

**PAID**  
CITY OF SACRAMENTO

AUG 16 2006



Inspection Request (916) 264-7622

Building Permit **ISSUED**  
NEW CITY HALL  
CITY OF SACRAMENTO

Permit No: 0612485  
Date Issued: \_\_\_\_\_  
Total Amount: \_\_\_\_\_  
Imp Area #: \_\_\_\_\_

AUG 16 2006  
DOWNTOWN PERMIT CENTER

\*\*\*\*\* Please Fill in the Following \*\*\*\*\*

Site Address: 2501 Orchard Ln.  
Nature of Work: HVAC Changeout

CONSTRUCTION LEADING AGENCY: I hereby affirm under penalty of perjury that there is a contracted leading agency for the performance of the work for which this permit is issued (Sec. 3697, C.C.).  
Leader's Name: \_\_\_\_\_ Leader's Address: \_\_\_\_\_

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (contracting) of the California Code of Regulations and Professions Code and my license is in full and in effect.  
License Class: 20 C-25 License Number: 726129 Date: 8/15/06 Signature: Danalign Masters

OWNER/OPERATOR DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractor license law for the following reason (Sec. 7001.5, Business and Professions Code) which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its initiation. The contractor license law does not apply to the project because the lot or site is licensed pursuant to the provisions of the Contractor License Law (Chapter 9 of the California Code of Regulations and Professions Code) or that he or she is exempt therefrom and the basis for the exemption is: My violation of Section 7001.5 by my application for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.00).

I, as owner or operator, or my authorized agent, will do the work, and the structure is not licensed or altered for any other purpose. The contractor license law does not apply to an owner of property who builds or improves thereon, and who does the work through his or her own employees, provided that such improvements are not licensed or altered for sale. If, however, the building or improvement is sold within one year of completion, the contractor will have the burden of proving that he or 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 Contractor License Law does not apply to an owner of property who builds or improves thereon, and who contracts through projects with a contractor(s) licensed pursuant to the Contractor License Law.  
I am exempt under Sec. \_\_\_\_\_ B & C of the law.

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 improvements to be constructed does not violate any local or private agreements relating to prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreements 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 any employee(s) of this city to conduct an inspection of the property for inspection purposes.

Date: 8/15/06 Applicant's Signature: Danalign Masters

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

I have and will maintain a certificate of workers' compensation or other workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which this permit is issued.

I have and will maintain workers' compensation coverage, 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 number and policy number are:

Class: Final Retail Package  
Policy Number: 1000000000 Expiration Date: 04-29-07

This section does not apply if the permit is for \$1,000 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 as to persons 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's Signature: Danalign Masters

WARNING: FAILURE TO SECURE WORKERS COMPENSATION COVERAGE IS A VIOLATION OF THE LAW AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL PENALTIES UP TO ONE HUNDRED THOUSAND DOLLARS IN ADDITION TO THE COST OF COOPERATION, DAMAGES AS PROVIDED FOR IN SECTION 3704 OF THE LABOR CODE, OFFENSE AND ATTORNEY'S FEES.

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



CITY OF SACRAMENTO

www.cityofsacramento.org

Help Line: 1-816-808-5886 OR 1-855-EZ-PERMIT  
Inspection Request 1-816-808-7822

New City Hall  
815 I Street, 3rd Floor  
Sacramento, CA 95814

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

HEATING and COOLING EQUIPMENT QUESTIONNAIRE

Applicant's Name: Chalynn Masters Phone: 916 605-4616  
Project Address: 2801 Orchard Ln. Phone: \_\_\_\_\_

Please check the appropriate boxes. Only check a box if it accurately and completely describes your proposed work, otherwise leave boxes blank.

1. GROUND-MOUNTED UNIT

- There is an existing ground-mounted unit.
  - The existing unit shall be removed. The new unit shall be placed in the same location as the existing unit and shall not exceed the size of the existing unit by more than 25%.
  - The new unit differs in location from the existing unit.
  - The new unit is fully screened behind a solid fenced area and will not be visible from any street views.
  - Existing shrubs or buildings will screen the unit from being visible from any street views.
- There is no unit in the proposed location.
  - The new unit will be fully screened behind a solid fenced area and will not be visible from any street views.
  - Existing shrubs or building will screen the unit from being visible from any street views.

2. ROOF-MOUNTED UNIT

- There is an existing roof-mounted unit.
  - The existing unit shall be removed. The new unit shall be placed in the same location as the existing unit and shall not exceed the size of the existing unit by more than 25%.
  - The new unit differs in location from the existing unit. The new unit shall be screened from street views by the building with no portion of the new unit being visible from any street views.
- There is no existing roof-mounted unit.
  - The new unit shall be screened from street views by the building with no portion of the new unit being visible from any street views.

By signing below, the applicant certifies that this form accurately describes the proposed work.

Applicant's signature: Chalynn Masters

Date: 01/15/06

FOR CITY STAFF USE ONLY

Counter Staff: 0612485

- In a DR District. Meets DR criteria?  Yes  No (route to DR staff)
- In a P area or listed (route to P staff)
- Not in a DR or P area

*MP*

CITY OF SACRAMENTO



0612485

**FIXBACK PERMIT APPLICATION**

(Certain restrictions apply)

Fixed request received in this office before 3:30 p.m. will be processed the following work day. Contractors must have a current certificate of Workforce Compensation Insurance. Work started before a Building Permit is issued will be subject to quad fees.

Permits requiring plan review are not eligible for FIXBACK

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

Credit Card info on file? Yes  No  **RESIDENTIAL**  **APARTMENTS** (4 units per building)  **COMMERCIAL** (mixed)

Job Address: 2551 ORCHARD LN. UNIT 100  
 Partial Number: CONTACT PERSON: CHAKIM MASTERS  
 Project Owner: WILMA EUFFAZIA  
 Address: 2501 ORCHARD LN.  
 City/State: SACRAMENTO, CA 95833  
 Phone: 916 922-1055  
 FAX: 916 680-5293

NATURE OF WORK: (Provide detailed description of work & indicate type of work inspectors do by.)  
 HVAC REPLACEMENT

<input type="checkbox"/> AIRCRAFT landing (by) <input type="checkbox"/> REAR-OUT <input type="checkbox"/> REAR-SET <input type="checkbox"/> GARAGE <input type="checkbox"/> HOUSE <input type="checkbox"/> STORES # Stories: 1 2 3+ Master(s):	<input checked="" type="checkbox"/> GUARANTEE ONLY <input checked="" type="checkbox"/> HVAC INSTALLATIONS <input type="checkbox"/> NEW <input type="checkbox"/> EXISTING-OUT <input type="checkbox"/> Heat Pump <input type="checkbox"/> Furnace <input type="checkbox"/> Evaporator <input type="checkbox"/> Roof Insul <input type="checkbox"/> Coil-ty <input type="checkbox"/> High pressure cond. unit to per, <input type="checkbox"/> Wall/ceiling <input type="checkbox"/> Fresh air leak <input type="checkbox"/> Other (describe below) Equip. with \$ Cost: \$ * Gas/In Part/See approval may be required.	<input type="checkbox"/> GAS <input type="checkbox"/> WATER HEATER <input type="checkbox"/> EL. W/RTIC <input type="checkbox"/> Change-out <input type="checkbox"/> Electric by Gas <input type="checkbox"/> Relocate <input type="checkbox"/> New <input type="checkbox"/> DRY ROT OR TERMITES DAMAGE <input type="checkbox"/> REPAIR <input type="checkbox"/> FRESH AIR INTAKE <input type="checkbox"/> Roof Structure <input type="checkbox"/> Exterior <input type="checkbox"/> Dry Rot or Termites (see approval) (Weathered and/or damaged equipment in the DWELLING) <input type="checkbox"/> ELECTRICAL SAFETY INSPECTION <input type="checkbox"/> STAIRS <input type="checkbox"/> POSE * Fire Protection (see approval)	<input type="checkbox"/> REPAIRS <input type="checkbox"/> RE-PLUMBING <input type="checkbox"/> Electrical and/or SINKS <input type="checkbox"/> Electrical <input type="checkbox"/> New electric <input type="checkbox"/> Circuit <input type="checkbox"/> Re-wire <input type="checkbox"/> Replumb <input type="checkbox"/> Water Service <input type="checkbox"/> Sewer Service <input type="checkbox"/> Gas Lines <input type="checkbox"/> Re-plumb <input type="checkbox"/> Water <input type="checkbox"/> Waste * Fix Backs (see approval) DATE: 01
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MARY EUFRAZIA  
**Project Title**

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2501 ORCHARD LN SACRAMENTO CA 95833  
**Project Address**

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KENNY BELL 916-685-4616  
**Documentation Author Telephone**

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Prescriptive 12  
**Compliance Method (Prescriptive) Climate Zone**

9/25/2006  
**Date**

---

Building Permit #  
 0612485

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Plan Check / Date

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Field Check / Date

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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) 1300 ft2 Average Ceiling Height: 8 ft  
 Maximum Allowed West Facing Fenestration Products Per Table 151-B or 151-C --- (5% X CFA) N/A ft2  
 Maximum Allowed Total Fenestration Products Per Table 151-B or 151-C --- (20% X CFA) N/A ft2

Building Type: Single Family Detach 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: \_\_\_\_\_ 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 Ufactor (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.

MARY EUFRAZIA

2501 ORCHARD LN

9/25/2006

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	Attic	4.20	Programmable	Split
36 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	14.00 SEER	Attic	4.20	Programmable	Split
36 kBTU	12.00 EER				

MARY EUFRAZIA  
ProjectTitle

2501 ORCHARD LN

9/25/2006  
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 checked="" type="checkbox"/>	Sealed Ducts (all climate zones) (Installer testing and certification and HERS rater field verification required.)
<input checked="" type="checkbox"/>	TXVs, readily accessible (climate zones 2 and 8-15 only) (Installer testing and certification and HERS Rater field verification required.)
<input checked="" 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 161-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 160(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) 1	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 160 (j) 2 A or 160 (j) 2 B.

MARY EUFRAZIA

9195 SURVEY RD

9/25/2006

ProjectTitle

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 Requir	
<input type="checkbox"/>	Buried Ducts	N/A; Indicate on building plans.	
<input type="checkbox"/>	Kitchen Pipe Insulation	See Section 5.6.2 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
<input checked="" type="checkbox"/>	Duct Sealing	CF-6R part 4 of 12	
<input checked="" type="checkbox"/>	Refrigerant Charge	CF-6R part 5 of 12	
<input checked="" type="checkbox"/>	Thermostatic Expansion Valve	CF-6R part 6 of 12	

**MARY EUFRAZIA**

**2501 ORCHARD LN**

**9/25/2006**

ProjectTitle

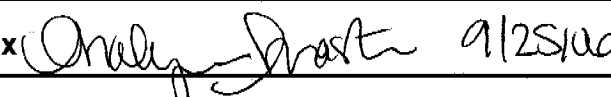

Date

**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**

<b>Name:</b> KENNY BELL	<b>Name:</b> KENNY BELL
<b>Title/Firm:</b> BELL BROS HEATING & AIR	<b>Title/Firm:</b> BELL BROS HEATING & AIR
<b>Address:</b> 9195 SURVEY RD ELK GROVE CA 95624	<b>Address:</b> 9195 SURVEY RD ELK GROVE CA 95624
<b>Telephone:</b> 916-685-4616	<b>Telephone:</b> 916-685-4616
<b>License #:</b> 726129	
<i>X</i>  9/25/06	<i>X</i>  9/25/06
<b>Signature and Date</b>	<b>Signature and Date</b>

**Enforcement Agency**

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



**INSTALLATION CERTIFICATE**

2501 ORCHARD LN

SACRAMENTO

CA

95833

Site Address

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)
Split	AMERICAN STANDARD	1	80.00 AFUE	Attic	4		36
Furnace	AUD080R936K						

**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)
Split	AMERICAN STANDARD	1	14.00 SEER	Attic	4		36
A/C	2A7A4036B1000A		12.00 EER				
Coil	ADP						
	CA036A9E7TMC						

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.

*Handwritten signature and date: [Signature] 8/16/10*

Signature and Date

**BELL BROS HEATING & AIR**

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

36

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

5016-17

2501 ORCHARD LN  
Site Address

SACRAMENTO

CA

95833

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:		1200	
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.		43	
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 [ 43 (Line #5) / 1200 (Line #2)]]		3.6%	<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 checked="" 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 2005 Building Energy Efficiency

*Chalyn Proster* 9/16/09  
Signature Date

BELL BROS HEATING & AIR  
Installing Subcontractor (Co. Name) OR  
General Contractor (Co. Name)

**INSTALLATION CERTIFICATE**

2501 ORCHARD LN

SACRAMENTO

CA

95833

Site Address

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.		
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 -3°F and +3°F or, upon remeasurement, if between -3°F and -100°F)	3°F and +3°F	F

INSTALLATION CERTIFICATE

2501 ORCHARD LN  
Site Address

SACRAMENTO

CA

95833

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.

Yes  No System Passes

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.

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

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.

Yes  No System Passes

Chalyn Dast 8/16/06  
Signature, Date

BELL BROS HEATING &  
Installing Subcontractor (Co. Name) OR  
General Contractor (Co. Name) OR Owner

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

2501 ORCHARD LN

SACRAMENTO

CA

95833

Site Address

Permit Number:

**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"/> Fall

**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			
		Pass	Fall

**MAXIMUM COOLING CAPACITY**

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

1	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	Adequate airflow verified (see adequate airflow credit)
2	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	Refrigerant charge or TXV
3	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	Duct Leakage reduction credit verified
4	<input type="checkbox"/>	<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"/>	<input type="checkbox"/>	Yes	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.
Yes to 1, 2, and 3; and Yes to either 4 or 5 is a pass					
		Pass			Fall

**HIGH EER AIR CONDITIONER**

Procedures for verification are available in RACM, Appendix RI.

1	<input type="checkbox"/>	<input 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 type="checkbox"/>	<input type="checkbox"/>	Yes	No	
3	<input type="checkbox"/>	<input type="checkbox"/>	Yes	No	
Yes to 1 and 2; and 3 (if Required) is a pass					
		Pass			Fall

*Cheryl Frost 8/16/10*

BELL BROS HEATING & AIR

Tests Performed

Signature / Date

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

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**CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING (Page 1 of 8)**

CF-4R

<b>2501 ORCHARD LN - SACRAMENTO, CA 95833</b>		<b>BELL BROS HEATING &amp; AIR / 726129</b>	
Project Address		Contractor Name / License No.	
Contractor Contact John Gustason		Telephone 916-768-9459	Permit Number 42723
HERS Rate	September 13, 2006	Sample Group Number CC14-1798383309	Certificate Number
Certifying Signature <i>[Signature]</i>		Date	
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**

		Measured Values	
1	Duct Pressurization Test Results (CFM @ 25 Pa) Enter Tested Leakage Flow in CFM:	N/A	
2	Fan Flow: Calculated (Nominal <input checked="" type="radio"/> Cooling <input checked="" type="radio"/> Heating) or <input checked="" type="radio"/> Measured Enter Total Fan Flow in CFM:	Not Tested	
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.	Not Tested	
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.	Not Tested	
6	Enter Reduction in Leakage for Altered Duct System [Line 4 - Line 5] - (Only if Applicable)	Not Tested	
7	Enter Tested Leakage Flow in CFM to Outside (Only if Applicable)	Not Tested	
8	Entire New Duct System - Pass if Leakage Percentage < 6% [ 100 x ( Line 5 / Line 2 ) ]:	Not Tested	<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 ) ]:	Not Tested	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
10	Pass if Leakage to Outside Percentage <= 10% [ 100 x ( Line 7 / Line 2 ) ]:	Not Tested	<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	Not Tested	<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

**CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING (Page 3-4 of 8)**

**CF-4R**

**2501 ORCHARD LN - SACRAMENTO, CA 95833**

**BELL BROS HEATING & AIR / 726129**

Project Address

Contractor Name / License No.

Contractor Contact

Telephone

Permit Number

John Gustason

916-768-9459

42723

HERS Rater

Telephone

Sample Group Number

Certifying Signature

September 13, 2006

Date

Certificate Number

Firm:

Energy Analysis and Comfort Solutions, Inc.

HERS Provider: **CalCERTS**

Street Address:

PO Box 2233

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

**THERMOSTATIC EXPANSION VALVE (TXV):**

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.

HVAC System TXV

Pass  Fail