4	6.8	3	UUT-8
<b>Non Loadbreak Switches</b>							
2237264C51M	Cooper Power	125 BIL 2-Deck Series Multiple Switch	Nut Mount	6	5.6	2	UUT-9
2237403B56M	Cooper Power	150 BIL 6-Deck Series Multiple Switch	Nut Mount	6	16.1	4	UUT-8
2237500C35	Cooper Power	100 Amp 3-Deck Tap Changer	Nut Mount	4	8.4	2	UUT-8
2237471C16ZM	Cooper Power	150 Amp 3-Deck Tap Changer	Nut Mount	5.6	9.1	2	interpolated
2237179C02M	Cooper Power	300 Amp 3-Deck Tap Changer	Nut Mount	6	9.6	9	UUT-9

**HOWARD INDUSTRIES  
THREE PHASE PAD MOUNT DISTRIBUTION TRANSFORMER  
CERTIFIED SUBCOMPONENT MATRIX**



Identification Number	Manufacturer	Description	Anchorage	Width (in) Diameter	Depth (in)	Weight (lbs)	Representative UUT
<b>Loadbreak Switches</b>							
703436-68	Central Moloney	300 Amp 150 BIL 3 Deck Loadbreak Switch	Nut Mount	7.5	19	10	UUT-8
703436-69	Central Moloney	300 Amp 150 BIL 3 Deck Loadbreak Switch	Nut Mount	7.5	19	10	same as -68
LS2R338H3N1A	Cooper Power	300 Amp 150 BIL 3 Deck Loadbreak Switch	Nut Mount	8.3	15.3	11	UUT-9
LS4BH3T12B	Cooper Power	200-600 Amp 3 Deck 4 Position Loadbreak Switch	Nut Mount	8.3	16.2	21	UUT-8
<b>Fuses</b>							
1C10775G02	ABB	Bayonet Assembly w/ Flapper	Nut Mount	3	13.5	2	UUT-8
4000361C109MC	Cooper Power	Bayonet Assembly	Nut Mount	3	13.4	3	UUT-8
4000361C109FV	Cooper Power	Bayonet Assembly w/ Flapper	Nut Mount	3	13.4	3	interpolated
4000361C89FV	Cooper Power	Bayonet Assembly w/ Flapper & Silver Contacts	Nut Mount	3	13.4	3	UUT-8
CBUC08030C100	Cooper Power	Current Limiting Fuse	Hose Clamp	2.1	7.2	2	UUT-9
CBUC23165D100	Cooper Power	Current Limiting Fuse	Hose Clamp	3	18.9	10.5	UUT-8
HTDS232035	Hi-Tech	Current Limiting Fuse	Hose Clamp	2.2	6.9	2.5	UUT-9
HTSS240030	Hi-Tech	Current Limiting Fuse	Hose Clamp	2.2	9.2	2.8	interpolated
HTDS342200	Hi-Tech	Current Limiting Fuse	Hose Clamp	3.3	16.5	10.8	interpolated
HTSS372165	Hi-Tech	Current Limiting Fuse	Hose Clamp	3.3	21.9	13.5	UUT-8
<b>Breakers</b>							
<b>Radiators</b>							
0061-001335-103	Howard Industries	Corrugated Radiator - Mild Steel - 3 Fin	Weld	8	17	24	UUT-9

**HOWARD INDUSTRIES**  
**THREE PHASE PAD MOUNT DISTRIBUTION TRANSFORMER**  
**CERTIFIED SUBCOMPONENT MATRIX**



Identification Number	Manufacturer	Description	Anchorage	Width (in) Diameter	Depth (in)	Weight (lbs)	Representative UUT
0061-001335-039	Howard Industries	Corrugated Radiator - Mild Steel - 39 Fin	Weld	98	54	1003	interpolated
0061-001339-303	Howard Industries	Corrugated Radiator - Stainless Steel - 3 Fin	Weld	8	24	35	UUT-9
0061-001339-633	Howard Industries	Corrugated Radiator - Stainless Steel - 33 Fin	Weld	83	42	792	interpolated
0066-001345-103	Howard Industries	Panel Radiator - Mild Steel - 3 Fin	Weld	11	33	41	interpolated
0066-200919-930	Howard Industries	Panel Radiator - Mild Steel - 30 Fin	Weld	58	85	980	UUT-9
0066-134601-703	Howard Industries	Panel Radiator - Stainless Steel - 3 Fin	Weld	11	52	59	interpolated
0066-001346-730	Howard Industries	Panel Radiator - Stainless Steel - 30 Fin	Weld	58	73	809	UUT-9

Notes:  
1)



**HOWARD INDUSTRIES**  
**TRHEE PHASE UCD DISTRIBUTION TRANSFORMER**  
**CERTIFIED SUBCOMPONENT MATRIX**



Identification Number	Manufacturer	Description	Anchorage	Width (in) Diameter	Depth (in)	Height (in)	Weight (lbs)	Representative UUT
<b>HV Bushings</b>								
K1601-PC-T1-R	Elastimold	200 amp 125kV BIL HV Bushing Well	Weld-in	3.625	3.625	10.250	2 -3	UUT10 / UUT11
<b>LV Bushings</b>								
AS1327-003	H-J International	30kV BIL 1.5" Stud Porcelain LV Bushing	Bolted Clamp	4.375	4.375	9.750	6 - 7	UUT10
45A0000398	Warco	30kV BIL 1.5" Stud Porcelain LV Bushing	Bolted Clamp	4.375	4.375	9.750	6 - 7	UUT10
7027328	Central Moloney	45kV BIL 2" Stud Molded LV Bushing	Bolted Clamp	5.500	5.500	12.000	12 - 14	UUT11
<b>Loadbreak Switch</b>								
272D913G13	ABB	300 amp 150 kV BIL 3 Deck Loadbreak Switch	Weld-in	7.280	4.000	16.750	15 - 20	UUT10 / UUT11
<b>Delta / Wye Switch</b>								
2238664C01M	Cooper Power	150 amp 125kV BIL Delta/Wye Switch	Nut Mount	5.520	5.520	10.860	5 - 10	UUT10 / UUT11
<b>Fuses</b>								
HTSS242080	Hi-Tech	80 amp Partial Range Current Limiting Fuse	Hose Clamp	2.300	2.300	12.200	12 - 15	UUT10
HTDS242100	Hi-Tech	100 amp Partial Range Current Limiting Fuse	Hose Clamp	2.300	2.300	16.700	12 - 15	interpolated
HTSS242150	Hi-Tech	150 amp Partial Range Current Limiting Fuse	Hose Clamp	2.300	2.300	16.700	12 - 15	UUT11
<b>Corrugated Radiators</b>								
0061-001338-005	Howard Industries	5 Fin Corrugated Radiator	Weld-in	12.500	8.000	54.000	110.0	extrapolated
0061-001339-008	Howard Industries	8 Fin Corrugated Radiator	Weld-in	20.000	10.000	54.000	215.0	UUT11

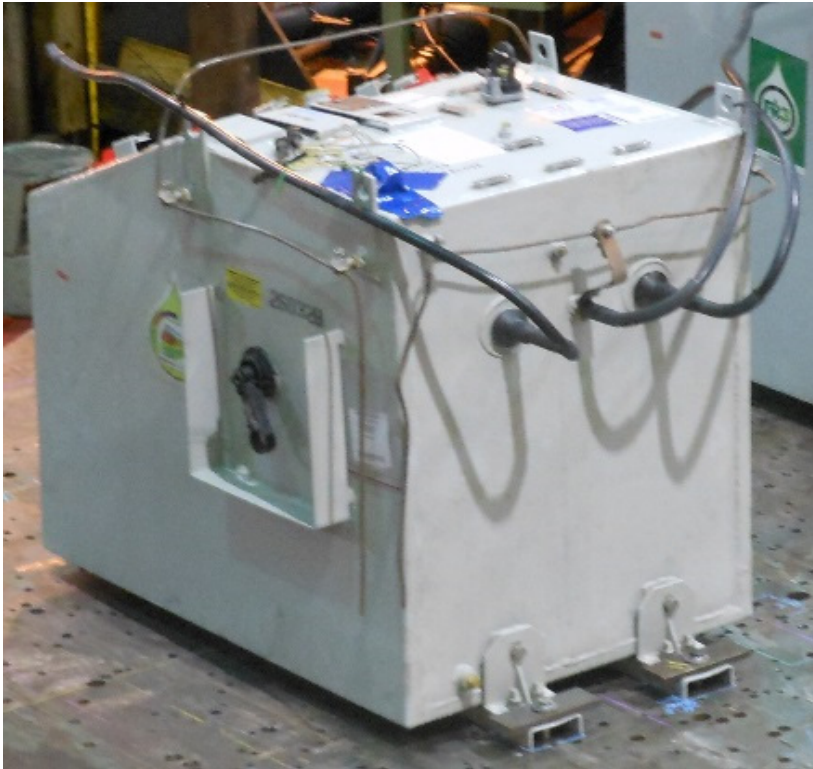
Notes:

UUT-1

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (4) 1/2"-13 Grade 5 hex head bolts with 4"x2"x1/2" seismic



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Horizontal Subsurface Distribution Transformers

**Identification Number:** 40-15kVA - SN2467863213

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** Steel enclosures with (6) HV Bushing, (2) LV Bushings and (1) Non-Load Break Switch as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,166	26.0"	44.0"	34.0"	16.4	22.1	17.1

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.

UUT-2

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (4) 1/2"-13 Grade 5 hex head bolts with 4"x2"x1/2" seismic washers.



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Horizontal Subsurface Distribution Transformers

**Identification Number:** 80-100/50kVA - 2470863213

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** Steel enclosures with (6) HV Bushing, (2) LV Bushings and (1) Non-Load Break Switch as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,604	33.0"	56.0"	40.0"	8.8	20.9	8.4

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.



UUT-3

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (4) 1/2"-13 Grade 5 hex head bolts with 4"x2"x1/2" seismic



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Single Phase Round Subsurface Distribution Transformers

**Identification Number:** 48/49-25kVA - SN2538983313

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** Steel enclosures with (6) HV Bushing, (2) LV Bushings, (1) Non-Load Break Switch and (3) Load Break Switches as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)		Natural Frequency (Hz)		
	Enclosure Diameter	Enclosure Height	FB	SS	V
860	29.0"	54.0"	9.7	25.9	>33

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.

UUT-4

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (4) 1/2"-13 Grade 5 hex head bolts with 4"x2"x1/2" seismic



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Single Phase Round Subsurface Distribution Transformers

**Identification Number:** 48/49-250kVA - 2539103313

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** Steel enclosures with (6) HV Bushing, (2) LV Bushings, (1) Non-Load Break Switch and (3) Load Break Switches as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)		Natural Frequency (Hz)		
	Enclosure Diameter	Enclosure Height	FB	SS	V
2,240	37.0"	58.0"	9.7	22.5	>33

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

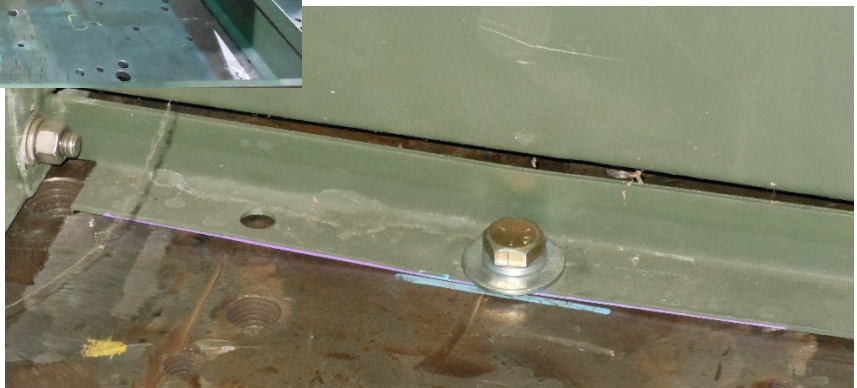
Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.

UUT-5

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (2 rear) 5/8"-11 and (2 front) 1/2"-13 Grade 5 hex head bolts.



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Pad Mount Distribution Transformers

**Identification Number:** 61/62/63/65/66/69/71/72/73/75/76-25kVA - SN6625397771305

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone carbon steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** Steel enclosures with 1600A MBB, (2) E3 Main Breaker, (2) E2 Feeder Breakers and Control Systems as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
1,262	44.0"	36.0"	32.0"	9.7	20.8	>33

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.

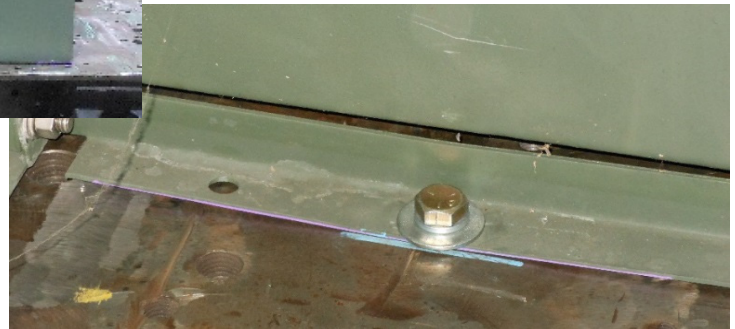


UUT-6

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (2 rear) 5/8"-11 and (2 front) 1/2"-13 Grade 5 hex head bolts.



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Pad Mount Distribution Transformers

**Identification Number:** 67-100/50 - SN2317582913

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone mixed carbona and stainless steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** Steel enclosures with 1600A MBB, (2) E3 Main Breaker, (2) E2 Feeder Breakers and Control Systems as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,762	45.0"	46.0"	42.0"	9.7	20.8	>33

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.

UUT-7

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (2 rear) 5/8"-11 and (2 back) 1/2"-13 Grade 5 hex head bolts.



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Pad Mount Distribution Transformers

**Identification Number:** 97-150kVA - SN2699553613

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone stainless steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** Steel enclosures with 1600A MBB, (2) E3 Main Breaker, (2) E2 Feeder Breakers and Control Systems as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
2,824	45.3"	47.8"	42.0"	19.4	14.5	>33

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.



**UUT-8**

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (4) 3/4"-10 Grade 5 hex head bolts with 4"x2"x1/4" seismic



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Three Phase Pad Mount Distribution Transformers

**Identification Number:** 91/95-45kVA - SN2790583713

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone carbon steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** Steel enclosures with (6) HV Bushing, (5) LV Bushings, (3) Non-Load Break Switch, (1) Load Break Switches and (5) Fuses as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
3,386	68.3"	57.5"	71.0"	19.4	22	>33

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.

UUT-9

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (4) 3/4"-10 Grade 5 hex head bolts with 4"x2"x1/4" seismic



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Three Phase Pad Mount Distribution Transformers

**Identification Number:** 93/96-2500kVA - SN2790573713

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone stainless steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** Steel enclosures with (6) HV Bushing, (5) LV Bushings, (2) Non-Load Break Switch, (2) Load Break Switches and (2) Fuses as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
19,722	95.5"	112.7"	86.0"	11.4	15.3	>33

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.

**UUT-10**

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (4) 3/4"-10 Grade 5 hex head bolts with 4"x2"x1/4" seismic



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Three Phase UCD Distribution Transformers

**Identification Number:** 98-150kVA - SN2540203313

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** NEMA1 steel enclosures with 1600A MBB, (2) E3 Main Breaker, (2) E2 Feeder Breakers and Control Systems as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
4,362	73.2"	35.4"	58.4"	18.4	16.6	>33

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.



UUT-11

**SECTION UNDER TEST  
SUMMARY SHEET**



**Mounting Details:** Floor mounted with (4) 3/4"-10 Grade 5 hex head bolts with 4"x2"x1/4" seismic



**Manufacturer:** Howard Industries, Inc.

**Product Line:** Three Phase UCD Distribution Transformers

**Identification Number:** 98-10,000kVA - SN2540213313

**UUT Function:** Distribution Transformers step down the voltage to a level used by consumers.

**UUT Description:** The unit is comprised of a oil filled standalone steel enclosure with core and coil, bushings, switches, and fuses.

**UUT Component Description:** Steel enclosures with (6) HV Bushing, (2) LV Bushings and (1) Non-Load Break Switch as identified in the subcomponent matrices.

**UUT PROPERTIES**

Weight (lb)	Dimensions (inches)			Natural Frequency (Hz)		
	Enclosure Width	Enclosure Depth	Enclosure Height	FB	SS	V
8,942	80.0"	36.0"	79.5"	18.5	15.7	>33

**SEISMIC TEST PARAMETERS**

Test Criteria	S <sub>DS</sub> (g)	z / h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
ICC-ES AC156 2012	2.50	0.0	1.5	2.50	1.00	1.67	0.67

Note: The unit was full of contents including oil and maintained structural integrity and functionality after the ICC-ES AC156 Test.