



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

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: **OSP – 0347 - 10**

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Trane Commercial Systems

Manufacturer's Technical Representative: Jason Baggett

Mailing Address: 2701 Wilma Rudolph Blvd., Clarksville, TN 37040

Telephone: (931) 221-3722 Email: Jason.Baggett@Trane.com

Product Information

Product Name: Split System Condensing Units - RAUJ

Product Type: Air-cooled condensing unit

Product Model Number: RAUJ-C20, RAUJ-C25, RAUJ-C30, RAUJ-C40, RAUJ-C50, RAUJ-C60, RAUJ-C80,
RAUJ-D10, RAUJ –D12

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

General Description: Air-cooled condensing unit of HVAC split system.

Mounting Description: Rigid mount with bolts.

Applicant Information

Applicant Company Name: Trane Commercial Systems

Contact Person: Jason Baggett

Mailing Address: 2701 Wilma Rudolph Blvd., Clarksville, TN 37040

Telephone: (931) 221-3722 Email: Jason.Baggett@Trane.com

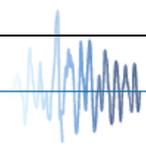
I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

Signature of Applicant: _____ Date: 6/17/13

Title: Large Commercial Unitary & Lab

Title: Engineering Leader Company Name: Trane

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





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

Company Name: Buehler & Buehler Structural Engineers, Inc.

Name: Scott R. Hooker California License Number: S3937

Mailing Address: 600 Q Street, Suite 200, Sacramento, CA 95811

Telephone: (916) 443-0303 Email: shooker@bbse.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: US ARMY ERDC-CERL

Contact Name: James Wilcoski

Mailing Address: 2902 Newmark Drive, Champaign, IL 61826-1076

Telephone: (217) 373-6763 Email: James.wilcoski@usace.army.mil





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY
OSH-FD-759 (REV 1/24/13)

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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) = 1.65

S_{DS} (Design spectral response acceleration at short period, g) = 2.20

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

R_p (Equipment or component response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = (See Table 3)

Overall dimensions and weight (or range thereof) = (See Table 3)

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, 2010: Yes No

List of Attachments Supporting Special Seismic Certification

Test Report(s) Drawings Calculations Manufacturer's Catalog

Other(s) (Please Specify): Test Witness Letter

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

Signature:  Date: 7/11/13

Print Name: M. R. Karim Title: SHFR

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.2 z/h = 1.0

Condition of Approval (if applicable): _____





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Trane RAUJ Product Line



Table 1. Certified Product List

Air Cooled Condensing Units

Model Number	Nominal Capacity	Tested/ Interpolated	Length (in)	Width (in)	Height (in)	Operating Weight (lbs)
RAUJ-C20	20.0 tons	UUT-1	88.25	60.12	68	1,573
RAUJ-C25	25.0 tons	Interpolated	88.25	60.12	68	1,623
RAUJ-C30	30.0 tons	Interpolated	88.25	60.12	68	1,623
RAUJ-C40	40.0 tons	Interpolated	88.25	88.25	73	2,532
RAUJ-C50	50.0 tons	Interpolated	113.82	88.25	73	2,868
RAUJ-C60	60.0 tons	Interpolated	113.82	88.25	73	2,853
RAUJ-C80	80.0 tons	Interpolated	176.25	88.25	73	4,940
RAUJ-D10	100.0 tons	Interpolated	227.25	88.25	73	5,622
RAUJ-D12	120.0 tons	UUT-2	227.25	88.25	73	6121



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Table 2. Certified Sub-Component List

Compressor					
<i>Part Number</i>	<i>Nominal capacity</i>	<i>Voltage</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
570010515100	10.0 tons	208/230V	IR	Carbon steel housing	Interpolated
570010515200	10.0 tons	380V	IR	Carbon steel housing	UUT-1
570010515200	10.0 tons	460V	IR	Carbon steel housing	UUT-1
570010515400	10.0 tons	575V	IR	Carbon steel housing	Interpolated
570010510100	10.0 tons	208/230V	IR	Carbon steel housing	Interpolated
570010510200	10.0 tons	380V	IR	Carbon steel housing	Interpolated
570010510200	10.0 tons	460V	IR	Carbon steel housing	Interpolated
570010510400	10.0 tons	575V	IR	Carbon steel housing	Interpolated
570010520100	11.5 tons	208/230V	IR	Carbon steel housing	Interpolated
570010520200	11.5 tons	380V	IR	Carbon steel housing	Interpolated
570010520200	11.5 tons	460V	IR	Carbon steel housing	Interpolated
570010520400	11.5 tons	575V	IR	Carbon steel housing	Interpolated
570010530100	13.5 tons	208/230V	IR	Carbon steel housing	Interpolated
570010530200	13.5 tons	380V	IR	Carbon steel housing	Interpolated
570010530200	13.5 tons	460V	IR	Carbon steel housing	Interpolated
570010530400	13.5 tons	575V	IR	Carbon steel housing	Interpolated
570011405100	15.0 tons	208/230V	IR	Carbon steel housing	Interpolated
570011405200	15.0 tons	380V	IR	Carbon steel housing	Interpolated
570011405200	15.0 tons	460V	IR	Carbon steel housing	Interpolated
570011405400	15.0 tons	575V	IR	Carbon steel housing	Interpolated
570011400100	15.0 tons	208/230V	IR	Carbon steel housing	Interpolated
570011400200	15.0 tons	380V	IR	Carbon steel housing	Interpolated
570011400200	15.0 tons	460V	IR	Carbon steel housing	Interpolated
570011400400	15.0 tons	575V	IR	Carbon steel housing	Interpolated
570011054100	15.0 tons	208/230V	IR	Carbon steel housing	Interpolated
570011054200	15.0 tons	380V	IR	Carbon steel housing	Interpolated
570011054200	15.0 tons	460V	IR	Carbon steel housing	Interpolated
570011054400	15.0 tons	575V	IR	Carbon steel housing	Interpolated
570011052100	15.0 tons	208/230V	IR	Carbon steel housing	Interpolated
570011052200	15.0 tons	380V	IR	Carbon steel housing	Interpolated
570011052200	15.0 tons	460V	IR	Carbon steel housing	Interpolated
570011052400	15.0 tons	575V	IR	Carbon steel housing	Interpolated
570011062100	20.0 tons	208/230V	IR	Carbon steel housing	Interpolated
570011062200	20.0 tons	380V	IR	Carbon steel housing	UUT-2
570011062200	20.0 tons	460V	IR	Carbon steel housing	UUT-2
570011062400	20.0 tons	575V	IR	Carbon steel housing	Interpolated

Condenser Coils -- Microchannel			
<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
438656010100	Delphi	Aluminum	UUT-1
438656020100	Delphi	Aluminum	UUT-1
438653010100	Delphi	Aluminum	Interpolated
438653020100	Delphi	Aluminum	Interpolated
438653040100	Delphi	Aluminum	Interpolated
438653030100	Delphi	Aluminum	Interpolated
438654830100	Delphi	Aluminum	UUT-2
438654840100	Delphi	Aluminum	UUT-2



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Table 2. Certified Sub-Component List (Cont'd)

Condenser Fan				
<i>Part Number</i>	<i>Voltage</i>	<i>Manufacturer*</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
X38010335010	(see motors)	Hessaire Products Inc	Carbon steel hub, Aluminum blades	UUT-1 & 2

Condenser Fan Motor					
<i>Part Number</i>	<i>Horsepower</i>	<i>Voltage</i>	<i>Manufacturer*</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
X70370261010	1 hp	208/230V	RBC Manufacturing Corp.	Carbon steel	UUT-1
X70370262010	1 hp	460V	RBC Manufacturing Corp.	Carbon steel	UUT-1 & 2
X70370263010	1 hp	575V	RBC Manufacturing Corp.	Carbon steel	Interpolated

Low Ambient Damper Assembly			
<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>	<i>Interpolated / Included With Test</i>
438656470100	IR	Carbon Steel	Interpolated
438656470200	IR	Carbon Steel	UUT-1
438656470300	IR	Carbon Steel	Interpolated
438656480100	IR	Carbon Steel	Interpolated
438656480200	IR	Carbon Steel	Interpolated
438656480300	IR	Carbon Steel	Interpolated
438656450100	IR	Carbon Steel	Interpolated
438656450200	IR	Carbon Steel	Interpolated
438656450300	IR	Carbon Steel	Interpolated
438656490100	IR	Carbon Steel	Interpolated
438656490200	IR	Carbon Steel	UUT-2

Low Ambient Damper - Actuator				
<i>Part Number</i>	<i>Description</i>	<i>Voltage</i>	<i>Manufacturer*</i>	<i>Interpolated / Included With Test</i>
X13611434010	Rotary; Damper 24V	24V	Belimo	UUT-1 & 2



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Table 2. Certified Sub-Component List (Cont'd)

Control Box Assembly			
Part Number	Manufacturer	Material	Interpolated / Included With Test
570746560200	IR	Galv steel housing	Interpolated
570746562300	IR	Galv steel housing	Interpolated
570746562000	IR	Galv steel housing	Interpolated
570746560300	IR	Galv steel housing	UUT-1
570746560400	IR	Galv steel housing	Interpolated
570746560500	IR	Galv steel housing	Interpolated
570746562400	IR	Galv steel housing	Interpolated
570746562100	IR	Galv steel housing	Interpolated
570746560600	IR	Galv steel housing	Interpolated
570746560700	IR	Galv steel housing	Interpolated
570746560800	IR	Galv steel housing	Interpolated
570746562500	IR	Galv steel housing	Interpolated
570746562200	IR	Galv steel housing	Interpolated
570746560900	IR	Galv steel housing	Interpolated
570746561000	IR	Galv steel housing	Interpolated
570746570200	IR	Galv steel housing	Interpolated
570746572500	IR	Galv steel housing	Interpolated
570746572200	IR	Galv steel housing	Interpolated
570746570300	IR	Galv steel housing	Interpolated
570746570400	IR	Galv steel housing	Interpolated
570746570500	IR	Galv steel housing	Interpolated
570746572600	IR	Galv steel housing	Interpolated
570746572300	IR	Galv steel housing	Interpolated
570746570600	IR	Galv steel housing	Interpolated
570746570700	IR	Galv steel housing	Interpolated
570746570800	IR	Galv steel housing	Interpolated
570746572700	IR	Galv steel housing	Interpolated
570746572400	IR	Galv steel housing	Interpolated
570746570900	IR	Galv steel housing	Interpolated
570746571000	IR	Galv steel housing	Interpolated
570746580200	IR	Galv steel housing	Interpolated
570746581100	IR	Galv steel housing	Interpolated
570746580300	IR	Galv steel housing	Interpolated
570746580400	IR	Galv steel housing	Interpolated
570746580500	IR	Galv steel housing	Interpolated
570746580600	IR	Galv steel housing	Interpolated
570746580700	IR	Galv steel housing	Interpolated
570746581200	IR	Galv steel housing	Interpolated
570746580800	IR	Galv steel housing	Interpolated
570746581300	IR	Galv steel housing	Interpolated
570746580900	IR	Galv steel housing	UUT-2
570746581000	IR	Galv steel housing	Interpolated



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Table 3. UUT Summary

<i>Model Number</i>	<i>Tonnage</i>	<i>UUT Mark</i>	<i>Mounting</i>	<i>Excitation Direction</i>	<i>Frequency (Hz)</i>	<i>Length (in)</i>	<i>Width (in)</i>	<i>Height (in)</i>	<i>Tested Weight (lbs)</i>
RAUJ-C20	20	UUT-1	Rigid Base Mount	X	7.8	88.25	60.12	68	1,548
				Y	15.0				
				Z	N/A				
RAUJ-D12	120	UUT-2	Rigid Base Mount	X	7.5	227.25	88.25	73	5,995
				Y	14.0				
				Z	N/A				



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Table 4. UUT Summary Sub-Component List

UUT-1 RAUJ-C20				
<i>Sub-Component</i>	<i>Description</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Compressor	CSHD120K0*0M	570010515200	IR	Carbon steel housing
Condenser Coil	Microchannel	438653010100	Delphi	Aluminum
Condenser Fan	26" Diameter	X38010335010	Hessaire Products Inc	Carbon steel hub, Aluminum blades
Condenser Fan Motor	1HP	X70370262010	RBC Manufacturing Corp.	Carbon steel
Low Ambient Damper Assembly		438656470200	IR	Carbon steel
Low Ambient Damper - Actuator	Rotary; Damper 24V	X13611434010	Belimo	Carbon steel
Control Panel		570746560300	IR	Galv steel housing

UUT-2 RAUJ-D12				
<i>Sub-Component</i>	<i>Description</i>	<i>Part Number</i>	<i>Manufacturer</i>	<i>Material</i>
Compressor	CSHN250K0*KM	570011062200	IR	Carbon steel housing
Condenser Coil	Microchannel	438653010100	Delphi	Aluminum
Condenser Fan	26" Diameter	X38010335010	Hessaire Products Inc	Carbon steel hub, Aluminum blades
Condenser Fan Motor	1HP	X70370262010	RBC Manufacturing Corp.	Carbon steel
Low Ambient Damper Assembly		438656490200	IR	Carbon steel
Low Ambient Damper - Actuator	Rotary; Damper 24V	X13611434010	Belimo	Carbon steel
Control Panel		570746580900	IR	Galv steel housing



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Shake Table Test Setup		Test #1		Seismic Parameters							
UUT Designation	UUT-1	UUT Designation	UUT-2	Building Code	Test Criteria	S_{ds} (g)	z/h	Horizontal		Vertical	
Identification No.	RAUJC2004EC13ABDF00000	Identification No.	RAUJD124EB132BDFJ00					A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
Attachment Method	Base mounted with (4) 1/2" dia. bolts	Attachment Method	Base mounted with (8) 1/2" dia. bolts								
				CBC 2013	ICC-ES AC156-12	2.20	1.0	3.52	2.64	1.47	0.59



Notes: The UUTs were full of contents during the test.
 The structural integrity of the component attachment and force-resisting systems was maintained.



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RAUJ Model Number Nomenclature

20 to 60-Ton Units¹

Digit 1 – Unit Type

R = Condensing Unit

Digit 2 – Condenser

A = Air Cooled

Digit 3 – Airflow

U = Upflow

Digit 4 – Development Sequence

J = Third

Digits 5,6,7 – Nominal Capacity

C20 = 20 Tons
 C25 = 25 Tons
 C30 = 30 Tons
 C40 = 40 Tons
 C50 = 50 Tons
 C60 = 60 Tons

Digit 8 – Voltage and Start Characteristics

E = 200/60/3 XL
 D = 415/50/3 XL
 F = 230/60/3 XL
 4 = 460/60/3 XL
 5 = 575/60/3 XL
 9 = 380/50/3 XL

Digit 9 – System Control

B = No System Control
 C = Constant Volume Control
 E = Supply Air VAV Control
 P = EVP Control

Digit 10 – Design Sequence

(Factory Assigned)
 A = First
 B = Second
 Etc.

DIGIT 11 – Ambient Control

0 = Standard
 1 = 0°F (Low Ambient Dampers)

DIGIT 12 – Agency Approval

0 = None
 3 = cULus (not available for 50 Hz)

DIGIT 13

A = Non Fused Unit Disconnect Switch

DIGIT 14

B = Hot Gas Bypass Valve

DIGIT 15

D = Suction Service Valves

DIGIT 16

F = Pressure Gauges and Piping

Digit 17

G = Return Air Sensor

Digit 18

J = Corrosion Protected Condenser Coil

Digit 19

C = Remote Chiller Evaporator & Install Kit
 T = Flow Switch (EVP Control Only)

Digit 20

1 = Spring Isolators
 2 = Neoprene Isolators

80 to 120-Ton Units²

Digit 1 – Unit Type

R = Remote Condensing Unit

Digit 2 – Condenser

A = Air-Cooled

Digit 3 – Airflow

U = Upflow

Digit 4 – Development Sequence

J = Third

Digits 5,6,7 – Nominal Capacity

C80 = 80 Tons
 D10 = 100 Tons
 D12 = 120 Tons

Digit 8 – Voltage and Start Characteristics

E = 200/60/3 XL
 F = 230/60/3 XL
 4 = 460/60/3 XL
 5 = 575/60/3 XL
 * = 380/50/3 XL²
 * = 415/50/3 XL²

Digit 9 – System Control

B = No System Control
 E = Supply Air VAV Control
 P = EVP Control

Digit 10 – Design Sequence

(Factory Assigned)
 A = First
 B = Second
 Etc.

Digit 11 – Ambient Control

0 = Standard
 1 = 0°F (Low Ambient Dampers)

Digit 12 – Agency Approval

0 = None
 3 = cULus (not available for 50 Hz)

Digit 13 – Number of Circuits

2 = Dual (All 80-120 Ton)

Digit 14

B = Hot Gas Bypass Valve

Digit 15

D = Suction Service Valves

Digit 16

F = Pressure Gauges and Piping

Digit 17

J = Corrosion Protected Condenser Coil

Digit 18

1 = Spring Isolators

Digit 19

C = Remote Chiller Evap & Install Kit
 3 = Flow Switch (EVP Control only)

