

TRANSMISSION VERIFICATION REPORT

TIME : 09/20/2006 12:24  
 NAME : CITY OF SACRAMENTO  
 FAX : 9168085543  
 TEL : 9168085656  
 SER.# : BROH4J832840

DATE, TIME	09/20 12:22
FAX NO./NAME	94523439
DURATION	00:01:16
PAGE(S)	03
RESULT	OK
MODE	STANDARD ECM

*Harick*

**CITY OF SACRAMENTO  
 CASHIER'S WORKSHEET**

RECEIPT NUMBER: R0617393  
 TRANSACTION DATE: 09/20/2006  
 TRANSACTION AMOUNT: 187.68  
 NOTATION:

**ISSUED  
 CITY OF SACRAMENTO  
 SEP 20 2006  
 DOWNTOWN PERMIT  
 CENTER**

APD #: 0614596  
 SITE ADDRESS: 5516 CARLSON DR SAC  
 PARCEL: 005-0184-013

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	187.68

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	2.14	.00	2.14
213	General Plan Surcharge	1760	3.54	.00	3.54
259	Bldg-Technology Surcharg	1750	7.00	.00	7.00



Inspection Request # (916) 264-7622

Building Permit

Office Use Only

ISSUED CITY OF SACRAMENTO

Permit No: 0604596
Date Issued:
Total Amount:
Insp Area #:

SEP 20 2006 DOWNTOWN PERMIT CENTER

Please Fill in the Following

Site Address: 5516 Carlson Dr. Sacramento, CA 95819
Nature of Work: HVAC-Pkg unit change out like for like

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 C-20 License Number 582046 Date 9/6/06 Signature Warren T. Wright

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractor 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 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 9/6/06 Applicant/Agent Signature Warren T. Wright

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.

X 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 Virginia Safety Co. Policy Number KNS0012675-01 Expiration Date 11-07

(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 9/6/06 Applicant Signature Warren T. Wright

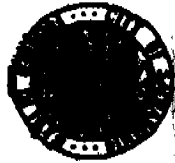
WARNING: FAILURE TO ENQUIRE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S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

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

PBF10004

**FAXED**

SEP 06 2006



005-0213-004  
0184-013

**CITY OF SACRAMENTO**  
PLANNING & BUILDING DEPARTMENT  
BUILDING DIVISION

www.cityofsacramento.org

Help Line: 1-916-808-6658 OR 1-888-62-PERMIT  
Inspection: 1-916-808-7622

0614596



Fax # 916-808-1991 Downtown Permit Center, New City Hall  
915 I Street, 3rd Floor, Sacramento, CA 95814

North Permit Center  
2101 Arden Blvd., Suite 200, Sacramento, CA 95834

Fax # 916-808-8370

Activity # \_\_\_\_\_

**FAXBACK PERMIT APPLICATION**

(certain restrictions apply)

Date: 9/6/06

*Faxed request must be received in this office by 3:00 P.M. to be processed the following workday. Contractors must have a current certificate of Worker's Compensation Insurance. Note: Work started before a Building Permit is issued will be subject to a grand fee.*

*Permits require Plan Review and are eligible for FAXBACK*

IN ORDER TO PROCESS THIS REQUEST, ALL THE FOLLOWING INFORMATION MUST BE PROVIDED:

CREDIT CARD INFORMATION ON FILE?  YES  NO  RESIDENTIAL  APARTMENTS (4+ units per building)  COMMERCIAL (limited)

Job Address: 5516 Carlson Dr. Sacramento, CA. 95819 Unit # \_\_\_\_\_ Contract Price \$ 5,343.45

Contact Person: Warren T. Wright Contact Phone: (916) 452-2497 License # 582046

Property Owner: Art Bischoff Contractor: Garrick Service Co.

Address: 5516 Carlson Dr. City/State/Zip: Sacramento, CA. 95818

Phone: (916) 452-7423 City/State/Zip: Sacramento, CA. 95818 Fax: (916) 452-3439

Nature of Work: (Provide detailed description of work & indicate type of work in selections below)

Description of Work: HVAC - PKG unit change out like for like

<input type="checkbox"/> Reroof (excluding tile) <input type="checkbox"/> Tear-Off <input type="checkbox"/> Reroof <input type="checkbox"/> House <input type="checkbox"/> Garage # Stories: _____ # Squares: _____ Material: <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	<input checked="" type="checkbox"/> HVAC Installations <small>(Residential Only)</small> <input checked="" type="checkbox"/> Change-out <input type="checkbox"/> New <input type="checkbox"/> Heat Pump <input checked="" type="checkbox"/> Package <input type="checkbox"/> Split system <input type="checkbox"/> Roof mount <input type="checkbox"/> Cut-in <input type="checkbox"/> Heat pump or elect. unit to gas. <input type="checkbox"/> Wall furnace <input type="checkbox"/> Other (describe below) Value of duct work: _____ Equipment \$ <u>2461.00</u> Cur-in: \$ _____	<input type="checkbox"/> Water Heater <small>(Residential Only)</small> <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 Termitic <input type="checkbox"/> Damage Repair <small>(Describe Location Below)</small>	<input type="checkbox"/> Minor Electric and/or Minor Plumbing <small>(Residential Only)</small> <input type="checkbox"/> Electric Service Change # amps <input type="checkbox"/> New electric circuits <input type="checkbox"/> Re-wire <input type="checkbox"/> Water Service Replacement <input type="checkbox"/> Sewer Service Replacement <input type="checkbox"/> Gas Line Replacement <input type="checkbox"/> Re-plumb <input type="checkbox"/> Water <input type="checkbox"/> Waste	<input type="checkbox"/> Public Utilities Safety Inspection <small>(Residential and single apartment units Only)</small> <input type="checkbox"/> SMUD <input type="checkbox"/> PG&E NOTE: Correction Notice items will require an additional building permit.
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PBF-10002

**CERTIFICATE OF COMPLIANCE: RESIDENTIAL**

Art Biscoff  
 Project Title

5516 Carlson Dr. Sacto Ca 95819  
 Project Address

Documentation Author Telephone

Prescriptive 12  
 Compliance Method (Prescriptive) Climate Zone

9/8/2006  
 Date

0614596  
 Building Permit #

Plan Check / Date

Field Check / Date

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 7-14

**GENERAL INFORMATION**

Total Conditioned Floor Area (CFA) 900 ft<sup>2</sup> Average Ceiling Height: 8 ft

Maximum Allowed West Facing Fenestration Products Per Table 151-B or 151-C --- (5% X CFA) N/A ft<sup>2</sup>

Maximum Allowed Total Fenestration Products Per Table 151-B or 151-C --- (20% X CFA) N/A ft<sup>2</sup>

Building Type: Single Family Attaché Project Type: 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.)

Number of Stories: 1 Number of Dwelling Units: 1

Floor Construction Type: Raised

Floor Orientation: E = 090 North / South / East / West / All Orientations (input front orientation in degrees from True North and circle one).

Radiant Barrier (required in climate zones 2, 4, 8-15)

**OPAQUE SURFACES INCLUDING OPAQUE DOORS**

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

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.

Art Biscoff

5516 Carlson Dr.

9/8/2006

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) 1	Area (ft <sup>2</sup> )	U-factor 2	U-factor Source 3	SHGC 4	SHGC Source 5	Exterior Shading/Overhangs 6, 7 Check Box if WS-3R is
							<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 are either NFRC Rated value or from Standards default Table 116A.
- 3) Indicate source either from NFRC or Table 116A.
- 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 or Table 116B.
- 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	80.00 AFUE	Crawl Space	4.20	Programmable	Package
60 kBTU					

Cooling Equipment Type and Capacity (A/C, heat pump, evap)	Minimum Efficiency (SEER or EER)	Duct Location (attic, etc.)	Duct R-Value	Thermostat Type	Configuration (Split or Package)
A/C	13.00 SEER	Crawl Space	4.20	Programmable	Package
30 kBTU	11.00 EER				

Art Biscoff  
Project Title

5516 Carlson Dr.

9/8/2006  
Date

**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 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"/>	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 and 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.
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**WATER HEATING SYSTEMS**

<input 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**

Water Heater Type/ Fuel Type	Distribution Type	Number in System	Rated Input (kW or Btu/hr)	Tank Capacity (gallons)	Energy Factor or Thermal Eff. 1	Standby Loss (%) 1	Tank External Insulation

**Systems serving multiple dwelling units**

Water Heater Type/ Fuel Type	Distribution Type	Number in System	Rated Input (kW or Btu/hr)	Tank Capacity	Energy Factor or Thermal Eff. 1	Standby Loss (%) 1	Tank External Insulation

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 > 3/4 inches) All hot water pipes from the heating source to the kitchen fixtures that are 1/2 inches or greater in diameter shall be thermally insulated as specified by Section 150 (j) 2 A or 160 (j) 2 B.

Art Blischoff  
Project Title

9/8/2006  
Date

**SPECIAL FEATURES NOT REQUIRING HERS VERIFICATION (add extra sheets if necessary)**

Indicate which special features are part of this project. The list below represents special features relevant to the Prescriptive and Performance Method.

	Feature	Required Forms (if applicable)	Description
<input type="checkbox"/>	Metal Framed Walls	CF-1R	
<input type="checkbox"/>	Radiant Barriers	CF-1R	
<input type="checkbox"/>	Exterior Shades	WS-4R N/A; Performance Calculation	
<input type="checkbox"/>	Cool Roof	Required. Attach CRRC Label to Form	
<input type="checkbox"/>	Dedicated Hydronic Heating	Performance Calculation Required; Attach Run to Forms.	
<input type="checkbox"/>	Combined Hydronic System	Performance Calculation Required; Attach Run to Forms.	
<input type="checkbox"/>	Gas Cooling	N/A; Performance Calculation Required	
<input type="checkbox"/>	Buried Ducts	N/A; indicate on building plans.	
<input type="checkbox"/>	Kitchen Pipe Insulation	See Section 5.8.2 Distribution Systems in Residential Manual.	
<input type="checkbox"/>	Multiple Water Heater	See Table 5-13 or use Performance Calculation and attach Run to Forms	
<input type="checkbox"/>	Central Water Heating System	Performance Calculation and attach Run to Forms.	
<input type="checkbox"/>	Non-NAECA Large Water Heater	CF-1R	
<input type="checkbox"/>	Indirect Water Heater	See Table 5-13 or use Performance Calculation and attach Run to Forms	
<input type="checkbox"/>	Instantaneous Gas Water Heater	See Table 5-13 or use Performance Calculation and attach Run to Forms	
<input type="checkbox"/>	Solar Water Heating System	See Table 5-13 or use Performance Calculation and attach Run to Forms	
<input type="checkbox"/>	Wood Stove Boiler	Performance Calculation and attach Run to Forms	

**SPECIAL FEATURES REQUIRING HERS RATER VERIFICATION**

(add extra sheets if necessary) Indicate to the HERS Rater which credits are part of this project and need verification.

	Feature	Required Forms (if applicable)	Description
	Duct Sealing	CF-6R part 4 of 12	
	Refrigerant Charge	CF-6R part 5 of 12	
	Thermostatic Expansion Valve	CF-6R part 6 of 12	

Art Biscoff  
ProjectTitle

5516 Carlson Dr.

9/8/2006  
Date

**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: <i>Warren Wright</i>	Name: <i>Warren Wright</i>
Title/Firm: <i>Garick A/C</i>	Title/Firm: <i>Garick</i>
Address: <i>2122 X ST Sac Ca 95818</i>	Address: <i>2122 X ST Sac, Ca 95818</i>
Telephone: <i>(916) 452-2477</i>	Telephone: <i>916-452-2477</i>
License #: <i>582046</i>	<i>582046</i>
X <i>Warren T. Wright 9/20/06</i>	X <i>Warren T. Wright 9/28/06</i>
Signature and Date	Signature and Date

Enforcement Agency

Name:	Comments:
Title/Firm:	
Address:	
Telephone:	
X	
Signature / Stamp and Date	



**INSTALLATION CERTIFICATE**

5516 Carlson Dr.  
Site Address

Sacto

Ca

95819

Permit Number:

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)	CEC Certified Mfg. Name, Model, and Serial No.	# of Identical Systems	Efficiency (AFUE, etc) <sup>1</sup> >(CF-1R value)	Duct Location	Duct or Piping R-Value	Heating Load (kBtu/hr)	Heating Capacity (kBtu/hr)
Package	AMERICAN STANDARD	1	80.00 AFUE	Crawl Space	4		60
Furnace	YCY030G1MOA						

**Cooling Equipment**

Equip. Type (pkg. heat pump)	CEC Certified Mfg. Name, Model, and Serial No.	# of Identical Systems	Efficiency (AFUE, etc) <sup>1</sup> >(CF-1R value)	Duct Location	Duct or Piping R-Value	Cooling Load (kBtu/hr)	Cooling Capacity (kBtu/hr)
Package		1	13.00 SEER	Crawl Space	4		30
A/C			11.00 EER				
Coil							

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

II, 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.

X Fred [Signature]  
Signature and Date

Garick  
Installing Subcontractor (Co. Name) 46  
OR General Contractor (Co. Name) OR Owner 5022-1

COPY TO: Building Department  
HERS Rater (if applicable)  
Building Owner at Occupancy

5516 Carlson Dr.  
Site Address

Sacto

Ca

95819

Permit Number:

**INSTALLER COMPLIANCE STATEMENT FOR DUCT LEAKAGE**

Copies to: Builder, HERS Rater, Building Owner at Occupancy and Building Department

**INSTALLER COMPLIANCE STATEMENT**

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

**INSTALLER VISUAL INSPECTION AT FINAL CONSTRUCTION STAGE:**

- 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

**DUCT LEAKAGE REDUCTION**

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

NEW CONSTRUCTION:		Measured Values	
Duct Pressurization Test Results (CFM @ 25 Pa)			
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:	1000	
3	Pass if Leakage Percentage < 6% for Final or < 4% at Rough-in: [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.		
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.	84	
6	Enter Reduction in Leakage for Altered Duct System [ _____ (Line #4) Minus _____ (Line #5) ] - (Only if Applicable)		
7	Enter Tested Leakage Flow in CFM to Outside (Only if Applicable)		
8	Entire New Duct System - Pass if Leakage Percentage < 6% for Final or < 4% at Rough-in [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</b>			
9	Pass if Leakage Percentage < 15% [100 x [ <u>84</u> (Line # 5) / <u>1000</u> Line # 2]]	8.4%	<input checked="" 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		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
12	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

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 2008 Building Energy Efficiency

X Garick 9.22.06  
Signature Date

Garick  
Installing Subcontractor (Co. Name) OR  
General Contractor (Co. Name)

**INSTALLATION CERTIFICATE**

8516 Carlson Dr.

Sacto

Ca

95819

Site Address

Permit Number:

**THERMOSTATIC EXPANSION VALVE (TXV)**

Procedures for field verification of thermostatic expansion valves are available in RACM, Appendix R1.

<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.		
		Yes is a Pass	<input checked="" type="checkbox"/> Pass	<input type="checkbox"/> Fail

**REFRIGERANT CHARGE MEASUREMENT PROCEDURE**

Verification for Required Refrigerant Charge and Adequate Airflow for Split System Space Cooling Systems without Thermostatic

<b>Expansion Valves</b>	
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 Procedure (outdoor air dry-bulb 55oF 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

**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)		F
Condenser (entering) air dry-bulb temperature (Tcondenser, db)		F

**Superheat Charge Method Calculations for 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 - or, upon remeasurement, if between -3°F and -100°F)	3°F and +3°F	F

INSTALLATION CERTIFICATE

(Page 6 of 12)

CF-6R

5516 Carlson Dr.

Sacto

Ca

95819

Site Address

Permit Number:

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.

System Passes:  Yes  No

Alternate Charge Measurement Procedure (outdoor air dry-bulb below 55 oF)

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 oF 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.

Table with 3 columns: Measurement (Actual liquid line length, Manufacturer's Standard liquid line length, Difference), Unit (ft), and Calculation (Manufacturer's correction x difference in length = ounces).

Measured Airflow Method for Adequate Airflow Verification available in RACM, Appendix

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

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.

System Passes:  Yes  No

Signature, Date: Warren T. ... 9-27-06

Garick
Installing Subcontractor (Co. Name) OR
General Contractor (Co. Name) OR Owner

COPY TO: Building Department
HERS Rater (if applicable)
Building Owner at Occupancy

5516 Carlson Dr.  
Site Address

Sacto

Ca

95819

Permit Number: 0614596

**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"/>	<input type="checkbox"/>	RE3.2.1	Portable Watt Meter Measurement
<input type="checkbox"/>	<input type="checkbox"/>	RE3.2.2	Utility Revenue Meter Measurement
Measured Fan watt Draw:		Enter results of Watts/cfm:	
Measured Fan Flow (Enter total cfm from airflow verification)		Enter results of Watts/cfm:	
<input type="checkbox"/> Yes	<input type="checkbox"/> No	Calculated fan watt/cfm is equal to or lower than the fan watt/cfm draw documented in CF-1R	
		Yes is a pass	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

**ADEQUATE AIRFLOW VERIFICATION**

Procedures for field verification and diagnostic testing of adequate airflow are available in RACM, Appendix RE4.1.

Method For Airflow Measurement			
<input type="checkbox"/>	<input type="checkbox"/>	Yes	No
		Duct design exists on plans	
<input type="checkbox"/>	<input type="checkbox"/>	RE4.1.1	Diagnostic Fan Flow Using Flow Capture Hood
<input type="checkbox"/>	<input type="checkbox"/>	RE4.1.2	Diagnostic Fan Flow Using Plenum Pressure Matching
<input type="checkbox"/>	<input type="checkbox"/>	RE4.1.3	Diagnostic Fan Flow Using Flow Grid Measurement
Measured Airflow:		cfm/ton	
<input type="checkbox"/>	<input type="checkbox"/>	Yes	No
		Measured airflow is greater than the criteria in Table RE-2	
		<input type="checkbox"/>	<input type="checkbox"/>
		Pass	Fail

**MAXIMUM COOLING CAPACITY**

Procedures for determining maximum cooling load capacity are available in RACM, Appendix RF3.

1	<input type="checkbox"/>	Yes	No	Adequate airflow verified (see adequate airflow credit)
2	<input type="checkbox"/>	Yes	No	Refrigerant charge or TXV
3	<input type="checkbox"/>	Yes	No	Duct Leakage reduction credit verified
4	<input type="checkbox"/>	Yes	No	Cooling capacities of installed systems are ≤ to maximum cooling capacity indicated on the Performance's CF-1R and RF-3.
5	<input type="checkbox"/>	Yes	No	
				Yes to 1, 2, and 3; and Yes to either 4 or 5 is a pass
				<input type="checkbox"/> Pass <input type="checkbox"/> Fail

**HIGH EER AIR CONDITIONER**

Procedures for verification are available in RACM, Appendix RI.

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

Tests Performed

Signature / Date

*Garick* 9/27/06

Garick

Installing Subcontractor (Co. Name) OR  
General Contractor (Co. Name)

CalCERTS - Certificate

**CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING (Page 1 of 8)** CF-4R

<b>5516 Carlson Dr. - Sacramento, Ca 95619</b>		Garick / 582046	
Project Address		Contractor Name / License No.	
		06-14596	
Contractor Contact		Telephone	Permit Number
Michael McDermott		916-704-2810	41746
HERS Rater		Telephone	Sample Group Number
<i>Michael McDermott</i>		September 22, 2006	CC14-1798382328
Certifying Signature		Date	Certificate Number
Firm:	Energy Analysis and Comfort Solutions, Inc.	HERS Provider: CalCERTS	
Street Address:	PO Box 2233	City/State/Zip: Orangevale / CA / 95662	

Copies to: Homeowner, HERS Provider and Building Department  
 This CF-4R has been registered with the CalCERTS® registry in accordance with the Title 24 & Title 20 of the CCR. CalCERTS® is an approved HERS provider by the California Energy Commission.

**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 the CF-6R (Installation Certificate).
- New Distribution system is fully ducted (i.e., does not use building cavities as plenums or platform returns in lieu of ducts).
- New systems where cloth backed, rubber adhesive duct tape is installed, mastic and drawbands 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:**

NEW CONSTRUCTION			
	Duct Pressurization Test Results (CFM @ 25 Pa)	Measured Values	
1	Enter Tested Leakage Flow in CFM:	N/A	
2	Fan Flow: Calculated (Nominal <input checked="" type="radio"/> Cooling <input type="radio"/> Heating) or <input type="radio"/> Measured Enter Total Fan Flow in CFM:	1000	
3	Pass if Leakage Percentage <= 6% [ 100 x ( Line 1 / Line 2 ) ]:	N/A	N/A
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.		
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.	84	
6	Enter Reduction in Leakage for Altered Duct System [Line 4 - Line 5] - (Only if Applicable)		
7	Enter Tested Leakage Flow in CFM to Outside (Only if Applicable)		
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 ) ]:	8.40%	<input checked="" 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		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
12	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