



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP – 0200 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Cryoquip, Inc.

Manufacturer's Technical Representative: Raul Boza

Mailing Address: 25720 Jefferson Ave, Murrieta, CA 92562

Telephone: 951.677.2062

Email: RBoza@Cryoquip.com

Product Information

Product Name: Ambient Vaporizer

Product Type: Cryogenic Fluid Vaporizer

Product Model Number: See Attachment

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

General Description: Ambient air cryogenic fluid vaporizer

Vertical and lateral support must be designed
and braced for a 300% increase in mass, due
to the accumulation of ice during use.
See attached cut sheet.

Mounting Description: Base mounted – rigid

Applicant Information

Applicant Company Name: TRU Compliance LLC


Contact Person: Matthew Tobolski, PhD, SE

Mailing Address: 960 SW Disk Dr., Suite 104, Bend, OR 97702

Telephone: 844.878.0200

Email: mtobolski@trucompliance.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: 

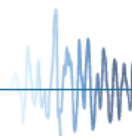
Date: 01/06/2017

Title: President

Company Name: TRU Compliance LLC

"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 12/16/15)



OSHPD

Page 1 of 3



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: TRU Compliance LLC

Name: Matthew Tobolski, PhD, SE California License Number: S5648

Mailing Address: 960 SW Disk Dr., Suite 104, Bend, OR 97702

Telephone: 844.878.0200 Email: mtobolski@trucompliance.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): _____

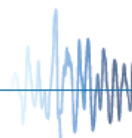
Testing Laboratory

Company Name: Clark Testing

Contact Name: Robert Francis

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

Telephone: 412.387.1004 Email: rfrancis@clarktesting.com





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 1.5

S_{DS} (Design spectral response acceleration at short period, g) = 2.5

a_p (In-structure equipment or component amplification factor) = 2.5

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) = 0

Equipment or Component Natural Frequencies (Hz) = See attachment

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

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) = _____

Ω_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, 2015: ☐ Yes ☒ No

List of Attachments Supporting Special Seismic Certification

☒ Test Report(s) ☒ Drawings ☐ Calculations ☐ Manufacturer's Catalog

☐ Other(s) (Please Specify): _____

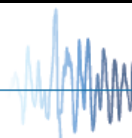
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022

Signature: [Signature] Date: 1/10/17

Print Name: M. R. Karim Title: SHFR

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.5 z/h = 0.0

Condition of Approval (if applicable): _____



16053-CR-001, rev. 0

[illegible]

UNIT UNDER TEST (UUT) SUMMARY SHEET

16053-CR-001, rev. 0



Manufacturer: Cryoquip, Inc.
Model Line: Ambient Vaporizer
Model Number: VAI-1208-FBL15

Serial Number: 43008-2-1

UUT 1A

Product Construction Summary:

Aluminum base frame that holds "spar" link plates which are arranged vertically and connect to vaporizer tubing via standard crimping detail. Tubing is aluminum with stainless steel lining.

Options/Subcomponent Summary:

None.

This test was conducted with operational load.

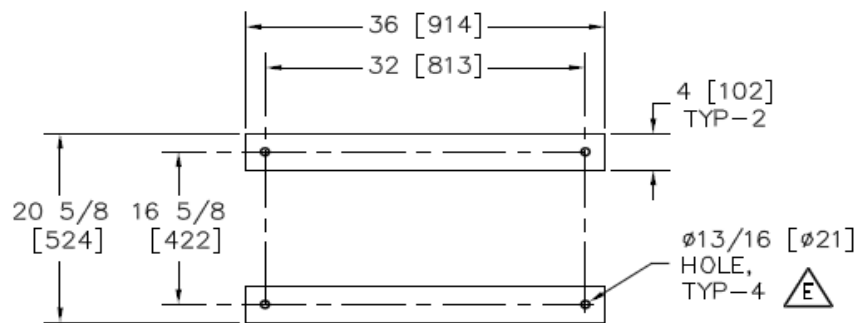
UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
625	22.6	44.9	209.3	4.9	5.5	>33

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _P	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	2.5	0.0	1.5	2.50	1.00	1.68	0.68

Test Mounting Details:



ANCHOR BOLT PATTERN

Unit mounted to table using (4) 3/4" diameter - 316 stainless steel bolts

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

16053-CR-001, rev. 0



Manufacturer:	Cryoquip, Inc.	UUT 1B
Model Line:	Ambient Vaporizer	
Model Number:	VAI-1208-FBL15	
		Serial Number: 43008-2-1

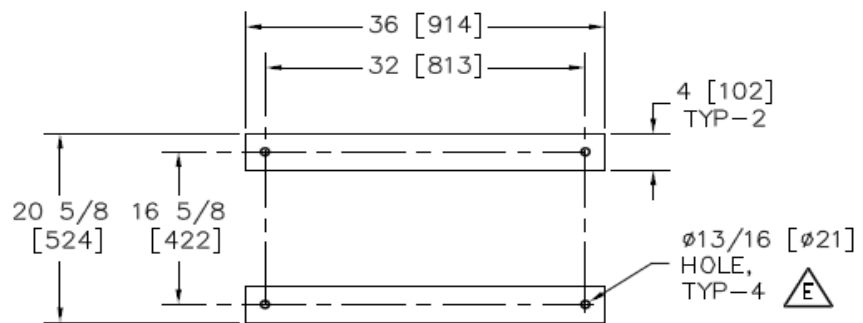
Product Construction Summary:
Aluminum base frame that holds "spar" link plates which are arranged vertically and connect to vaporizer tubing via standard crimping detail. Tubing is aluminum with stainless steel lining.

Options/Subcomponent Summary:
None.

This test was conducted without any operational load.

UUT Properties									
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)					
	Depth	Width	Height	Front-Back	Side-Side	Vertical			
575	22.6	44.9	209.3	4.6	5.2	>33			
UUT Highest Passed Seismic Run Information									
Building Code		Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016		ICC-ES AC156	2.5	0.0	1.5	2.50	1.00	1.68	0.68

Test Mounting Details:



ANCHOR BOLT PATTERN

Unit mounted to table using (4) 3/4" diameter - 316 stainless steel bolts
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

UNIT UNDER TEST (UUT) SUMMARY SHEET

16053-CR-001, rev. 0



Manufacturer: Cryoquip, Inc.
Model Line: Ambient Vaporizer
Model Number: VAI-H48-FBL15-SP

Serial Number: 43008-1-1

UUT 2A

Product Construction Summary:

Aluminum base frame that holds "spar" link plates which are arranged vertically and connect to vaporizer tubing via standard crimping detail. Tubing is aluminum with stainless steel lining.

Options/Subcomponent Summary:

None.

This test was conducted without any operational load.

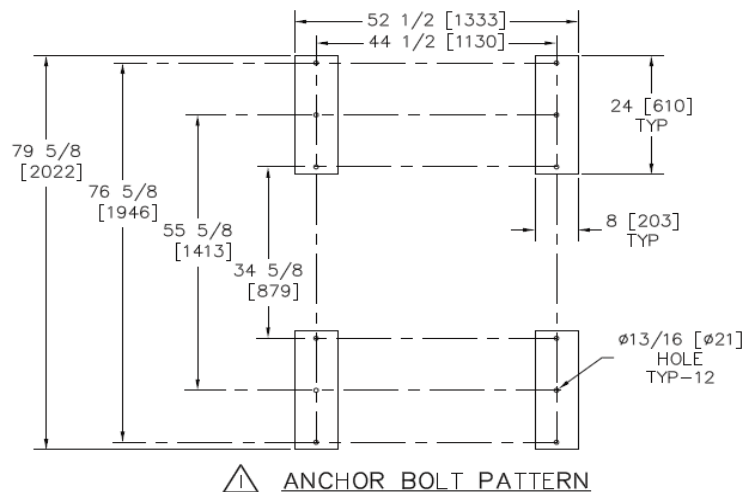
UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2765	100.9	67.1	221.6	4.2	4.9	>33

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _P	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	2.5	0.0	1.5	2.50	1.00	1.68	0.68

Test Mounting Details:



Unit mounted to table using (12) 3/4" diameter - 316 stainless steel bolts

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

UNIT UNDER TEST (UUT) SUMMARY SHEET

16053-CR-001, rev. 0



Manufacturer: Cryoquip, Inc.
Model Line: Ambient Vaporizer
Model Number: VAI-H48-FBL15-SP

Serial Number: 43008-1-1

UUT 2B

Product Construction Summary:

Aluminum base frame that holds "spar" link plates which are arranged vertically and connect to vaporizer tubing via standard crimping detail. Tubing is aluminum with stainless steel lining.

Options/Subcomponent Summary:

None.

This test was conducted with operational load.

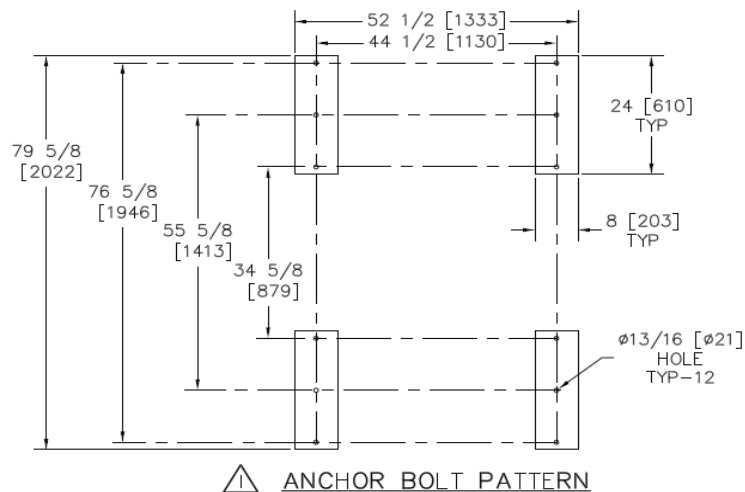
UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2945	100.9	67.1	221.6	3.9	4.7	>33

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _P	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2016	ICC-ES AC156	2.5	0.0	1.5	2.50	1.00	1.68	0.68

Test Mounting Details:



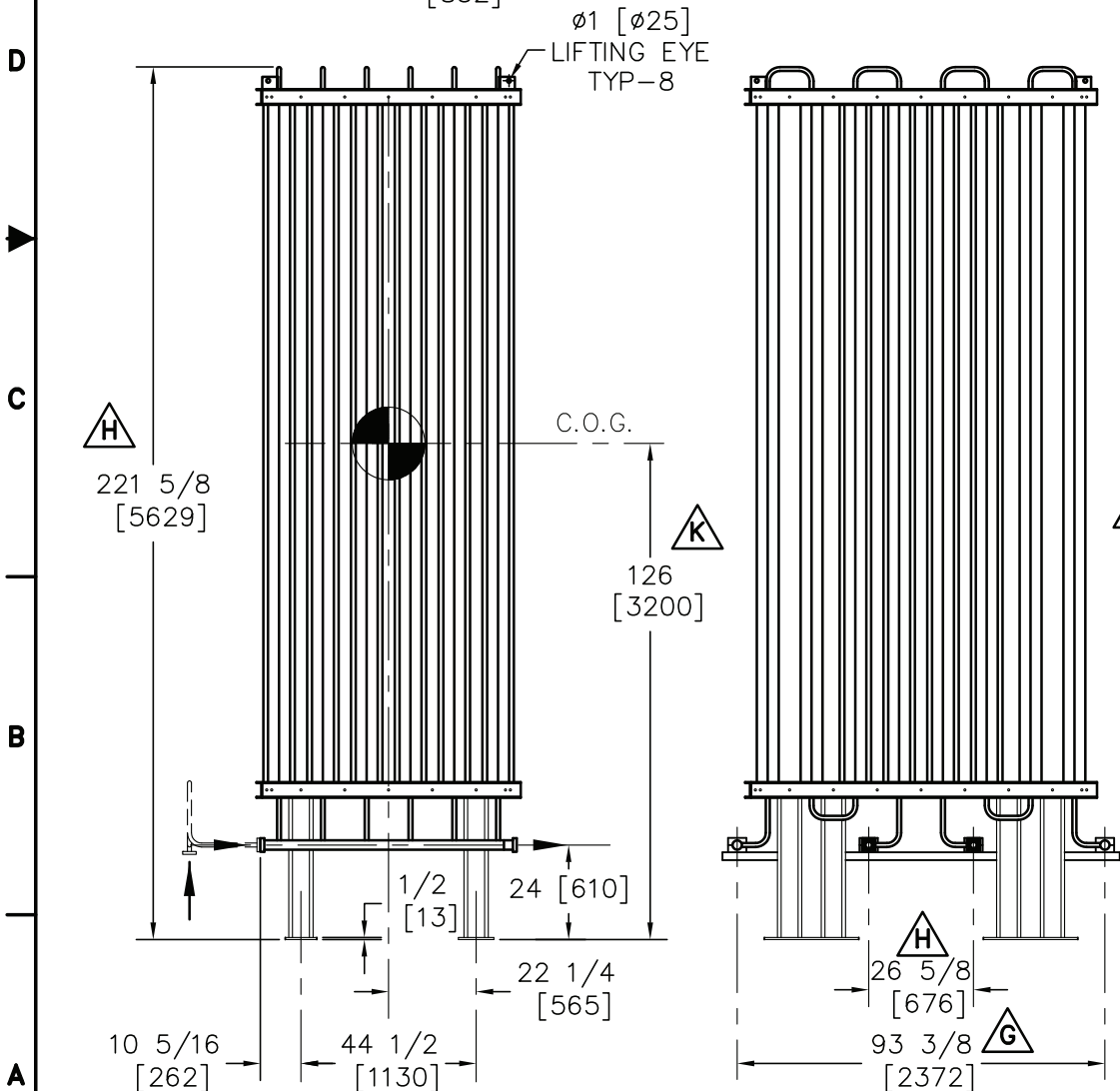
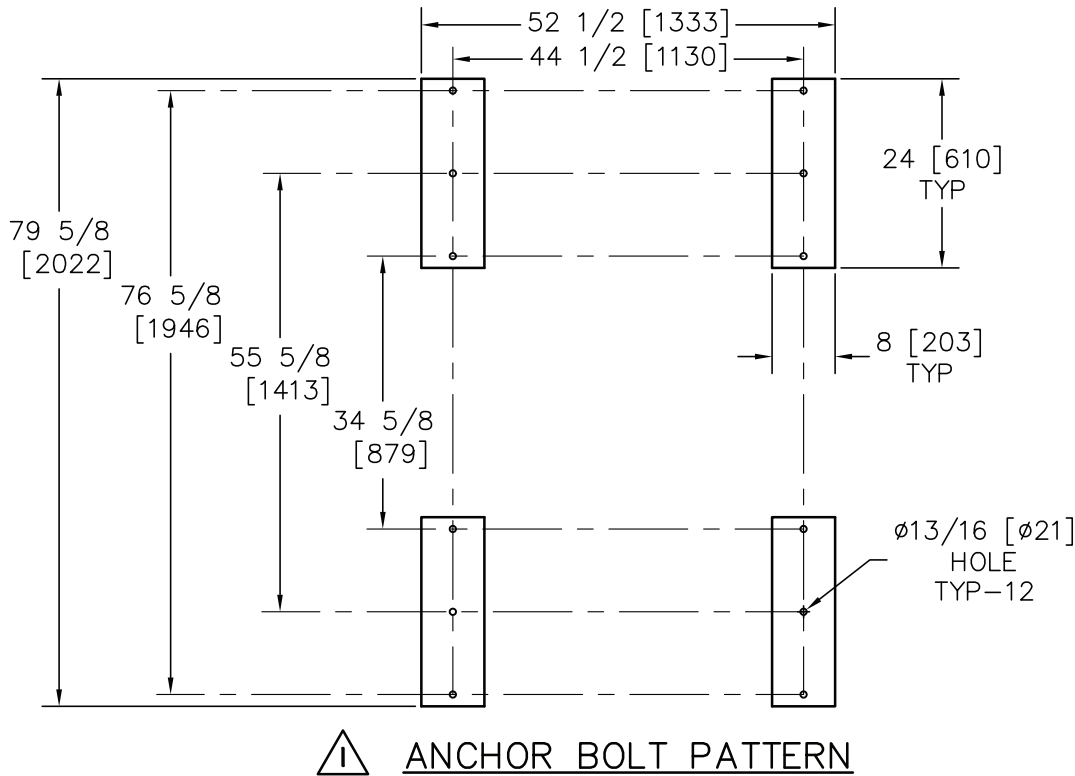
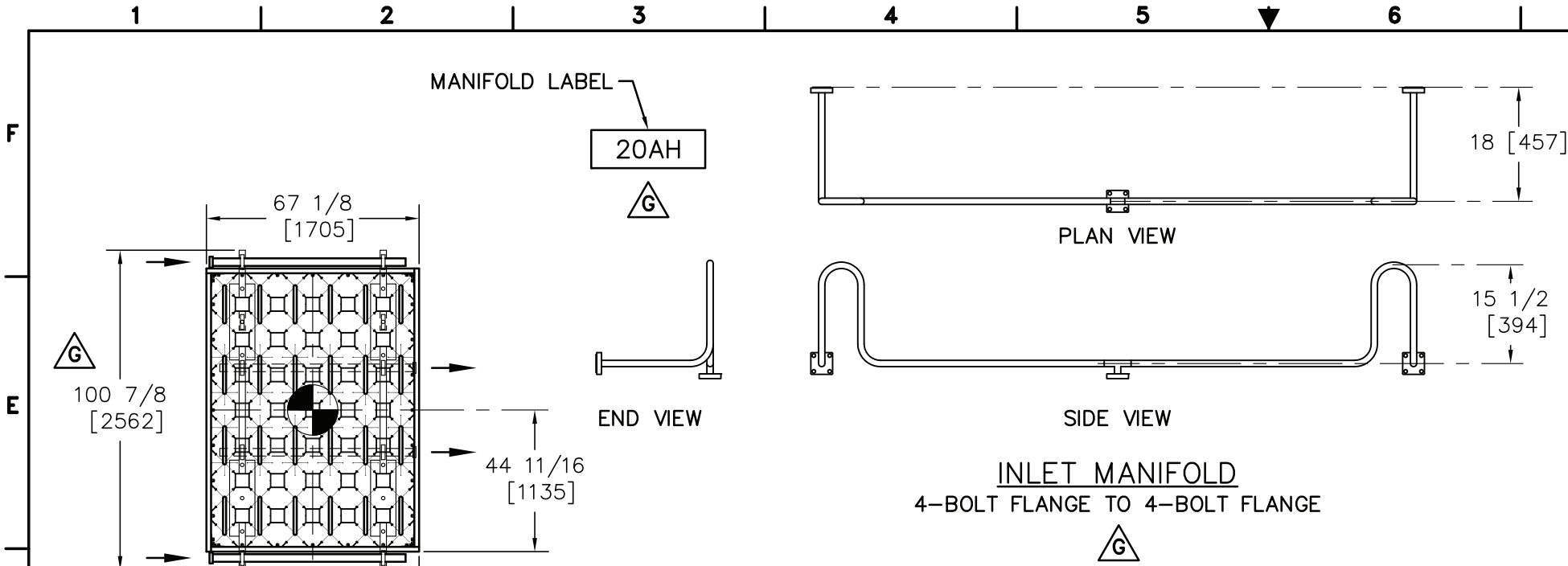
Unit mounted to table using (12) 3/4" diameter - 316 stainless steel bolts

Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Contents were included in testing per operating conditions.

REV	DESCRIPTION	DATE	APPROVED
A	REV. ANCHOR BOLT HOLES & MANIFOLD	8/18/97	AKH
A	ADDED LENGTH TO MANIFOLD GAS TRAP	6/9/98	AKH
C	REVISED MODEL NUMBER. GEN. REV.	6/12/01	DJC
D	UPDATED	4/17/03	PB
E	INCREASED MANIFOLD SPACING	4/27/05	PB
F	REDESIGNED INLET MANIFOLD	8/23/05	DJC
G	REDESIGNED INLET & OUTLET HEADERS	3/6/07	DJC
G	ADDED TAG REFERENCES	3/7/06	DJC
H	REV. OUTLETS BASED ON FIELD COMMENTS	3/23/07	DJC
I	CHANGED BASE PLATE DESIGN	11/13/08	
J	ADDED WIND AND SEISMIC NOTES	10/05/09	
K	ADDED CENTER OF GRAVITY	11/23/09	

DWG NO. 4838930
SHEET 1
REV K
CAD ORIGINATED DRAWING. REVISION UPDATES RESTRICTED TO CAD SYSTEM ONLY. NO MANUAL UPDATES.



NOTES:

- DO NOT IMPOSE LOADS ON NOZZLES, USE STANDS FOR SUPPORT.
- ALLOW AT LEAST 3 FEET [914] CLEARANCE TO ADJACENT STRUCTURES FOR COLD AIR REMOVAL.
- FOUNDATION SHOULD HAVE PROVISIONS FOR DRAINAGE AND LOW TEMPERATURES.
- SURFACES OF VAPORIZER OPERATE AT LOW TEMPERATURES AND SHOULD BE PROTECTED FROM INADVERTENT TOUCHING.
- INLET CONNECTIONS: 4-BOLT FLANGES.
OUTLET CONNECTIONS: 4-BOLT FLANGES.
- APPROXIMATE WEIGHT (DRY): 3,600 LBS [1633 KG].
APPROXIMATE WEIGHT (ICED OPERATING): 10,800 LBS [4899 KG].
- DIMENSIONS IN BRACKETS [] ARE MILLIMETERS UNLESS OTHERWISE NOTED.
- WIND AND SEISMIC PER IBC 2006:
WIND=140 MPH, EXPOSURE:C, IMPORTANCE FACTOR:1.
SEISMIC=SITE CLASS:D, SEISMIC DESIGN CATEGORY:D, IMPORTANCE FACTOR:1.
- PART NUMBER: 4838931-001

Mass increase of 300%,
due to ice - typical

NOTICE: THIS DRAWING IS A PRINTED VERSION OF AN ELECTRONIC RECORD AND SERVES AS AN ILLUSTRATION TO THE ELECTRONIC LIST OF MATERIALS (LM). THE LM GOVERNS FOR ANY CONFLICT BETWEEN THE DRAWING AND THE LM. THE LM RECORD REFERENCES THE LATEST REVISION LEVEL FOR BOTH THE LM AND THE DRAWING. THE REVISION OF THE DRAWING RECORD AND THE LM RECORD MAY BE DIFFERENT. PRINTED LM OR DRAWING COPIES MUST BE VERIFIED WITH THE ELECTRONIC VERSION AND REVISION LEVEL BEFORE USE.

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DO NOT SCALE DRAWING		CONTRACT NUMBER	
INTERPRET DRAWING IN ACCORDANCE WITH DOD-STD-100		SIGNATURES	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		DATE	
TOLERANCES ON		DRAWN	
DECIMALS		AKH	
ANGLES		5/6/97	
.X ± .1		CHECK	
.XX ± .03		DJC	
.XXX ± .010		6/13/01	
FRACTIONS		ENGR	
±1" [25]		APPD	
THIRD ANGLE PROJECTION		DJC	
FILE NAME:		6/13/01	
48389301.DWG		APPROVED	
CAD REF. SCALE		1/48	
WEIGHT		SHEET 1 OF 1	
SIZE		DWG NO.	
B 7X733		4838930	
REV		K	

CRYOQUIP MURRIETA, CA 92562 USA

OUTLINE
VAI-H48-FBL15-SP (20AH)
AMBIENT VAPORIZER