



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY
APPLICATION #: OSP - 0597

OSHPD Special Seismic Certification Preapproval (OSP)

Type: [X] New [] Renewal

Manufacturer Information

Manufacturer: Termaco

Manufacturer's Technical Representative: Carl Tremblay, R&D Director

Mailing Address: 325 Boul. Industriel Saint-Jean-Sur-Richelieu, QC, Canada J3B 7M3

Telephone: (450)-346-6871 ext. 237 Email: ctremblay@termaco.com

Product Information

Product Name: GVS Battery Cabinets

Product Type: Battery Cabinets

Product Model Number: See Attached
(List all unique product identification numbers and/or part numbers)

General Description: Each UUT is a cabinet comprised of batteries and breakers.

Mounting Description: Units are rigid base mounted

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: John Giuliano

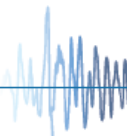
Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: john.giuliano@thevmcgroup.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant: [Handwritten Signature] Date: 3/26/19
Title: President Company Name: The VMC Group

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





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

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

Company Name: The VMC Group

Name: Kenneth Tarlow California License Number: SE-2851

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: ken.tarlow@thevmcgroup.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): _____

BY: Mohammad Aliaari

DATE: 11/19/2020

Testing Laboratory

Company Name: Dynamic Certification Laboratories

Contact Name: Josh Sailer, Laboratory Manager

Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV 89431

Telephone: (775) 358-5085 Email: Josh@shaketest.com

Testing Laboratory

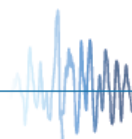
Company Name: National Technical Systems

Contact Name: Robert Bridges, Operations Manager

Mailing Address: 7800 Highway 20 West, Huntsville, AL, 35806

Telephone: (256) 837-4411 Email: rob.bridges@nts.com

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





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

Seismic Parameters

Design in accordance with ASCE 7-16 Chapter 13: Yes No

Design Basis of Equipment or Components (F_p/W_p) = 1.04

S_{DS} (Design spectral response acceleration at short period, g) = 1.45

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

R_p (Equipment or component response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See Attached

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

Equipment or Components @ grade designed in accordance with ASCE 7-16 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) = _____

Ω_0 (System overstrength factor) = by: Mohammad Aliaari

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, 2015: Yes No

List of Attachments Supporting Special Seismic Certification

Test Report(s) Drawings Calculations Manufacturer's Catalog

Other(s) (Please Specify): Attachments

OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2025

Signature: M. Aliaari Date: November 19, 2020

Print Name: Mohammad Aliaari Title: Senior Structural Engineer

Special Seismic Certification Valid Up to : S_{DS} (g) = 1.45 z/h = 1

Condition of Approval (if applicable): _____

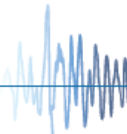


Table 1 - Certified Components, Agilis Battery Cabinets



Certification Level: S_{DS} = 1.45g, z/h=1.0

Mounting: Rigid Base Mounted

Termaco Model Number	Schneider Drawing Number	Max. Dimensions (in)			Max Weight (lb)	Battery Quantity	Battery Model	Battery Manufacturer	Unit
		Depth	Width	Height					
TCR-CS-410RB-A07-150A-32-HRL140	GVS32B150NA140-CS	33.1	27.6	58.5	1,286	32	HRL140	Narada	Extrapolated
TCR-CS-410RB-A07-150A-32-xxxxx	GVS32B150NA140-CS	33.1	27.6	58.5	1,357	32	12HX135 12HRL140 UPS12-150MR	Enersys (1) Narada (30) C&D (1)	UUT 1
TCR-CS-410RB-A07-150A-32-HX135	GVS32B150EN135-CS	33.1	27.6	58.5	1,366	32	12HX135	Enersys	Interpolated
TCR-CS-410RB-A07-150A-32-150MR	GVS32B150CD150-CS	33.1	27.6	58.5	1,418	32	UPS12-150MR	C&D	Interpolated
TCR-CS-410RB-A07-150A-40-HRL140	GVS40B150NA140-CS	33.1	27.6	58.5	1,494	40	HRL140	Narada	Interpolated
TCR-CS-410RB-A07-150A-40-HX135	GVS40B150EN135-CS	33.1	27.6	58.5	1,574	40	12HX135	Enersys	Interpolated
TCR-CS-410RB-A07-150A-40-150MR	GVS40B150CD150-CS	33.1	27.6	58.5	1,626	40	UPS12-150MR	C&D	Interpolated
TCR-CS-410RB-A07-150A-40-210MR	GVS40B150CD210-CS	33.1	27.6	58.5	2,120	40	UPS12-210MR	C&D	Interpolated
TCR-CS-410RB-A07-150A-40-HRL200	GVS40B150NA200-CS	33.1	27.6	58.5	2,160	40	HRL200	Narada	Interpolated
TCR-CS-410RB-A07-150A-40-HX205	GVS40B150EN205-CS	33.1	27.6	58.5	2,240	40	12HX205	Enersys	Interpolated
TCR-CS-410RB-A10-250A-40-HRL300	GVS40B250NA300-CS	33.1	39.4	58.5	2,917	40	HRL300	Narada	Interpolated
TCR-CS-410RB-A10-250A-40-300MR	GVS40B250CD300-CS	33.1	39.4	58.5	3,009	40	UPS12-300MR	C&D	Interpolated
TCR-CS-410RB-A10-250A-40-HX300	GVS40B250EN300-CS	33.1	39.4	58.5	3,073	40	12HX300	Enersys	Interpolated
TCR-CS-410RB-A10-250A-40-HRL365	GVS40B250NA365-CS	33.1	39.4	58.5	3,324	40	HRL365	Narada	Interpolated
TCR-CS-410RB-A10-250A-40-350MR	GVS40B250CD350-CS	33.1	39.4	58.5	3,364	40	350MR	C&D	Interpolated
TCR-CS-410RB-A10-250A-40-xxxxx	GVS40B250EN330-CS	33.1	39.4	58.5	3,468	40	12HX330 12HRL365 UPS12-350MR	Enersys (38) Narada (1) C&D (1)	UUT 2
TCR-CS-410RB-A11-250A-40-XP400	GVS40B250LE400-CS	33.1	44.4	58.5	3,499	40	XP12-400	Leoch	Interpolated
TCR-CS-410RB-A10-250A-40-HX330	GVS40B250EN330-CS	33.1	39.4	58.5	3,508	40	12HX330	Enersys	Interpolated
TCR-CS-410RB-A11-400A-40-XP400	GVS40B400LE400-CS	33.1	44.4	58.5	3,538	40	XP12-400	Leoch	Interpolated
TCR-CS-410RB-A11-250A-40-HRL400	GVS40B250NA400-CS	33.1	44.4	58.5	3,731	40	HRL400	Narada	Interpolated
TCR-CS-410RB-A11-400A-40-xxxxx	GVS40B400EN400-CS	33.1	44.4	58.5	3,760	40	12HX400 12HRL400 UPS12-400MR HR4000 XP12-400	Enersys (32) Narada (2) C&D (2) East Penn (2) Leoch (2)	UUT 3
TCR-CS-410RB-A11-250A-40-400MR	GVS40B250CD400-CS	33.1	44.4	58.5	3,763	40	400MR	C&D	Extrapolated
TCR-CS-410RB-A11-400A-40-HRL400	GVS40B400NA400-CS	33.1	44.4	58.5	3,770	40	HRL400	Narada	Extrapolated
TCR-CS-410RB-A11-400A-40-400MR	GVS40B400CD400-CS	33.1	44.4	58.5	3,802	40	400MR	C&D	Extrapolated
TCR-CS-410RB-A11-250A-40-HX400	GVS40B250EN400-CS	33.1	44.4	58.5	3,931	40	12HX400	Enersys	Extrapolated
TCR-CS-410RB-A11-250A-40-HR4000	GVS40B250EP400-CS	33.1	44.4	58.5	3,931	40	HR4000	East Penn	Extrapolated
TCR-CS-410RB-A11-400A-40-HX400	GVS40B400EN400-CS	33.1	44.4	58.5	3,970	40	12HX400	Enersys	Extrapolated
TCR-CS-410RB-A11-400A-40-HR4000	GVS40B400EP400-CS	33.1	44.4	58.5	3,970	40	HR4000	East Penn	Extrapolated

Notes:

1. Multiple batteries were used in UUTs to encompass all the brands in the full product line. As such a distinct model number cannot be associated with the actual tested units since they each utilize multiple battery brands.

11/19/2020

Nomenclature Chart



Example Nomenclature: ABC- DE-012-FG-A34-567A-89-XXXXX

Part Number	Allowable Value	Meaning	Unit
ABC	TCR	Termaco Top Terminal Battery Cabinet	UUT 1, UUT 2, UUT 3
DE	CS	Seismic Version	UUT 1, UUT 2, UUT 3
0	4	Number of Tiers	UUT 1, UUT 2, UUT 3
12	10	Maximum Quantity of Batteries per Tier	UUT 1, UUT 2, UUT 3
F	R	Regular Battery Type	UUT 1, UUT 2, UUT 3
G	B	Door Cabinet Configuration	UUT 1, UUT 2, UUT 3
A34	A07	Cabinet Width (700mm)	UUT 1
	A10	Cabinet Width (1000mm)	UUT 2
	A11	Cabinet Width (1150mm)	UUT 3
567A	150A	Amperage (Amperes)	UUT 1
	250A		UUT 2
	400A		UUT 3
89	32	Battery Quantity	UUT 1
	40		UUT 2, UUT 3
XXXXX	HX135	Battery Type / Brand Allowable Values	UUT 1
	HX205		Interpolated
	HX300		Interpolated
	HX330		UUT 2
	HX400		UUT 3
	HR4000		UUT 3
	HRL140		UUT 1
	HRL200		Interpolated
	HRL300		Interpolated
	HRL365		UUT 2
	HRL400		UUT 3
	150MR		UUT 1
	210MR		Interpolated
	300MR		Interpolated
	350MR		UUT 2
400MR	UUT 3		
XP400	UUT 3		

Table 2 - Certified Subcomponents

Certification Level: $S_{DS} = 1.45g$, $z/h=1.0$



Mounting: Interior Mounting

12 Volt Batteries					
Model Number	Manufacturer	Rated Power (W) ¹	Material	Battery Quantity Tested	Unit
12HX135	Energys	136	Lead Acid	1	UUT 1
12HX205	Energys	206	Lead Acid	N/A	Interpolated
12HX300	Energys	284	Lead Acid	N/A	Interpolated
12HX330	Energys	336	Lead Acid	38	UUT 2
12HX400	Energys	381	Lead Acid	32	UUT 3
12HRL140	Narada	140	Lead Acid	1	UUT 1
12HRL200	Narada	200	Lead Acid	N/A	Interpolated
12HRL300	Narada	300	Lead Acid	N/A	Interpolated
12HRL365	Narada	365	Lead Acid	1	UUT 2
12HRL400	Narada	400	Lead Acid	2	UUT 3
UPS12-150MR	C&D	148	Lead Acid	30	UUT 1
UPS12-210MR	C&D	206	Lead Acid	N/A	Interpolated
UPS12-300MR	C&D	300	Lead Acid	N/A	Interpolated
UPS12-350MR	C&D	350	Lead Acid	1	UUT 2
UPS12-400MR	C&D	400	Lead Acid	2	UUT 3
HR4000	East Penn	420	Lead Acid	2	UUT 3
XP12-400	Leoch	406	Lead Acid	2	UUT 3

Notes:

1. Ratings at 15min rate to 1.67 volts/cell end voltage at 77°F

Cabinets					
Model Number	Manufacturer	Dimensions (D"xW"xH")	Material ¹	NEMA	Unit
GVSCBT1ST	Termaco	33.1"x27.6"x58.5"	Carbon Steel	1	UUT 1
GVSCBT2ST	Termaco	33.1"x27.6"x58.5"	Carbon Steel	1	Interpolated
GVSCBT3ST	Termaco	33.1"x27.6"x58.5"	Carbon Steel	1	Interpolated
GVSCBT4ST	Termaco	33.1"x39.4"x58.5"	Carbon Steel	1	Interpolated
GVSCBT5ST	Termaco	33.1"x39.4"x58.5"	Carbon Steel	1	UUT 2
GVSCBT6ST	Termaco	33.1"x44.4"x58.5"	Carbon Steel	1	Interpolated
GVSCBT7ST	Termaco	33.1"x44.4"x58.5"	Carbon Steel	1	UUT 3

Notes:

1. Cabinets are 10 gage carbon steel. Cabinet Panels are 16 gage carbon steel.

Breakers				
Model Number	Manufacturer	Description	Material	Unit
JGL37150D81AAUO	Schneider Electric	150A	Plastic, Copper	UUT 1
JGL37250D82AAUO	Schneider Electric	250A	Plastic, Copper	UUT 2
LGL37040D30ABUO	Schneider Electric	400A	Plastic, Copper	UUT 3

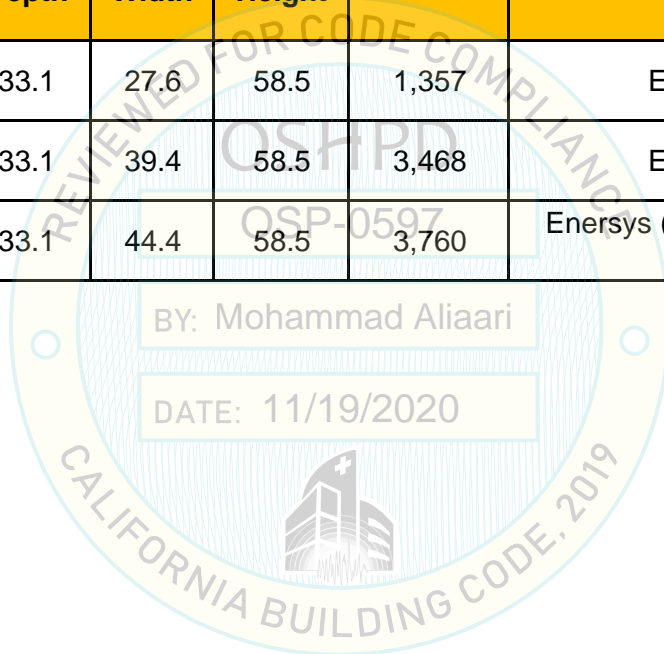
Table 3 - Tested Units


Certification Level: $S_{DS} = 1.45g$, $z/h=1.0$

Mounting: Rigid Base Mounted



Model Number	Max. Dimensions (in)			Weight (lb)	Battery Manufacturer (Quantity Tested in Unit)	Unit
	Depth	Width	Height			
TCR-CS-410RB-A07-150A-32-xxxxx	33.1	27.6	58.5	1,357	Enersys (1), Narada (30), C&D (1)	UUT 1
TCR-CS-410RB-A10-250A-40-xxxxx	33.1	39.4	58.5	3,468	Enersys (38), Narada (1), C&D (1)	UUT 2
TCR-CS-410RB-A11-400A-40-xxxxx	33.1	44.4	58.5	3,760	Enersys (32), Narada (2), C&D (2), East Penn (2), Leoch (2)	UUT 3



UUT 1	
Unit Under Test (UUT) Summary Sheet	

Manufacturer:	Termaco
Product Line:	Battery Cabinets
Model Number:	TCR-CS-410RB-A07-150A-32-xxxxx
Mounting:	Rigid Base Mounted

Product Construction Summary:
Painted Carbon Steel

Options / Component Summary:
12V Batteries, Cabinets, Breakers

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
1,357	33.1	27.6	58.5	10.0	10.0	23.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2019	ICC-ES AC156	1.45	1.0	1.5	2.32	1.74	0.97	0.39

Unit Mounting Description: OSP-0597



UUT 1 was rigid base mounted to a shake table interface plate with (6) 1/2" diameter grade 5 bolts spaced approximately 14" on center widthwise and 32" lengthwise.

UUT 2



Unit Under Test (UUT) Summary Sheet

Manufacturer:	Termaco
Product Line:	Battery Cabinet
Model Number:	TCR-CS-410RB-A10-250A-40-xxxxx
Mounting:	Rigid Base Mounted

Product Construction Summary:
Painted Carbon Steel

Options / Component Summary:
12V Batteries, Cabinets, Breakers

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Side-Side	Front-Back	Vertical (Z)
3,468	33.1	39.4	58.5	10.0	10.0	23.0


Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2019	ICC-ES AC156	1.45	1.0	1.5	2.32	1.74	0.97	0.39

Unit Mounting Description:



UUT 2 was rigid base mounted to a shake table interface plate with (6) 1/2" diameter grade 5 bolts spaced approximately 19" on center widthwise and 32" lengthwise.

UUT 3	
Unit Under Test (UUT) Summary Sheet	

Manufacturer:	Termaco
Product Line:	Battery Cabinets
Model Number:	TCR-CS-410RB-A11-400A-40-xxxxx
Mounting:	Rigid Base Mounted

Product Construction Summary:
Painted Carbon Steel

Options / Component Summary:
12V Batteries, Cabinets, Breakers

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Length	Width	Height	Front-Back	Side-Side	Vertical
3,760	33.1	44.4	58.5	9.0	10.0	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:



UUT 3 was base mounted to the steel shake table interface plate with (6) M12x1.75 class 8.8 bolts and washers. The bolts are spaced 21" widthwise and 35.5" lengthwise.