

TRANSMISSION VERIFICATION REPORT

TIME : 08/15/2006 12:18  
 NAME : CITY OF SACRAMENTO  
 FAX : 9168085543  
 TEL : 9168085656  
 SER.# : BROH4J832840

DATE, TIME : 08/15 12:17  
 FAX NO./NAME : 94513680  
 DURATION : 00:01:12  
 PAGE(S) : 03  
 RESULT : OK  
 MODE : STANDARD  
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**CITY OF SACRAMENTO  
 CASHIER'S WORKSHEET**

**ISSUED  
 CITY OF SACRAMENTO  
 AUG 15 2006  
 DOWNTOWN PERMIT  
 CENTER**

RECEIPT NUMBER: R0615027  
 TRANSACTION DATE: 08/15/2006  
 TRANSACTION AMOUNT: 188.61  
 NOTATION:

APD #: **0612447**  
 SITE ADDRESS: 1652 VALLARTA CR SAC  
 PARCEL: 225-0890-054  
 TYPE: Bldg Minor Permit  
 SUB-TYPE: RES  
 HOUSING: N  
 STATUS: **ISSUED**

Mixed Income Housing  
 Fee Program  
 ??

TRANSACTION LIST

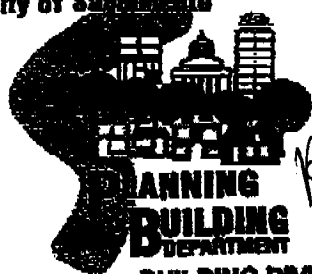
Type	Method	Description	Pymt Amount
Payment	Credit C	TEETER	188.61

RECEIPT ACCOUNT ITEM LIST

Class #	Description	Item #	Total Fee	Prev Pymt	Current Pymt
200	Permit--Building-Res	1100	175.00	.00	175.00
206	City Business Oper Tax	1730	2.48	.00	2.48
213	General Plan Surcharge	1760	4.13	.00	4.13
259	Bldg-Technology Surcharg	1750	7.00	.00	7.00

Building Permit

City of Sacramento



PLANNING BUILDING DEPARTMENT BUILDING DIVISION (916) 808-BLDG (2534)

Area: 4

\*\*\*\*\* Office Use Only \*\*\*\*\*

Permit No: 0612447 Date Issued: Total Amount: \$188.61

ISSUED CITY OF SACRAMENTO AUG 15 2006

\*\*\*\*\* Please Fill in DOWNTOWN PERMIT \*\*\*\*\*

Site Address: 1653 VALLAR CENTER Nature of Work: Change out HP work Air Handler: 2012 Condenser on ground

CONSTRUCTION LENDING AGENCY: I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C).

Lender's Name Lender's Address

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect. License Class C20 License Number 825095 Date 8/15/06 Signature [Signature]

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code; any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.00):

I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professions Code. The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code; The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law).

I am exempt under Sec. B & PC for this reason:

Date: Owner Signature

IN ISSUING THIS BUILDING PERMIT, the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and hereby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

Date 8/15/06 Applicant/Agent Signature [Signature]

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury one of the following declarations:

- I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.
I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:
Carrier Expiration Date
Policy Number

(This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date 8/15/06 Applicant Signature [Signature]

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

# 06 18 447

(certain restrictions apply)

Faxed request received in this office before 3:00 p.m. will be processed the following work day. Contractors must have a current certificate of Worker's Compensation Insurance. Work started before a Building Permit is issued will be subject to quad fees.

Permits requiring plan review are not eligible for FAXBACK

In order to process this request, ALL of the following information MUST be provided:



RESIDENTIAL  APARTMENTS (4+ units per building)  COMMERCIAL (limited)

Address: 1652 Valleria Cir. Unit #

Contract Price \$ 6,000.00

CONTACT PERSON: JOSELUIS NADRA CONTACT PHONE: 451-2222

Property Owner: VICKI MASSEY Contractor: Arctic Heat & Air License # 82509Y

Address: 1791 23rd St

City/State/Zip: SAC CA 95834

Phone: 520 321-9557 Phone: 451-2222 FAX 451-3680

NATURE OF WORK: (Provide detailed description of work & indicate type of work in selections below.)

Description of Work: Change-out a HP unit Split Air Handler in the attic condenser on the ground

<input type="checkbox"/> REROOF (excluding tile) <input type="checkbox"/> TEAR-OFF <input type="checkbox"/> RESHIRT <input type="checkbox"/> GARAGE # SQUARES 1      2      3+	(Residential ONLY) <input type="checkbox"/> HVAC INSTALLATIONS <input checked="" type="checkbox"/> NEW <input type="checkbox"/> CHANGE-OUT <input checked="" type="checkbox"/> Heat Pump <input type="checkbox"/> Package <input type="checkbox"/> Split system <input type="checkbox"/> Roof mount <input type="checkbox"/> Cut-in <input type="checkbox"/> Heat pump or steel unit to gas. <input type="checkbox"/> Wall furnace <input type="checkbox"/> Fire Place insert <input type="checkbox"/> Other (describe below) Value of dust work: Equipment: \$ Cubic: \$	(Residential ONLY) <input type="checkbox"/> WATER HEATER <input type="checkbox"/> GAS <input type="checkbox"/> ELECTRIC <input type="checkbox"/> Change-out <input type="checkbox"/> Electric to Gas <input type="checkbox"/> Relocate <input type="checkbox"/> New <input type="checkbox"/> DRY ROT OR TERMITES DAMAGE REPAIR <input type="checkbox"/> Flooding/Water <input type="checkbox"/> Roof Structure <input type="checkbox"/> Exterior * Design Review approval may be required. <input type="checkbox"/> PUBLIC UTILITIES SAFETY INSPECTION * (Residential and single apartment units ONLY) <input type="checkbox"/> SAUD <input type="checkbox"/> POLE	(Residential ONLY) MINOR ELECTRIC and/or MINOR PLUMBING <input type="checkbox"/> Existing Service Change # amps <input type="checkbox"/> New electric circuits <input type="checkbox"/> Re-wire <input type="checkbox"/> Replacement <input type="checkbox"/> Water Service <input type="checkbox"/> Sewer Service <input type="checkbox"/> Gas Line <input type="checkbox"/> Re-plumb <input type="checkbox"/> Water <input type="checkbox"/> Waste
<input type="checkbox"/> SIDING <input type="checkbox"/> Wood <input type="checkbox"/> T-111 <input type="checkbox"/> Horiz <input type="checkbox"/> Vinyl <input type="checkbox"/> Stucco	IFR Faxback Permit updated 12/01/01 * Design Review approval may be required.		

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING (Page 1 of 8) CF-4R		
Project Address <b>1652 Vallarta Circle</b>	Builder or Installer Name <b>Arctic Air Conditioning &amp; Heating</b>	
Builder or Installer Contact <b>Joceline Nadra</b>	Telephone <b>916 457-2222</b>	Plan/Permit (Additions or Alterations) Number <b>0612447</b>
HERS Rater <b>STEVE VASA- CC2004262</b>	Telephone <b>916-682-8730</b>	Sample Group Number
Compliance Method (Prescriptive)	Climate Zone <b>12</b>	
Certifying Signature	Date <b>08/29/06</b>	Sample House Number
Firm <b>Capitol Energy Consultants</b>	HERS Provider <b>CalCerts</b>	
Street Address: <b>1709 Adonis Way</b>	City/State/Zip: <b>Sacramento CA 95864</b>	

Copies to: BUILDER, HERS PROVIDER AND BUILDING DEPARTMENT

### HERS RATER COMPLIANCE STATEMENT

The house was:  Tested  Approved as part of sample testing, but was not tested

As the HERS rater providing diagnostic testing and field verification, I certify that the house identified on this form complies with the diagnostic tested compliance requirements as checked  on this form. The HERS rater must check and verify that the new distribution system is fully ducted and correct tape is used before a CF-4R may be released on every tested building. The HERS rater must not release the CF-4R until a properly completed and signed CF-6R has been received for the sample and tested buildings.

- The installer has provided a copy of CF-6R (Installation Certificate).
- New ducts are fully ducted (i.e., does not use building cavities as plenums or platform returns in lieu of ducts).
- New ducts with cloth backed, rubber adhesive duct tape is installed, mastic and draw bands are used in combination with cloth backed, rubber adhesive duct tape to seal leaks at duct connections.

### MINIMUM REQUIREMENTS FOR DUCT LEAKAGE REDUCTION COMPLIANCE CREDIT

Procedures for field verification and diagnostic testing of air distribution systems are available in RACM, Appendix RC4.3.

#### Duct Diagnostic Leakage Testing Results

NEW CONSTRUCTION:			
	Duct Pressurization Test Results (CFM @ 25 Pa)	Measured Values	
1	Enter Tested Leakage Flow in CFM:		
2	Fan Flow: Calculated (Nominal: <input checked="" type="checkbox"/> Cooling <input type="checkbox"/> Heating) or <input checked="" type="checkbox"/> Measured Enter Total Fan Flow in CFM:	1200	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
3	Pass if Leakage Percentage < 6% [100 x [ (Line # 1) / (Line # 2) ]]		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
ALTERATIONS: Duct System and/or HVAC Equipment Change-Out			
4	Enter Tested Leakage Flow in CFM from CF-6R: Pre-Test of Existing Duct System Prior to Duct System Alteration and/or Equipment Change-Out.	598	
5	Enter Tested Leakage Flow in CFM: Final Test of New Duct System or Altered Duct System for Duct System Alteration and/or Equipment Change-Out.	239	
6	Enter Reduction in Leakage for Altered Duct System [ (Line # 4) Minus (Line # 5) ] (Only if Applicable)	359	
7	Enter Tested Leakage Flow in CFM to Outside (Only if Applicable)		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
8	Entire New Duct System - Pass if Leakage Percentage < 6% [100 x [ (Line # 5) / (Line # 2) ]]		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
TEST OR VERIFICATION STANDARDS: For Altered Duct System and/or HVAC Equipment Change-Out			
Use one of the following four Test or Verification Standards for compliance:			
9	Pass if Leakage Percentage < 15% [100 x [ (Line # 5) / (Line # 2) ]]	19.9	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
10	Pass if Leakage to Outside Percentage < 10% [100 x [ (Line # 7) / (Line # 2) ]]		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
11	Pass if Leakage Reduction Percentage > 60% [100 x [ (Line # 6) / (Line # 4) ]] and Verification by Smoke Test and Visual Inspection	60.0	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
	Pass if Sealing of all Accessible Leaks and Verification by Smoke Test and Visual Inspection		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Pass if One of Lines # 9 through # 12 pass		<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

Residential Compliance Forms

December 2005

## System Passes

CERTIFICATE OF COMPLIANCE: RESIDENTIAL (Page 1 of 5) CF-1R		
Project Title <b>HVAC CHANGEOUT</b>	Date	Building Permit # <b>0612447</b>
Project Address <b>1652 Vallarta Circle SACRAMENTO, CA 95834</b>		Plan Check / Date
Documentation Author <b>Joceline Nadra</b>	Telephone <b>916 457-2222</b>	Field Check / Date
Compliance Method (Prescriptive)	Climate Zone <b>12</b>	Enforcement Agency Use Only

Alternative Component Package Method: (check one)  C  D  D (Alternative)  
 Package C and Package D choices require HERS rater field verification and/or diagnostic testing (see CF-1R page 3)  
 For Package D Alternative see Appendix B Table 151-C Footnotes 8-14 in the Residential Compliance Manual (RCM)

**GENERAL INFORMATION**

Total Conditioned Floor Area (CFA) \_\_\_\_\_ ft<sup>2</sup>  
 Average Ceiling Height: **8** ft

Check Applicable Boxes

Building Type: (check one or more)  Single Family  Multifamily  Addition  Alteration  
 (If adding fenestration fill-out WS-4R, Fenestration Maximum Allowed Area Worksheet and see Section 8.3.2 for Additions and 8.3.3 for Alterations in the RCM.)

- Maximum Allowed Total Fenestration Area   n/a   ft<sup>2</sup> (from WS-4R)
- Maximum Allowed West Facing Fenestration Area   na   ft<sup>2</sup> (from WS-4R)
- Number of Stories:   1   Number of Dwelling Units:   1
- Floor Construction Type:   slab   Slab/Raised Floor (circle one or both)
- Front Orientation:   na   North / South / East / West : All Orientations (input front orientation in degrees from True North and circle one).

**RADIANT BARRIER** (check box if required in climate zones 2, 4, 8-15)

**OPAQUE SURFACES INCLUDING OPAQUE DOORS**

Component Type (Wall, Roof, Floor, Slab Edge, Doors)	Frame Type (Wood or Metal)	Cavity Insulation R-Value	Continuous Insulation R-Value	Assembly U-factor (for wood, metal frame and mass assemblies) <sup>1</sup>	Joint Appendix IV Reference	Roof Radiant Barrier Installed <sup>2</sup> Yes or No	Location Comments (attic, garage, typical, etc.)
<b>N/A</b>							

1) See Joint Appendix IV in Section IV.2, IV.3, and IV.4, which is the basis for the U-factor criterion. U-factors can not exceed prescriptive value to show equivalence to R-values.  
 2) This column is for the Inspector to verify installation of roof radiant barrier.

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING (Page 3 of 8) <b>CF-4R</b>	
Project Address <b>1652 Vallarta Cricle</b>	Builder Name <b>Arctic Air Conditioning &amp; Heating</b>
Builder Contact <b>Joceline Nadra</b> Telephone <b>916 457-2222</b>	Plan Number
HERS Rater <b>STEVE VASA- CC2004262</b> Telephone <b>916-882-8720</b>	Sample Group Number
Compliance Method (Prescriptive)	Climate Zone <b>12</b>
Certifying Signature	Date <b>08/29/06</b> Sample House Number
Firm <b>Capitol Energy Consultants</b>	HERS Provider <b>CalCerts</b>
Street Address: <b>1709 Adonis Way</b>	City/State/Zip: <b>Sacramento CA 95864</b>

Copies to: **BUILDER, HERS PROVIDER AND BUILDING DEPARTMENT**

**HERS RATER COMPLIANCE STATEMENT**

The house was:  Tested  Approved as part of sample testing, but was not tested

As the HERS rater providing diagnostic testing and field verification, I certify that the house identified on this form complies with the diagnostic tested compliance requirements as checked on this form.

The installer has provided a copy of CF-6R (Installation Certificate).

**THERMOSTATIC EXPANSION VALVE (TXV)**

Procedures for field verification of thermostatic expansion valves are available in RACM, Appendix RI.

				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Access is provided for inspection. The procedure shall consist of visual verification that the TXV is installed on the system and installation of the specific equipment shall be verified.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
				Yes is a pass	Pass Fail

**REFRIGERANT CHARGE MEASUREMENT**

Verification for Required Refrigerant Charge for Split System Space Cooling Systems without Thermostatic Expansion Valves

Outdoor Unit Serial #	
Location	
Outdoor Unit Make	
Outdoor Unit Model	
Cooling Capacity	Btu/hr
Date of Verification	
Date of Refrigerant Gauge Calibration	(must be checked monthly)
Date of Thermocouple Calibration	(must be checked monthly)

Standard Charge Measurement (outdoor air dry-bulb 55 °F and above)  
 Note: The system should be installed and checked in accordance with the manufacturer's specifications and installer verification shall be documented on CF-6R before starting the procedure. If outdoor air dry-bulb is below 55 °F rater shall use the Alternative Charge Measure Procedure

Procedures for Determining Refrigerant Charge using the Standard Method are available in RACM, Appendix RD2.

<input checked="" type="checkbox"/> <input type="checkbox"/> Yes <input type="checkbox"/> No	A copy of CF-6R (Installation Certificate) has been provided with refrigerant charge measurement documented.
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**INSTALLATION CERTIFICATE**

(Page 3 of 12) CF-6R

Site Address <b>1652 Vallarta Cricle</b>	Permit Number <b>0612447</b>
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An installation certificate is required to be posted at the building site or made available for all appropriate inspections. (The information provided on this form is required) After completion of final inspection, a copy must be provided to the building department (upon request) and the building owner at occupancy, per Section 10-103(a).

**HVAC SYSTEMS:**

*Heating Equipment*

Equip Type (pkg. heat pump)	CFC Certified Mfr. Name and Model Number	# of Identical Systems	Efficiency (AFUE, etc.) <sup>1</sup> (≥CF-IR value)	Duct Location (attic, etc.)	Duct or Piping R-value	Heating Load (Btu/hr)	Heating Capacity (Btu/hr)
<b>Furnace</b>	<b>AMANA</b>	<b>1</b>		<b>Attic</b>	<b>4.2</b>		
	<b>MBR1200AA-1AA</b>						

*Cooling Equipment*

Equip Type (pkg. heat pump)	CFC Certified Mfr. Name and Model Number	# of Identical Systems	Efficiency (SEER or EER) <sup>1</sup> (≥CF-IR value)	Duct Location (attic, etc.)	Duct R-value	Cooling Load (Btu/hr)	Cooling Capacity (Btu/hr)
<b>A/C</b>	<b>Amana</b>	<b>1</b>	<b>14</b>	<b>Attic</b>	<b>4.2</b>		<b>3 Ton</b>
	<b>RHF36C2C</b>						

1. ≥ symbol reads *greater than or equal to what is indicated on the CF-IR value.*  
Include both SEER and EER if compliance credit for high EER air conditioner is claimed.

I, the undersigned, verify that equipment listed above is: 1) is the actual equipment installed, 2) equivalent to or more efficient than that specified in the certificate of compliance (Form CF-1R) submitted for compliance with the *Energy Efficiency Standards for residential buildings*, and 3) equipment that meets or exceeds the appropriate requirements for manufactured devices (from the *Appliance Efficiency Regulations* or Part 6), where applicable.

Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner	<b>Arctic Air Conditioning &amp; Heating</b>
Signature: <i>[Signature]</i>	Date: <b>9/30/06</b>

Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE) BUILDING OWNER AT OCCUPANCY

**INSTALLATION CERTIFICATE**

(Page 4 of 12) CF-6R

Site Address **1652 Vallarta Cricle**

Permit Number **0612447**

**INSTALLER COMPLIANCE STATEMENT FOR DUCT LEAKAGE**

**INSTALLER COMPLIANCE STATEMENT**

The building was:  Tested at Final  Tested at Rough-in

**INSTALLER VISUAL INSPECTION AT FINAL CONSTRUCTION STAGE FOR NEW DUCTS:**

- Remove at least one supply and one return register, and verify that the spaces between the register boot and the interior finishing wall are properly sealed.
- If the house rough-in duct leakage test was conducted without an air handler installed, inspect the connection points between the air handler and the supply and return plenums to verify that the connection points are properly sealed.
- Inspect all joints to ensure that no cloth backed rubber adhesive duct tape is used on new ducts.


**DUCT LEAKAGE REDUCTION**

*Procedures for field verification and diagnostic testing of air distribution systems are available in RACM, Appendix RC4.3*

**NEW CONSTRUCTION:**

	Duct Pressurization Test Results (CFM @ 25 Pa)	Measured Values	
1	Enter Tested Leakage Flow in CFM:		
2	Fan Flow: Calculated (Nominal: <input checked="" type="checkbox"/> Cooling <input type="checkbox"/> Heating) or <input type="checkbox"/> Measured If Fan Flow is Calculated as 400 cfm/ton x number of tons or as 21.7 cfm/(kBtu/hr) x Heating Capacity in Thousands of Btu/hr, enter total calculated or measured fan flow in CFM here:	1200	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
3	Pass if Leakage Percentage < 6% for Final or < 4% at Rough-in without air handle: [100 x [ (Line # 1) / (Line # 2) ]]		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
<b>ALTERATIONS: Duct System and/or HVAC Equipment Change-Out</b>			
4	Enter Tested Leakage Flow in CFM from Pre-Test of Existing Duct System Prior to Duct System Alteration and/or Equipment Change-Out.	598	
5	Enter Tested Leakage Flow in CFM from Final Test of New Duct System or Altered Duct System for Duct System Alteration and/or Equipment Change-Out.	239	
6	Enter Reduction in Leakage for Altered Duct System [ (Line # 4) Minus (Line # 5) ] - (Only if Applicable)	359	
7	Enter Tested Leakage Flow in CFM to Outside (Only if Applicable)		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
8	Entire New Duct System - Pass if Leakage Percentage < 6% for Final. [100 x [ (Line # 5) / (Line # 2) ]]		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
<b>TEST OR VERIFICATION STANDARDS: For Altered Duct System and/or HVAC Equipment Change-Out Use one of the following four Test or Verification Standards for compliance:</b>			
9	Pass if Leakage Percentage < 15% [100 x [ (Line # 5) / (Line # 2) ]]	19.9	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
10	Pass if Leakage to Outside Percentage < 10% [100 x [ (Line # 7) / (Line # 2) ]]		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
11	Pass if Leakage Reduction Percentage > 60% [100 x [ (Line # 6) / (Line # 4) ]] and Verification by Smoke Test and Visual Inspection	60.0	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
12	Pass if Sealing of all Accessible Leaks and Verification by Smoke Test and Visual Inspection Pass if One of Lines # 9 through # 12 pass		<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail

I, the undersigned, verify that the above diagnostic test results were performed in conformance with the requirements for compliance credit. I, the undersigned, also certify that the newly installed or retrofit Air-Distribution System Ducts, Plenums and Fans comply with Mandatory requirements specified in Section 150 (m) of the 2005 Building Energy Efficiency standards.

Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner	<b>Artic Air</b>
Signature: 	Date: <b>9/30/06</b>

Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE) BUILDING OWNER AT OCCUPANCY



<b>INSTALLATION CERTIFICATE</b>		<b>(Page 5 of 12) CF-6R</b>
Site Address <b>1652 Vallarta Cricle</b>	Permit Number	

✓  **THERMOSTATIC EXPANSION VALVE (TXV)**  
*Procedures for field verification of thermostatic expansion valves are available in RACM, Appendix RI.*

✓	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Access is provided for inspection. The procedure shall consist of visual verification that the TXV is installed on the system and installation of the specific equipment shall be verified.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Yes is a pass				Pass	Fail

✓  **REFRIGERANT CHARGE MEASUREMENT**  
 Verification for Required Refrigerant Charge and Adequate Airflow for Split System Space Cooling Systems without Thermostatic Expansion Valves

Outdoor Unit Serial #	
Location	<b>N/A</b>
Outdoor Unit Make	<b>N/A</b>
Outdoor Unit Model	<b>N/A</b>
Cooling Capacity	<b>N/A</b> /hr
Date of Verification	
Date of Refrigerant Gauge Calibration	(must be checked monthly)
Date of Thermocouple Calibration	(must be checked monthly)

**Standard Charge Measurement Procedure (outdoor air dry-bulb 55°F and above):**  
*Procedures for Determining Refrigerant Charge using the Standard Method are available in RACM, Appendix RD2.*  
 Note: The system should be installed and charged in accordance with the manufacturer's specifications before starting this procedure.

**Measured Temperatures**

Supply (evaporator leaving) air dry-bulb temperature (Tsupply, db)		°F
Return (evaporator entering) air dry-bulb temperature (Treturn, db)		°F
Return (evaporator entering) air wet-bulb temperature (Treturn, wb)		°F
Evaporator saturation temperature (Tevaporator, sat)		°F
Suction line temperature (Tsuction, db)	<b>N/A</b>	°F
Condenser (entering) air dry-bulb temperature (Tcondenser, db)		°F

**Superheat Charge Method Calculations - Refrigerant Charge**

Actual Superheat = Tsuction, db - Tevaporator, sat		°F
Target Superheat (from Table RD-2)		°F
Actual Superheat - Target Superheat (System passes if between -5 and +5°F)		°F

**Temperature Split Method Calculations for Adequate Airflow**

*Split Method Calculation is not necessary if Adequate Airflow credit is taken*

Actual Temperature Split = T return, db - Tsupply, db		°F
Target Temperature Split (from Table RD3)		°F
Actual Temperature Split - Target Temperature Split (System passes if between -3°F and +3°F or, upon remeasurement, if between -3°F and -10°F)		°F

<b>INSTALLATION CERTIFICATE</b>		<b>(Page 6 of 12) CF-6R</b>
Site Address <b>1652 Vallarta Circle</b>	Permit Number <b>0612447</b>	

**Standard Charge Measurement Summary:**  
 System shall pass both refrigerant charge and adequate airflow calculation criteria from the same measurements. If corrective actions were taken, both criteria must be remeasured and recalculated.

Yes  No **System Passes**

**Alternate Charge Measurement Procedure (outdoor air dry-bulb below 55 °F)**  
 Note: The system should be installed and charged in accordance with the manufacturer's specifications and installer verification shall be documented on CF-6R before starting this procedure. If outdoor air dry-bulb is 55 °F or above, installer shall use the Standard Charge Measure Procedure:

*Procedures for Determining Refrigerant Charge using the Alternate Method are available in RACM, Appendix RD3.*  
**Weigh-In Charging Method for Refrigerant Charge**

Actual liquid line length:		ft
Manufacturer's Standard liquid line length:		ft
Difference (Actual - Standard):		ft
Manufacturer's correction (ounces per foot) $\times$ difference in length = _____ ounces + = add (- = remove)		

*Measured Airflow Method for Adequate Airflow Verification available in RACM, Appendix RD2.6*

Calculated Airflow: Cooling Capacity (Btu/hr)	$\times 0.033$ (cfm/Btu-hr) =	CFM
Measured Airflow is _____ CFM (Measured airflow must be greater than the calculated airflow).		

**Alternate Charge Measurement Summary:**  
 System shall pass both refrigerant charge and adequate airflow calculation criteria from the same measurements. If corrective actions were taken, both criteria must be remeasured and recalculated.

Yes  No **System Passes**

Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner	Arctic Air Conditioning & Heating
Signature: <i>[Signature]</i>	Date: <b>9/30/06</b>

**Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE) BUILDING OWNER AT OCCUPANCY**

**FAN WATT DRAW**  
*Procedures for measuring the air handler watt draw are available in RACM, Appendix RE3.2.*

**Method For Fan Watt Draw Measurement**

<input type="checkbox"/>	RE3.2.1	Portable Watt Meter Measurement
<input type="checkbox"/>	RE3.2.2	Utility Revenue Meter Measurement

Measured Fan Watt Draw: \_\_\_\_\_ Watts  
 Measured Fan Flow (enter total cfm from airflow verification): \_\_\_\_\_ cfm  
 Measured Fan Flow (enter result of Watts/cfm): \_\_\_\_\_ Watts/cfm

Yes  No Measured fan watt/cfm is equal to or lower than the fan watt/cfm flow documented in CF-1R.

Yes is a pass Pass Fail

**ADEQUATE AIRFLOW VERIFICATION**  
*Procedures for measuring the airflow are available in RACM, Appendix RE3.1.*

**Method For Airflow Measurement**

<input type="checkbox"/>	RE4.1.1	Diagnostic Fan Flow Using Flow Capture Hood
<input type="checkbox"/>	RE4.1.2	Diagnostic Fan Flow Using Plenum Pressure Matching
<input type="checkbox"/>	RE4.1.3	Diagnostic Fan Flow Using Flow Grid Measurement
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Duct design exists on plans

Measured Airflow: \_\_\_\_\_ Total cfm  
 Rated Tons cfm/ton \_\_\_\_\_ cfm/ton

Yes  No Measured airflow is greater than the criteria in Table RF-2.

Yes is a pass Pass Fail

**MAXIMUM COOLING CAPACITY**  
*Procedures for determining maximum cooling load capacity are available in RACM, Appendix RF3.*

1	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	Adequate airflow verified (see adequate airflow credit)		
2	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	Refrigerant charge or TXV		
3	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	Duct leakage reduction credit verified		
4	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	Cooling capacities of installed systems are ≤ to maximum cooling capacity indicated on the Performance's CF-1R and RF-3.		
5	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	If the cooling capacities of installed systems are > than maximum cooling capacity in the CF-1R, then the electrical input for the installed systems must be ≤ to electrical input in the CF-1R.	<input type="checkbox"/>	<input type="checkbox"/>

Yes to 1, 2, and 3; and Yes to either 4 or 5 is a pass Pass Fail

**HIGH EER AIR CONDITIONER**  
*Procedures for verification are available in RACM, Appendix RI.*

1	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	EER values of installed systems match the CF-1R		
2	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	For split system, indoor coil is matched to outdoor coil	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes <input type="checkbox"/> No	Time Delay Relay Verified (If Required)	<input type="checkbox"/>	<input type="checkbox"/>

Yes to 1 and 2; and 3 (If Required) is a pass Pass Fail

Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner	Arctic Air Conditioning & Heating
Signature:	Date:

**CERTIFICATE OF COMPLIANCE: RESIDENTIAL (Page 2 of 5)** **CF-1R**

**HVAC CHANGEOUT**

*Project Title*

*Date*

**FENESTRATION PRODUCTS - U-FACTOR AND SHGC**

FENESTRATION MAXIMUM ALLOWED AREA WORKSHEET WS-4R - must be included for New Construction, Additions, and Alterations.

Fenestration #/Type/Pos. (Front, Left, Rear, Right, Skylight)	Orientation, N, S, E, W <sup>1</sup>	Area (ft <sup>2</sup> )	U-factor <sup>2</sup>	U-factor Source <sup>2</sup>	SHGC <sup>3</sup>	SHGC Source <sup>5</sup>	Exterior Shading/Overhangs <sup>6,7</sup> <input checked="" type="checkbox"/> box if WS-3R is included
<b>N/A</b>							
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

- 1) Skylights are now included in West-facing fenestration area if the skylights are tilted to the west or tilted in any direction when the pitch is less than 1:12. See §151(f)3C and in Section 3.2.3 of the Residential Manual.
- 2) Enter values in this column from either NFRC Certified Label or from Standards Default Table 116-A.
- 3) Indicate source either from NFRC or Table 116-A.
- 4) Enter values in this column from NFRC or from Standards Default Table 116B or adjusted SHGC from WS-3R.
- 5) Indicate source either from NFRC, Table 116B or WS-3R.
- 6) Shading Devices are defined in Table 3-3 in the Residential Manual and see WS-3R to calculate Exterior Shading devices.
- 7) See Section 3.2.4 in the Residential Manual.

**HVAC SYSTEMS**

Heating Equipment Type and Capacity (furnace, heat pump, boiler, etc.)	Minimum Efficiency (AFUE or HSPF)	Distribution Type and Location (ducts, attic, etc.)	Duct or Piping R-Value	Thermostat Type	Configuration (split or package)
Furnace		Attic	4.2	antiback	

Cooling Equipment Type and Capacity (A/C, heat pump, evap. cooling)	Minimum Efficiency (SEER or EER)	Distribution Type and Location (ducts, attic, etc.)	Duct or Piping R-Value	Thermostat Type	Configuration (split or package)
A/C	14		4.2	antiback	

*Residential Compliance Forms*

*December 2005*

**CERTIFICATE OF COMPLIANCE: RESIDENTIAL (Page 3 of 5) CF-1R**

<i>Project Title</i> <b>HVAC CHANGEOUT</b>	<i>Date</i>
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**SEALED DUCTS and TXVs (or Alternative Measures)**

A signed CF-4R Form must be provided to the building department for each home for which the following are required.

<input checked="" type="checkbox"/>	Sealed Ducts (all climate zones) (Installer testing and certification and HERS rater field verification required.)
<input type="checkbox"/>	TXVs, readily accessible (climate zones 2 and 8-15 only) (Installer testing and certification and HERS Rater field verification required.)
<input type="checkbox"/>	Refrigerant Charge (climate zones 2 and 8-15 only) (Installer testing and certification and HERS Rater field verification required.)

OR

<input type="checkbox"/>	Alternative to Sealed Ducts and Refrigerant Charge /TXVs (See Package D Alternative Package Features for Project Climate Zone in the RM Appendix B Table 151-C, Footnotes 7-14.
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OR

<input type="checkbox"/>	No ducts installed.
<input type="checkbox"/>	New ducts from existing space conditioning equipment, not exceeding 40ft. in length.
<input type="checkbox"/>	For additions and alterations, duct systems that are not documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Residential ACM Manual. Duct systems with more than 40 linear feet in unconditioned spaces shall meet the requirements of Section 150(m) and duct insulation requirements of Package D.

**WATER HEATING SYSTEMS**

<input checked="" type="checkbox"/>	Check box if system meets criteria of a "Standard" system. Standard system is one gas-fired water heater per dwelling unit. If the water heater is a storage type, 50 gallons is the maximum capacity and recirculation system is not allowed.
<input type="checkbox"/>	Check box when using Preapproved Alternative Water Heating table, Table 5-4 in Chapter 5 in the Residential Manual. No water heating calculations are required, and the system complies automatically.
<input type="checkbox"/>	Check box if system does not meet criteria of "Standard" system, and does not comply with the Preapproved Alternative Water Heating table. In this case, the Performance Method must be used and must be included in the submittal.
<input type="checkbox"/>	Check box to verify that a time control is required for a recirculating system pump for a system serving multiple units

Systems serving single dwelling units (See RM Table 5-4, Alternative Water Heating Systems for recirculation requirements)

Water Heater Type/Fuel Type	Distribution Type	Number in System	Rated Input <sup>1</sup> (kW or Btu/hr)	Tank Capacity (gallons)	Energy Factor <sup>1</sup> or Thermal Efficiency	Standby <sup>1</sup> Loss (%)	Tank External Insulation R-Value
<b>N/A</b>							

System serving multiple dwelling units (See Residential Manual Section 5.3.3)

Water Heater Type	Distribution Type	Number in System	Rated Input <sup>1</sup> (kW or Btu/hr)	Tank Capacity (gallons)	Energy Factor <sup>1</sup> or Thermal Efficiency	Standby <sup>1</sup> Loss (%)	Tank External Insulation R-Value

1) For small gas storage water heaters (rated inputs of less than or equal to 75,000 Btu/hr), electric resistance, and heat pump water heaters, list Energy Factor. For large gas storage water heaters (rated input of greater than 75,000 Btu/hr), list Rated Input, Recovery Efficiency, Thermal Efficiency and Standby Loss. For instantaneous gas water heaters, list Rated Input and Thermal Efficiencies.

**Pipe Insulation** (kitchen lines  $\geq$  3/4 inches) All hot water pipes from the heating source to the kitchen fixtures that are 3/4 inches or greater in diameter shall be thermally insulated as specified by Section 150 (j) 2 A or 150 (j) 2 B.

**CERTIFICATE OF COMPLIANCE: RESIDENTIAL (Page 4 of 5) CF-1R**

Project Title: HVAC CHANGEOUT Date: \_\_\_\_\_

**SPECIAL FEATURES REQUIRING BUILDING OFFICIAL or HERS RATER VERIFICATION**

Indicate which special features are parts of this project. The list below only represents special features relevant to the prescriptive method. (Check Applicable boxes)

Category	Building Official Verification of Special Features	HERS Rater Verification	HERS Rater Diagnostic Testing	Measure
<b>Ducts</b>				
<input type="checkbox"/>	Y			100% of ducts in crawlspace/basement
<input type="checkbox"/>		Y		Buried ducts
<input type="checkbox"/>		Y		Diagnostic supply duct location, surface area, and R-value
<input type="checkbox"/>	Y			Duct increased R-value
<input checked="" type="checkbox"/>			Y	Duct leakage
<input type="checkbox"/>	Y			Ducts in attic with radiant barriers
<input type="checkbox"/>		Y		Less than 12 ft. of duct outside conditioned space
<input type="checkbox"/>		Y		Non-standard duct location
<input type="checkbox"/>	Y			Supply registers within two ft of floor
<input type="checkbox"/>				
<b>Envelope</b>				
<input type="checkbox"/>	Y			Air retarding wrap
<input type="checkbox"/>	Y			Cool roof
<input type="checkbox"/>	Y			Exterior shades
<input type="checkbox"/>	Y			High thermal mass
<input type="checkbox"/>	Y			Inter-zone ventilation
<input type="checkbox"/>	Y			Metal framed walls
<input type="checkbox"/>	Y			Non-default vent heights
<input type="checkbox"/>	Y	Y		Quality insulation installation
<input type="checkbox"/>	Y			Radiant barrier
<input type="checkbox"/>			Y	Reduced infiltration (blower door). May also require mechanical ventilation.
<input type="checkbox"/>	Y			Solar gain targeting (for sunspaces)
<input type="checkbox"/>	Y			Sunspace with interzone surfaces
<input type="checkbox"/>	Y			Vent area greater than 10%
<input type="checkbox"/>				
<b>HVAC Equipment</b>				
<input type="checkbox"/>			Y	Adequate air flow
<input type="checkbox"/>		Y		Air conditioner size
<input type="checkbox"/>			Y	Air handler fan power
<input type="checkbox"/>		Y		High EER
<input type="checkbox"/>	Y			Hydronic heating systems
<input type="checkbox"/>		Y		Mechanical ventilation
<input type="checkbox"/>			Y	Refrigerant charge
<input checked="" type="checkbox"/>		Y		Thermostatic expansion valve (TXV)
<input type="checkbox"/>	Y			Zonal control
<b>Water Heater</b>				
<input type="checkbox"/>	Y			Combined hydronic
<input type="checkbox"/>	Y			High EF for existing water heaters
<input type="checkbox"/>	Y			Non-NAECA water heater
<input type="checkbox"/>	Y			Non-standard water heaters (wt/unlk)
<input type="checkbox"/>	Y			Water heater distribution credits

<b>CERTIFICATE OF COMPLIANCE: RESIDENTIAL</b> (Page 5 of 5) <b>CF-1R</b>	
Project Title <b>HVAC CHANGEOUT</b>	Date

**Special Remarks**


**COMPLIANCE STATEMENT**

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. The undersigned recognizes that compliance using duct design, duct sealing, verification of refrigerant charge and TXVs, insulation installation quality, and building envelope sealing require installer testing and certification and field verification by an approved HERS rater.

Designer or Owner (per Business and Professions Code)	Documentation Author
Name:	Name: <b>Joceline Nadra</b>
Title/Firm:	Title/Firm: <b>Arctic Air Conditioning &amp; Heating</b>
Address:	Address: <b>9295 Emerald Vista Dr.</b>
Telephone:	Telephone: <b>Elk Grove, CA 95624</b>
License #:	License #: (if applicable) <b>826095</b>
(signature)	(signature) <i>[Signature]</i>
(date)	<b>9/30/06</b> (date)

**Enforcement Agency**

Name:	Comments:
Title:	
Agency:	
Telephone:	
(signature / stamp)	
(date)	