Facilities Development Division www.oshpd.ca.gov/fdd
400 R Street. Suite 200, Sacramento, California 95811-6213 Phone (916) 440-8300 Fax (916) 654-2973

APPLICATION FOR PREAPPROVAL

SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.

OSP -0152-10

Check whether application is: NEW [X] RENEWAL [ ]

1.0

IEA	Ron Shaffer
Manufacturer	*Manufacturer's Technical Representative*
9625 55th Street	Kenosha, WI 53144
Mailing Address	
(262) 612-1331	rshaffer@iearad.com
Telephone	*E-mail Address*

2.0

Remote Charge Coolers (RCC)	Radiators
Product Name	*Product Type*

RCC1001S-AFC, RCC1002S-AFC, RCC1502S-AFC

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

General Description: Frame mounted RCCs are stand-alone air cooling units used to cool hot turbocharger air prior to being introduced to the engine's combustion process. An RCC is used when the radiator cannot be mounted near the engine (i.e., in the basement of a building). RCCs require additional components such as a remote radiator, a coolant pump, and a coolant manifold. These components were not tested, and are therefore not a part of this approval.

3.0

IEA	*Ron Shaffer*
Applicant Company Name	*Contact Person*
9625 55th Street	*Kenosha, WI 53144*
Mailing Address	
(262) 612-1331	rshaffer@iearad.com
Telephone	*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.

	February 14, 2011
Signature of Applicant	*Date*
Managing Partner	Dynamic Certification Laboratories
Title	*Company Name*

Registered Design Professional Preparing the Report

4.0

DYNAMIC CERTIFICATION LABORATORIES, LLC
Company Name

JOSEPH LA BRIE, SE | SE-3566
Contact Name | *California License Number*

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

(775) 358-5085 | *LaBrie@MakeItRight.net*
Telephone | *E-mail Address*

California Licensed Structural Engineer Review and Acceptance of the Report

5.0

DYNAMIC CERTIFICATION LABORATORIES, LLC
Company Name

DR. AHMAD ITANI, SE | SE-5220
Contact Name | *California License Number*

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

(775) 358-5085 | Itani@shaketest.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

70. ☒ *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*

Testing Laboratory (if applicable)

8.0

DYNAMIC CERTIFICATION LABORATORIES, LLC | *KELLY LAPLACE, QUALITY MANAGER*
Company Name | *Contact Name*

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

(775) 358-5085 | *Kelly@shaketest.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) = 1.70g

S_{DS} (Spectral response acceleration at short period) =2.26g

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

R_p (Equipment or component response modification factor) =6.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio)=1

Equipment or Component fundamental period(s) =See Attachments

Building period limits (if any) =None

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

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

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):*

11.0 ***OSHPD Approval*** *(For Office Use Only)*

2/14/2011	**December 31, 2016**
Signature & Date	*Approval Expiration Date*
Chris Tokas, SHFR	S_{DS} (g) = **2.26** z/h = **1.0**
Name & Title	*Special Seismic Certification Valid Up to*

Condition of Approval (if any): **Approval is only valid for supports and attachments equivalent to tested configuration.**

IEA, Incorporated
9625 55th Street, Kenosha, WI 53144

((●)) DCL Dynamic Certification Laboratories

OSHPD PRE-APPROVAL OSP FOR SPECIAL SEISMIC CERTIFICATION

PRODUCT TYPE: Radiators

February 14, 2011

I, Dr. Ahmad Itani, S.E. Certify that I have reviewed all submitted test data for the equipment included within this OSHPD OSP Pre-Approval and have found it to be in compliance with the current code requirements for Special Seismic Certification.

Models Included in OSP:

Model	Dimensions				Lowest Natural Frequency			Unit	Description
	Length (in)	Width (in)	Height (in)	Weight (lb)	F-B (Hz)	S-S (Hz	V (Hz)		
RCC1001-AFC	30.5	26	64.9	350 ±	N/A	N/A	N/A	N/A	Same radiator as UUT1; frame of similar construction to UUT2
RCC1002S-AFC	78	22	50.7	690 ±	9.8	9.5	>33	UUT1	Two 0.5-1.5 MW radiators rigid-mounted to steel frame
RCC1502S-AFC	66.4	36	81	1,100 ±	8.2	4.7	27.4	UUT2	Two 1.5-2.5 MW radiators rigid-mounted to steel frame

Indicates shake table tested

Appendix A

RCC1001-AFC

RCC1002S-AFC

RCC1502S-AFC

RCC & FRAME #

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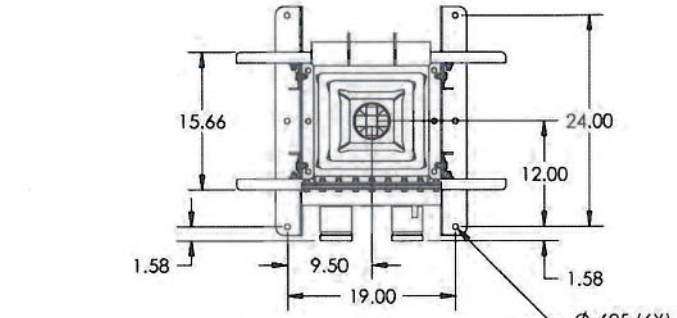
Interpolated Unit

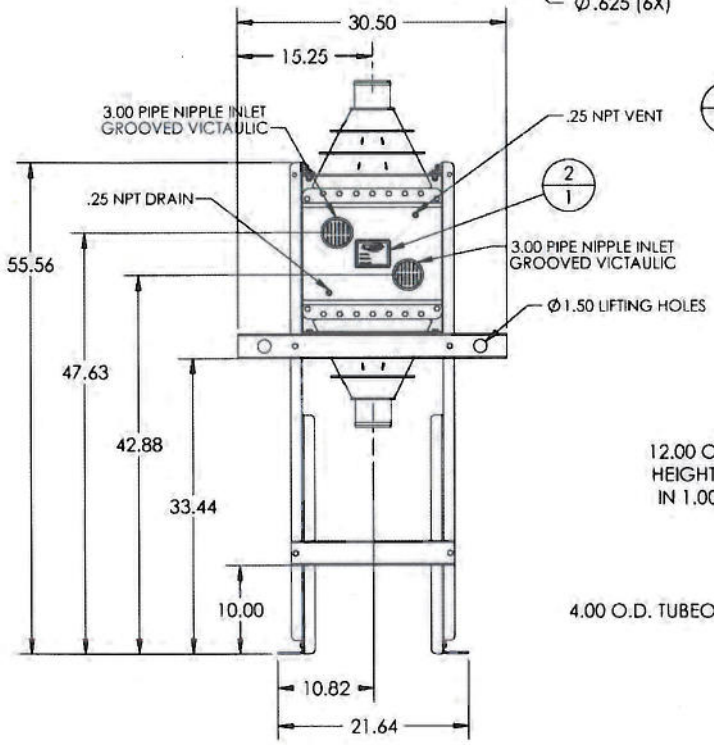
SHEET SIZE - B **RCC1001S-AFC**

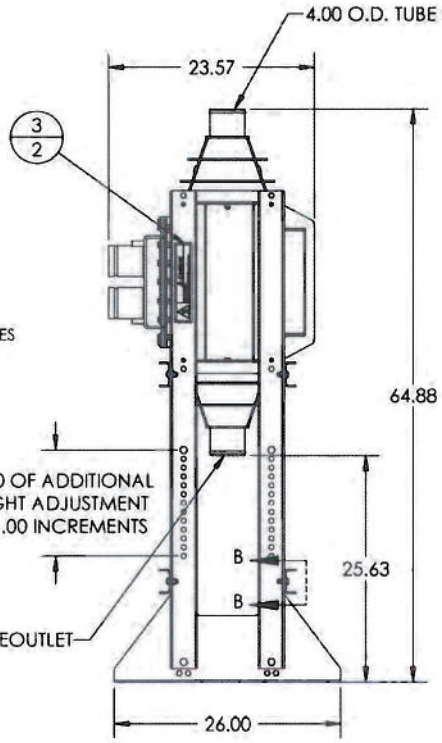
ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	RCC1001S-AF	REMOTE CAC & FRAME RCC10 X1 500 KW	1
2	8401225	NAMEPLATE IEA (GENERIC)	1
3	8401220	STICKER RCC CAUTION	2
4	8407077	STICKER CONDENSATION DRAIN	1

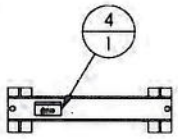
NOTES:
TOTAL LIQUID SIDE CAPACITY = 3 GAL
MAX LIQUID SIDE OPERATING PRESSURE = 30 PSIG
MAX LIQUID SIDE OPERATING TEMP = 220°F

MAX AIR SIDE OPERATING PRESSURE = 45 PSIG
MAX AIR SIDE OPERATING TEMPERATURE = 500°F

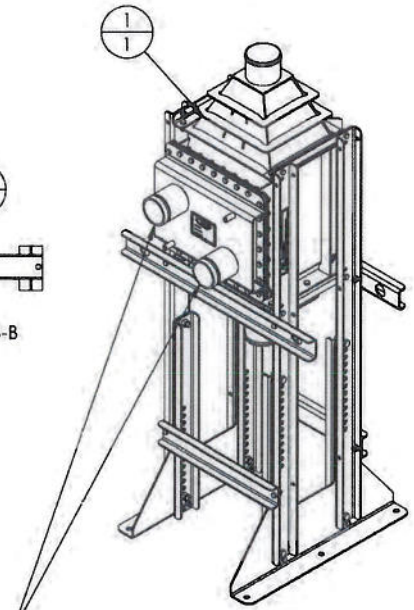








SECTION B-B



TOLERANCES (DIMENSION ARE IN INCHES)
ANGULAR: ± 1 DEG.
ONE PLACE DECIMAL ± .2
TWO PLACE DECIMAL ± .13
THREE PLACE DECIMAL ± .031
BTWN CONNECTIONS ± .25
BTWN MOUNTINGS ± .25
TOLERANCES ARE NON-CUMULATIVE AND DO NOT APPLY TO MATERIAL GRADES OR COMMERCIAL FEATURES

"The Next Generation of Cool"

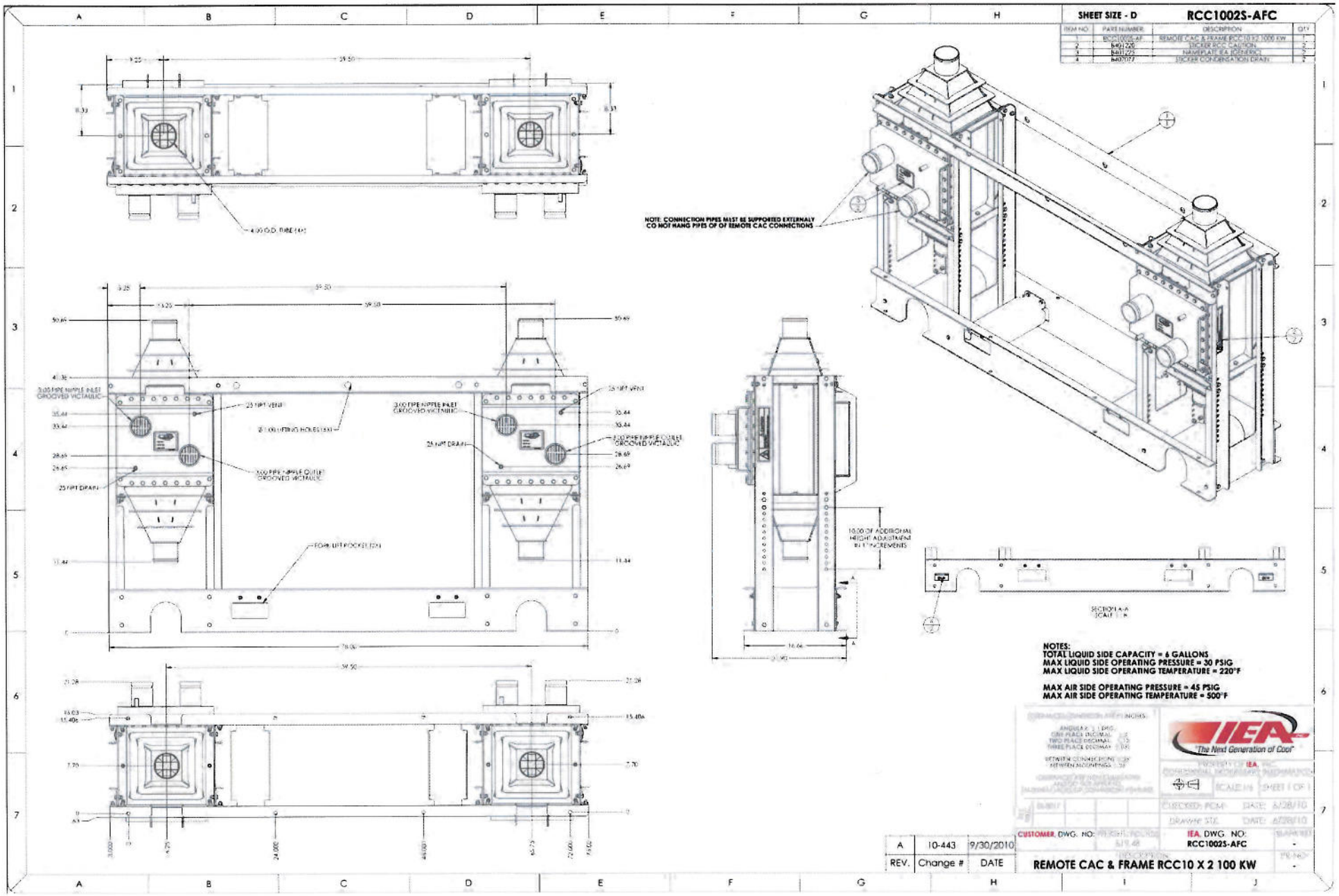
PROPERTY OF IEA, INC.
CONFIDENTIAL PROPRIETARY INFORMATION

REV.	Change #	DATE
A	10-409	09/21/2010

CUSTOMER DWG. NO:

IEA, DWG. NO: **RCC1001S-AFC**

DESCRIPTION: **REMOTE CAC & FRAME RCC10 X 1 500 KW**


SHEET SIZE - D
RCC1002S-AFC
NOTE: CONNECTION PIPES MUST BE SUPPORTED EXTERNALLY
DO NOT HANG PIPES OF OF REMOTE CAC CONNECTIONS
NOTES:
TOTAL LIQUID SIDE CAPACITY = 6 GALLONS
MAX LIQUID SIDE OPERATING PRESSURE = 30 PSIG
MAX LIQUID SIDE OPERATING TEMPERATURE = 220°F
MAX AIR SIDE OPERATING PRESSURE = 45 PSIG
MAX AIR SIDE OPERATING TEMPERATURE = 500°F
"The Next Generation of Cool"
REMOTE CAC & FRAME RCC10 X 2 100 KW
RCC10025-AFC

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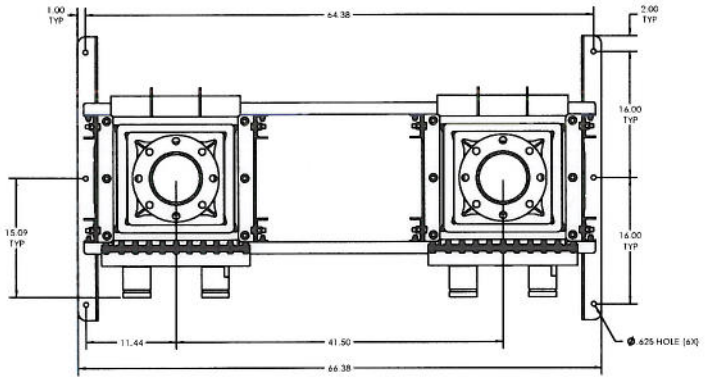
SHEET SIZE - D

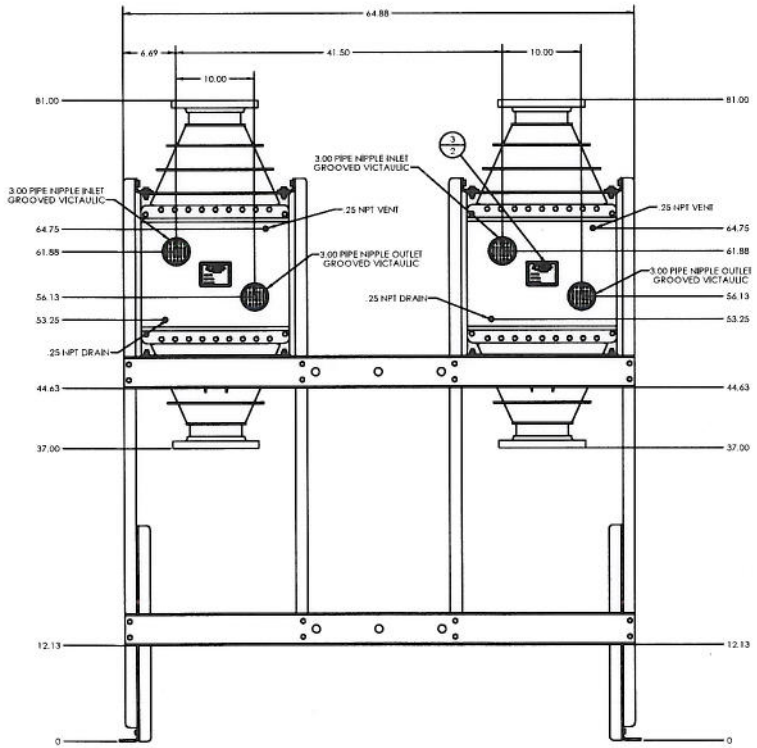
RCC1502S-AFC

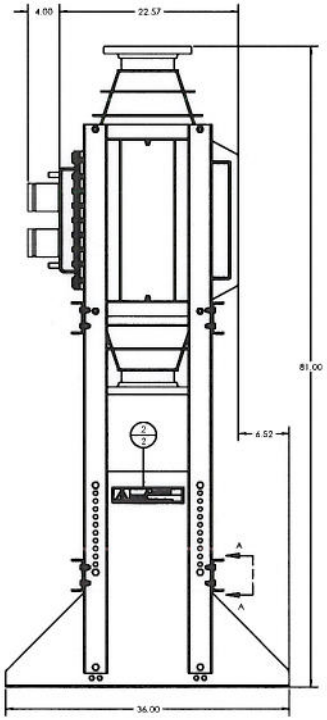
ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	RCC15025-AF	REMOTE CAC & FRAME ASSY RCC15 2000 RW	1
2	8401220	STICKER RCC CAUTION	2
3	8401225	NAMEPLATE IEA [GENERIC]	2
4	8407077	STICKER CONDENSATION DRAIN	2

NOTES:
TOTAL LIQUID SIDE CAPACITY = 9 GALLONS
MAX LIQUID SIDE OPERATING PRESSURE = 30 PSIG
MAX LIQUID SIDE OPERATING TEMPERATURE = 220 °F

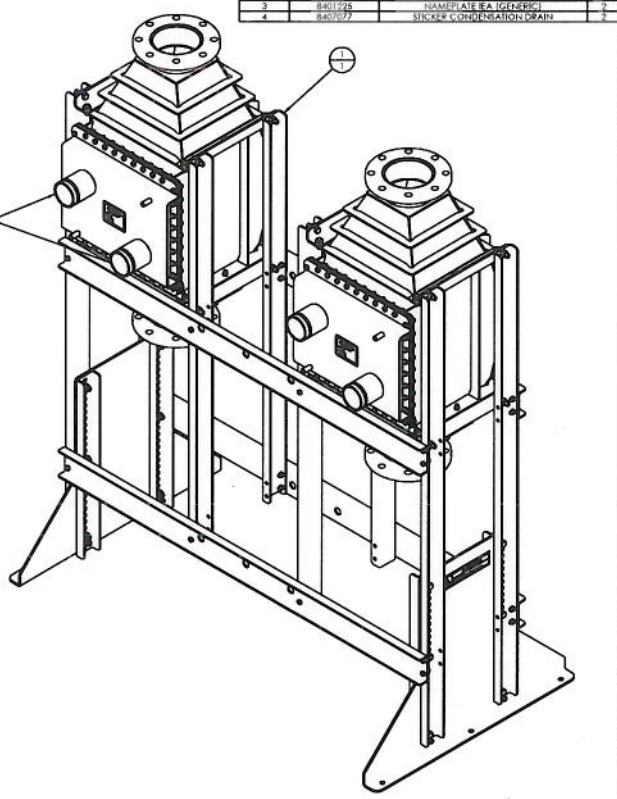
MAX AIR SIDE OPERATING PRESSURE = 45 PSIG
MAX AIR SIDE OPERATING TEMPERATURE = 500 °F

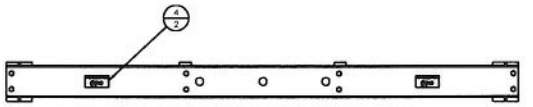






NOTE: CONNECTIONS MUST BE SUPPORTED EXTERNALLY
DO NOT HANG PIPES OFF REMOTE CAC CONNECTIONS





SECTION A-A
SCALE 1 : 7

TOLERANCES: (DIMENSION ARE IN **INCHES**)
ANGULAR ± 1 DEG.
ONE PLACE DECIMAL ± .2
TWO PLACE DECIMAL ± .13
THREE PLACE DECIMAL ± .031
BETWEEN CONNECTIONS ± .25
BETWEEN MOUNTINGS ± .25
TOLERANCES ARE NON-CUMULATIVE AND DO NOT APPLY TO MATERIAL GAGES OR COMMERCIAL FEATURES

IEA "The Next Generation of Cool"

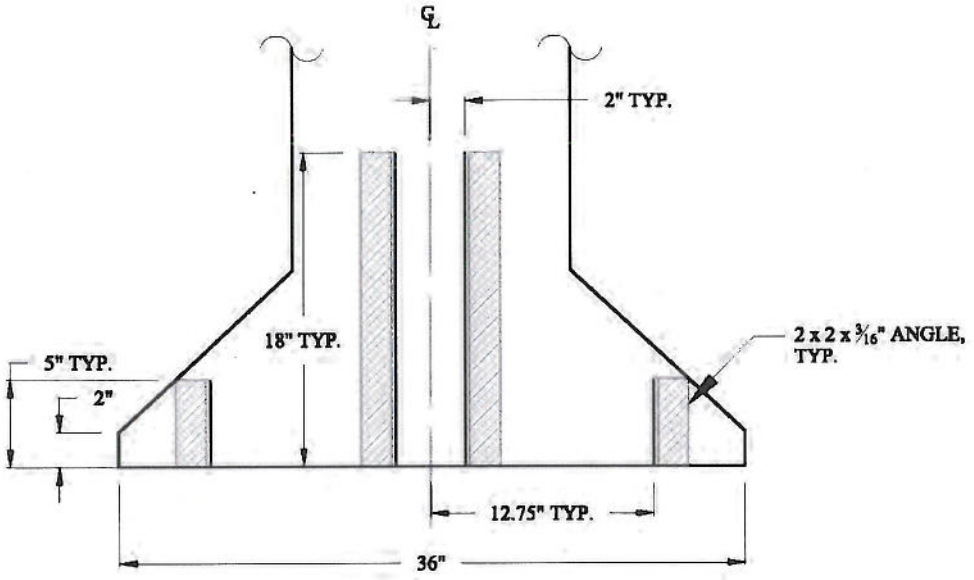
PROPERTY OF IEA, INC.
CONFIDENTIAL PROPRIETARY INFORMATION

SCALE:1:12 | SHEET 1 OF 1

	ES-3017	-	-	-	CHECKED: PCM DATE: 6/21/10
	-	-	-	-	DRAWN: STK DATE: 6/21/10

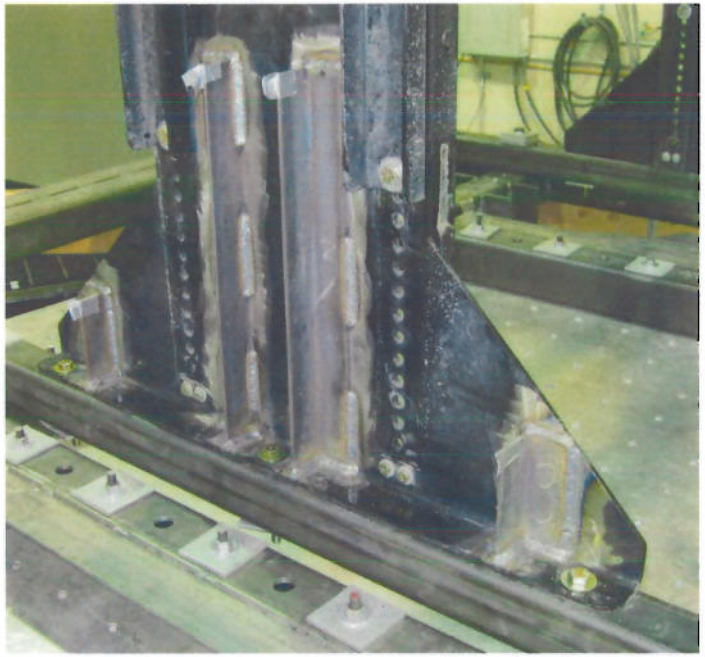
CUSTOMER DWG. NO: - | WEIGHT: POUNDS 997.33 | IEA, DWG. NO: RCC15025-AFC | BLANK REF -

REV.	Change #	DATE	DESCRIPTION: REMOTE CAC & FRAME RCC15	PR-NO: -
A	10-282	08/30/10		



NOTES:
1. 18-INCH ANGLE IRON: 4-INCH LONG 3/16 -INCH WELDS ON SIDES, WITH 3-INCH GAPS BETWEEN WELDS. FULL PERIMETER WELDS TOP AND BOTTOM.
2. 5-INCH LONG ANGLE IRON: FULLY WELDED.

Detail - UUT2 Support Frame Stiffeners (by DCL)



Photograph of one side of UUT2 support frame showing stiffeners (by DCL).

Project:	88135-1001	**DCL**	
Title:	UUT2 Stiffeners	**Dynamic Certification Laboratories**	
Drawn By:	Kelly Laplace		
Scale:	NTS	**Sheet:** 1 of 1	**Date:** 3 January 2010

Appendix B

UUT1 bolted to rigid test frame, instrumented and ready for shake; front view.

UUT1 bolted to rigid test frame, instrumented and ready for shake; rear view.

Close-up view of 1/4-inch Grade 8 bolts (eight total) used to attach UUT1 to shake table interface fixture.

Close-up view of UUT1 left radiator with tag and Victaulic couplings.

UUT2 bolted to rigid test frame, instrumented and ready for shake; front view.

UUT2 bolted to rigid test frame, instrumented and ready for shake; rear view.

Close-up of welded supports on UUT2 frame (see Appendix A for details).

Close-up view of UUT2 right radiator with tag.