



# APPLICATION FOR PREAPPROVAL

## SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

*For Office Use Only*

<b>APPLICATION NO.</b>
<b>OSP – 0244 – 10</b>

Check whether application is: NEW  RENEWAL

<b>1.0</b>	<b>Ameridex Plate Exchangers</b>	<b>Mark R. Hilkman</b>
	<i>Manufacturer</i>	<i>Manufacturer's Technical Representative</i>
	<b>145 County Road 309</b>	<b>Bryant, Alabama 35958</b>
	<i>Mailing Address</i>	
	<b>256-597-3360</b>	<b>ameridexplateexchangers@ameridex.net</b>
	<i>Telephone</i>	<i>E-mail Address</i>

<b>2.0</b>	<b>Ameridex Plate Exchangers</b>	<b>Plate Heat Exchangers</b>
	<i>Product Name</i>	<i>Product Type</i>
	<b>Ameridex X-5-IND to X-30 (See Table-1)</b>	
	<i>Product model No (List all unique product identification numbers and/or serial numbers)</i>	
	<i>General Description: <b>Rigid Floor Mounted Vertical Plate Heat Exchangers.</b></i>	

<b>3.0</b>	<b>Panache Engineering Inc</b>	<b>Ahmed Haider, Ph.D., P.E.</b>
	<i>Applicant Company Name</i>	<i>Contact Person</i>
	<b>150 N Santa Anita Ave, Suite 300</b>	<b>Arcadia, CA 91006</b>
	<i>Mailing Address</i>	
	<b>(626)698-0784</b>	<b>Ahmed.haider@panacheg.com</b>
	<i>Telephone</i>	<i>E-mail Address</i>

I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review.

	<b>4/25/12</b>
<i>Signature of Applicant</i>	<i>Date</i>
<b>Engineering Manager</b>	<b>Panache Engineering Inc</b>
<i>Title</i>	<i>Company Name</i>



Registered Design Professional Preparing the Report

4.0

PANACHE ENGINEERING INC

Company Name

AHMED HAIDER, Ph.D, P.E.

C68541

Contact Name

California License Number

150 N. SANTA ANITA AVE,  
SUITE 300,

ARCADIA, CA 91006

Mailing Address

626-203-6401

AHMED.HAIDER@PANACHEG.COM

Telephone

E-mail Address

California Licensed Structural Engineer Review and Acceptance of the Report

5.0

PANACHE ENGINEERING INC

Company Name

EUI S. KIM

S5138

Contact Name

California License Number

150 N. SANTA ANITA AVE, SUITE 300

ARCADIA, CA 91006

Mailing Address

(626)698-0784

PANACHEG@GMAIL.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

STORK Garwood Laboratories

Jerry Cederstrom

Company Name

Contact Name

7829 Industry Ave., Pico Rivera, CA 90660

Mailing Address

562-699-4159

Jerry.Cedertrom@us.stork.com

Telephone

E-mail:



**Approval Parameters**

**9.0**

Design in accordance with ASCE 7-05 Chapter 13:  Yes  No

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.44 @  $S_{DS} = 2.0$   
 = 0.60 @  $S_{DS} = 2.5$   
 $S_{DS}$  (Spectral response acceleration at short period) = See Table 1  
 $a_p$  (In-structure equipment or component amplification factor) = 1  
 $R_p$  (Equipment or component response modification factor) = 2.5  
 $I_p$  (Importance factor) = 1.5  
 $z/h$  (Height factor ratio) = See Table 1  
 Equipment or Component fundamental period(s) = See Table 2  
 Building period limits (if any) = N/A  
 Overall dimensions and weight (or range thereof) = See Table 2

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  
 $\Omega_0$  (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

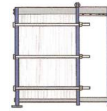
**10.0 List of attachments supporting the special seismic certification of equipment or components:**

- Test Report       Drawings       Manufacturer's Catalog  
 Calculations       Others (Please Specify):

<p><b>11.0 OSHPD Approval (For Office Use Only)</b></p> <div style="text-align: center;"> <p>Signature &amp; Date</p> <p><b>Timothy J. Piland, SSE</b></p> <p>Name &amp; Title</p> </div> <p>Condition of Approval (if any):</p>	<p><b>12/06/2012</b></p>	<p><b>December 31, 2016</b></p> <p>Approval Expiration Date</p> <p><math>S_{DS}</math> (g) = <b>See Section 9.0</b></p> <p><math>z/h</math> = <b>See Section 9.0</b></p> <p>Special Seismic Certification Valid Up to</p>
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**Table 1**

Special Seismic Certification Approved Units



Ameridex Plate Exchangers



Product Type: Vertical Plate Heat Exchangers

Manufacturer: Ameridex Plate Exchangers

Product Function

Fluid Heat Exchange

Certified Product Construction:

Stainless Steel SA-240 316 exchanger plates, SA-516 Grade 70 Header Plates, SA-193 B7 Rods and SA-194 2H Nuts

Certified Mounting Descriptions:

Rigid Floor Mounted

MODEL	Max Length (inches)	Width (inches)	Height (inches)	Max Wet Weight (Lbs)	Port Size	z/h	Sds (G)	UUT
X-5	13	8	19.5	125	1	0 1	2.5 2.0	UUT-2
X-10	19	8	31.5	200	1	0 1	2.5 2.0	Interpolated
X-15	38	13.25	27.3	260	2	0 1	2.5 2.0	Interpolated
X-18	38	16.5	26	400	2.5	0 1	2.5 2.0	Interpolated
X-20	38	13.25	39.1	400	2	0 1	2.5 2.0	Interpolated
X-25	38	13.25	47	550	2	0 1	2.5 2.0	Interpolated
X-28	38	16.5	38.5	600	2.5	0 1	2.5 2.0	Interpolated
X-30	42	20	44	1520	4	0 1	2.5 2.0	UUT-1
X-30	50	20	44	1800	4	0 1	2.5 2.0	Extrapolated

Table 2

Unit Under Test (UUT) Summary Sheet



Ameridex Plate Exchangers



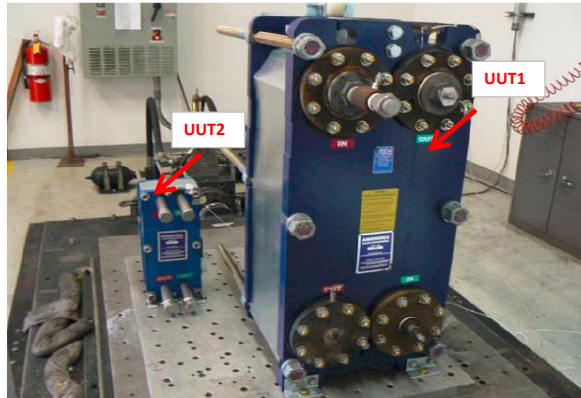
Product Type: Vertical Plate Heat Exchangers		Manufacturer: Ameridex Plate Exchangers	
Certified Product Construction:		Tested Configurations:	Test Mounting Descriptions:
Stainless Steel SA-240 316 exchanger plates, SA-516 Grade 70 Header Plates, SA-193 B7 Rods and SA-194 2H Nuts		Full of water and Rigidly Mounted to floor	Rigid Floor mounted. Attached to the test fixture by means of (5) 5/8" for UUT1 and (3) 1/2" for UUT2 ASTM A325 Bolts
Pre-Shake Functionality Test Results	Passed	Post-Shake Functionality Test Results	Passed
		Post-Shake Structural Observations	No Anomaly/Passed

UUT Properties

UUT	Model Number	Lowest Natural Frequency (Hz)			Dimensions (Inches)			Operating Weight(lb.)
		Front-Back	Side to Side	Vertical	Length	Width	Height	
UUT1	X-30	33.3	33.3	6.3	43	20	44	1520
UUT2	X-5	24.17	29.15	NA	13	8	19.5	125

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Afx-H	Arig-H	Afx-V	Arig-V
CBC 2010	ICC-ES-AC156 (2010)	2.5	0	1.5	2.50	1.00	1.68	0.68
		2.0	1	1.5	3.20	2.40	1.34	0.54



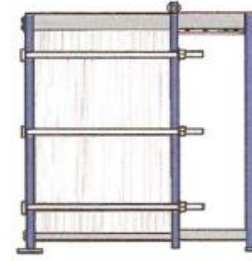
Equipment's Layout on Shake Table



UUT1 & UUT2 Attachment To Test Fixture

Table 3

Unit Under Test (UUT) Major Sub-Components



*Ameridex Plate Exchangers*

<b>Product Type: Vertical Plate Heat Exchangers</b>		<b>Manufacturer: Ameridex Plate Exchangers</b>	
<b>Certified Product Construction:</b>		<b>Tested Configurations:</b>	
Stainless Steel SA-240 316 exchanger plates, SA-516 Grade 70 Header Plates, SA-193 B7 Rods and SA-194 2H Nuts		Full of water and Rigidly Mounted to floor	
<b>Pre-Shake Functionality Test Results</b>		<b>Post-Shake Functionality Test Results</b>	
Passed		Passed	
<b>Test Mounting Descriptions:</b>			
Rigid Floor mounted. Attached to the test fixture by means of (5) 5/8" for UUT1 and (3) 1/2" for UUT2 ASTM A325 Bolts			

**UUT-1 Major Sub Components**

- (2) Vertical ASTM SA-516 Grade 70 Header Frame Plates manufactured by Ameridex
- (96) Stainless Steel -SA-240 316 Exchanger Plates manufactured by Ameridex
- (6) SA-193 B7 Bolts
- (12) SA-194 2H Nuts
- (4) 4" Port

**UUT-2 Major Sub Components**

- (2) Vertical ASTM SA-516 Grade 70 Header Frame Plates manufactured by Ameridex
- (27) Stainless Steel -SA-240 316 Exchanger Plates manufactured by Ameridex
- (6) SA-193 B7 Bolts
- (12) SA-194 2H Nuts
- (4) 1" Port

**Additional Sub-Components for UUT1 and UUT-2**

- Victaulic Couplings - Schedule 40 Style A07 Carbon Steel manufactured by Victaulic Corporation
- Bars & Stanchions - ASTM A36 carbon steel except upper guide bars are made from SS 316 (manufactured by Ameridex)
- NPT Nozzles - Schedule 40 Type 316 SS
- Gaskets - Nitrile Butyl Rubber manufactured Blaylock Gasket
- Flanges - ANSI B16.5 - 150# manufactured by Texas Flange