

CITY OF SACRAMENTO

Permit No: 0600741

1231 I Street, Sacramento, CA 95814

Insp Area: 3

Thos Bros: 318B5

Site Address: 5800 BOSCO WY SAC

Sub-Type: NSFR

Parcel No: 027-0231-020

LOT 14

Housing (Y/N): N

CONTRACTOR
GREEN GABLES INC
PO BOX 661713
SACRAMENTO CA 95866

OWNER
LONE WOLF CONST INC
PO BOX 661713
SACRAMENTO, CA 95866

ARCHITECT
DAVE S. KEITH

PAID
CITY OF SACRAMENTO
FEB 07 2006
NEIGHBORHOODS PLANNING
AND DEVELOPMENT SERVICES

Nature of Work: NSFR 1658 SF, 136 SF PORCH, W/GARAGE

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 License Number 869141 Date _____ Contractor 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 8 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 Professional 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 2-7-06 Applicant/Agent 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 EXEMPT Policy Number NO EMPLOYEES Exp Date _____

(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 2-7-06 Applicant 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.

INSULATION CONTRACT SIGNATURE: Mary Maggiano
 TITLE: BOOKKEEPER DATE: 10.3.2006

SIGNATURE: _____
 TITLE: _____
 DATE: _____
 CALIFORNIA CONTRACTORS LICENSE # _____
 GENERAL CONTRACTOR _____

APPLIED CAULK & SEALANT TO ALL EXTERIOR OPENINGS & PENETRATIONS
 YES NO

MANUFACTURER: _____ THICKNESS: _____ R-VALUE: _____
 INTERIOR KNEEWALL:

MANUFACTURER: _____ THICKNESS: _____ R-VALUE: _____
 EXTERIOR KNEEWALL:

MANUFACTURER: CT THICKNESS: 6 1/4 R-VALUE: 19
 FLOOR AREA:

SQUARE FOOTAGE: _____
 MANUFACTURER: AlIBatts THICKNESS: _____ R-VALUE: _____
 CEILINGS: BLOWN IN

MANUFACTURER: _____ THICKNESS: _____ R-VALUE: _____
 CEILING AREA: BATS CT 2x6 THICKNESS: CT R-VALUE: 19

MANUFACTURER: CT THICKNESS: 3/2 R-VALUE: 13
 EXTERIOR WALLS:

TRACT: GREEN GABLES, INC LOT: LOT 14
 STREET: 5800 BOSCO WAY CITY: SACRAMENTO, CA

THIS IS TO CERTIFY THAT INSULATION HAS BEEN INSTALLED IN CONFORMANCE WITH CURRENT ENERGY REGULATIONS, CALIFORNIA ADMINISTRATIVE CODE, TITLE 24, STATE OF CALIFORNIA, IN THE BUILDING LOCATED AT:

ENGEL INSULATION, INC.
 CALIFORNIA CONTRACTOR'S LICENSE #745646
 460 Roseville Road • Roseville, CA 95678
 (916) 786-2088 / (916) 786-2064

17660

Copies to: Building Department, HERS Rater (if applicable) Building Owner at Occupancy

Item #s (if applicable)	Signature Date 11-6-06	Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner OR Window Distributor
Item #s (if applicable)	Signature Date	Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner OR Window Distributor
Item #s (if applicable)	Signature Date	Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner OR Window Distributor

I, the undersigned, verify that the fenestration/glazing listed above my signature: 1) is the actual fenestration product installed; 2) is equivalent to or has a lower U-factor and lower SHGC than that specified in the certificate of compliance (Form CF-1R) submitted for compliance with the Energy Efficiency Standards for residential buildings; and 3) the product meets or exceeds the appropriate requirements for manufactured devices (from Part 6), where applicable.

1) Use values from a fenestration product's NFRC label. For fenestration products without an NFRC label, use the default values from Section 116 of the Energy Efficiency Standards.
 2) Installed U-factor must be less than or equal to values from CF-1R. Installed SHGC must be less than or equal to values from CF-1R, or a shading device (exterior or overhang) is installed as specified on the CF-1R. Alternatively, installed weighted average U-factors for the total fenestration area are less than or equal to values from CF-1R. If using default table SHGC values from §116 identify whether tinted or not.

Item	Manufacturer/Brand Name (GROUP LIKE PRODUCTS)	Product U-factor ¹ (<CF-1R value)	Product SHGC ¹ (<CF-1R value)	# of Panes (Optional)	Total Quantity of Like Product (Square Feet)	Area Square Feet	Exterior Shading Device or Overhang	Comments/Location/Special Features
1.	Stonley Door	0.520	0.50	1	20.0	N/A		Front/Entrance
2.	Sola View	0.370	0.31	2	21.0	21.0		Event/North
3.	"	0.370	0.31	2	21.0	21.0		East
4.	"	0.370	0.31	3	21.0	21.0		East
5.	"	0.370	0.31	2	15.0	15.0		East
6.	"	0.370	0.31	2	4.0	4.0		East
7.	"	0.370	0.31	2	17.5	17.5		South
8.	"	0.370	0.31	2	17.5	17.5		South
9.	"	0.370	0.31	2	17.5	17.5		South
10.	"	0.370	0.31	2	4.0	4.0		West
11.	Sola View	0.370	0.31	2	21.0	21.0		West
12.								
13.								
14.								
15.								

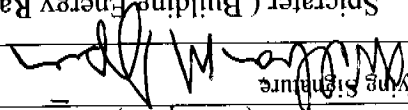
FENESTRATION/GLAZING:

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).

5800 Beale Way Sacramento Ca 95824
 Permit Number 0600741
 INSTALLATION CERTIFICATE
 (Page 2 of 12) CF-6R

L of 14

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

Builder Name	Champion Heat and Air
Project Address	5800 Bosco Way Sacramento
Builder Contact	Ken Innocent
HERS Rater	William "Michael" Spier
HERS Rater Telephone	(530) 383-1397
Compliance Method (Prescriptive)	Climate Zone 12
Certifying Signature	
Date	12/27/2006
Sample House Number	two
Firm	Spirater (Building Energy Rating Service)
Street Address:	Post Office Box 341
City/State/Zip:	Robbins CA 95676

Copies to: BUILDER, HERS PROVIDER AND BUILDING DEPARTMENT

HERS RATER COMPLIANCE STATEMENT

The house was: Approved as part of sample testing, but was not tested 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 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 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:	67
2	Fan Flow: Calculated (Nominal): <input checked="" type="checkbox"/> Cooling <input checked="" type="checkbox"/> Heating or <input type="checkbox"/> Measured	1600
3	Pass if Leakage Percentage ≤ 6% [100 x (Line # 1) / (Line # 2)]	4.19% <input checked="" 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:	67
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:	67
6	Enter Reduction in Leakage for Altered Duct System [(Line # 4) Minus (Line # 5)] (Only if Applicable)	0
7	Enter Tested Leakage Flow in CFM to Outside (Only if Applicable)	
8	Enter New Duct System - Pass if Leakage Percentage ≤ 6% [100 x (Line # 5) / (Line # 2)]	4.19% <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)]	4.19% <input type="checkbox"/> Pass <input type="checkbox"/> Fail
10	Pass if Leakage to Outside Percentage ≤ 10% [100 x (Line # 7) / (Line # 2)]	4.19% <input type="checkbox"/> Pass <input type="checkbox"/> Fail
11	Pass if Leakage Reduction Percentage ≥ 60% [100 x (Line # 6) / (Line # 4)]	4.19% <input type="checkbox"/> Pass <input type="checkbox"/> Fail
12	Pass if Sealing of all Accessible Leaks and Verification by Smoke Test and Visual Inspection 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		

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

Builder Name Champion Heat and Air	Project Address 5800 Bosco Way Sacramento
Builder Contact Ken Innocent	Builder Contact Ken Innocent
Plan Number	Telephone
Sample Group Number Four	Telephone (530) 383-1397
Climate Zone 12	HERS Rater William "Michael" Spier
Compliance Method (Prescriptive)	Certifying Signature
Sample House Number Two	Date 12/27/2006
HERS Provider CHEERS	Firm Spieler (Building Energy Rating Service)
City/State/Zip: Robbins CA 95676	Post Office Box 341 Robbins CA 95676 530-383-1397

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"/>	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 type="checkbox"/> No	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Yes is a pass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REFRIGERANT CHARGE MEASUREMENT

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

Indoor Unit Serial #	
Location	
Outdoor Unit Make	
Outdoor Unit Model	
Cooling Capacity	u/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 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 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. Yes No A copy of CF-6R (Installation Certificate) has been provided with refrigerant charge measurement documented.

INSTALLATION CERTIFICATE	
Site Address	5800 Bosco Way CA 95824
Permit Number	Permit by contractor

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

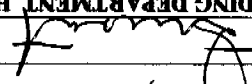
Equip Type (pkg. heat pump)	CEC Certified Mfr. Name and Model Number	# of Identical Systems	Efficiency (AFUE, etc.) ¹ (≥CF-IR value)	Duct Location (attic, etc.)	Duct or Piping R-value	Heating Load (Btu/hr)	Heating Capacity (Btu/hr)
Furnace	RUD UGPN07NAMGR	1	80	Attic	R-6	75K	75K
	1600 CFM						

Cooling Equipment

Equip Type (pkg. heat pump)	CEC Certified Mfr. Name and Model Number	# of Identical Systems	Efficiency (SEER or EER) ¹ (≥CF-IR value)	Duct Location (attic, etc.)	Duct R-value	Cooling Load (Btu/hr)	Cooling Capacity (Btu/hr)
Air Conditioner	RUD UAND-048JAZ	1	13	Attic	R-6	48K	48K

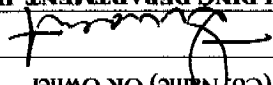
1. \geq symbol reads greater than or equal to what is indicated on the CF-IR value. Include both SEER and EER if compliance credit for high EER air conditioner is claimed.

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	Signature: 
Champion Heat And Air, Inc.	Date: 12/4/06

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

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

Signature: 	Date: 12/4/06
Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner	Champion Heat And Air, Inc.

✓ 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 retrofitted Air-Distribution System Ducts, Plenums and Fans comply with Mandatory requirements specified in Section 150 (m) of the 2005 Building Energy Efficiency standards.

ALTERATIONS: Duct System and/or HVAC Equipment Change-Out	
1	Enter Tested Leakage Flow in CFM: 67
2	Fan Flow: Calculated (Nominal): <input checked="" type="checkbox"/> Cooling <input checked="" 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: 1,600
3	Pass if Leakage Percentage ≤ 6% for Final or ≤ 4% at Rough-in: 4.19% <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
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. 67
6	Enter Reduction in Leakage for Altered Duct System (Line # 4) Minus (Line # 5) - (Only if Applicable) -67
7	Enter Tested Leakage Flow in CFM to Outside (Only if Applicable) ✓
8	Enter New Duct System - Pass if Leakage Percentage ≤ 6% for Final or ≤ 4% at Rough-in (Line # 5) / [100 x (Line # 2)] 4.19% <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)] 4.19% <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
10	Pass if Leakage to Outside Percentage ≤ 10% [100 x (Line # 7) / (Line # 2)] 4.19% <input type="checkbox"/> Pass <input type="checkbox"/> Fail
11	Pass if Leakage Reduction Percentage ≥ 60% [100 x (Line # 6) / (Line # 4)] 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 <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	

NEW CONSTRUCTION:
 ✓ DUCT LEAKAGE REDUCTION
 Procedures for field verification and diagnostic testing of air distribution systems are available in RACM, Appendix RC4.3
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.

INSTALLATION CERTIFICATE	Site Address	5800 Bosco Way CA 95824
(Page 4 of 12) CF-6R	Permit Number	Permit by contractor

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 type="checkbox"/>	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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Yes is a pass <input type="checkbox"/>	Pass <input checked="" type="checkbox"/>	Fail <input type="checkbox"/>
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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	
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 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)	°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 = Treturn, 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)	°F	

INSTALLATION CERTIFICATE
 (Page 6 of 12) **CF-6R**

Site Address: 5800 Bosco Way CA 95824

Permit Number: Permit by contractor

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) x 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) = _____ CFM
 X 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: **Champion Heat And Air, Inc.**

Date: 12/4/06

Signature: _____

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

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

Project Address 5800 Bosco Way Sacramento	Telephone	Builder Name Champion Heat and Air
Builder Contact Ken Innocent	Telephone (530) 383-1397	Plan Number 0600741
HERS Rater William "Michael" Spier	Date 12/27/2006	Sample Group Number four
Compliance Method (Prescriptive)		Climate Zone 12
Certifying Signature		Sample House Number three
Firm Spierater (Building Energy Rating Service)		HERS Provider CHEERS
Street Address: Post Office Box 341		City/State/Zip: Robbins CA 95676

SPIERATER
PO BOX 341
ROBBINS, CA 95676
(530) 383-1397

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 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 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		Measured Values	
NEW CONSTRUCTION:			
1 Duct Pressurization Test Results (CFM @ 25 Pa)		85	
Enter Tested Leakage Flow in CFM:		1600	<input checked="" type="checkbox"/> Pass <input checked="" type="checkbox"/> Fail
2 Fan Flow: Calculated (Nominal: <input checked="" type="checkbox"/> Cooling <input checked="" type="checkbox"/> Heating) or <input checked="" type="checkbox"/> Measured		5.31%	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
Enter Total Fan Flow in CFM:			
3 Pass if Leakage Percentage ≤ 6% [100 x [_____ (Line # 1) / _____ (Line # 2)]]			
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.		85	
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.		0	<input checked="" type="checkbox"/> Pass <input checked="" type="checkbox"/> Fail
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)		5.31%	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
8 Entire New Duct System - Pass if Leakage Percentage ≤ 6% [100 x [_____ (Line # 5) / _____ (Line # 2)]]			<input checked="" type="checkbox"/> Pass <input checked="" 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)]]		5.31%	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
10 Pass if Leakage to Outside Percentage ≤ 10% [100 x [_____ (Line # 7) / _____ (Line # 2)]]		5.31%	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
11 Pass if Leakage Reduction Percentage ≥ 60% [100 x [_____ (Line # 6) / _____ (Line # 4)]]		5.31%	<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			

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING (Page 3 of 8)		CF-4R
Project Address 5801 Bosco Way Sacramento	Builder Name Champion Heat and Air	
Builder Contact Ken Innocent	Telephone	Plan Number
HERS Rater William "Michael" Spier	Telephone (530) 383-1397	Sample Group Number four
Compliance Method (Prescriptive)		Climate Zone 12
Certifying Signature	Date 12/27/2006	Sample House Number three
Firm Spierater (Building Energy Rating Service)	SPIERATER PO BOX 341 ROBBINS, CA 95676 530-383-1397	HERS Provider CHEERS
Street Address: Post Office Box 341	City/State/Zip: Robbins CA 95676	

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	u/hr
Date of Verification	
Date of Refrigerant Gauge Calibration	(must be checked monthly)
Date of Thermocouple Calibration	(must be checked monthly)

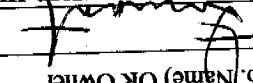
Standard Charge Measurement (outdoor air dry-bulb 55 °F and above):

Note: The system should be installed and 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 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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Copies to: BUILDING DEPARTMENT, HERS RATER (IF APPLICABLE), BUILDING OWNER AT OCCUPANCY

Signature: 	Date: 12/4/06
Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner	Champion Heat And Air, Inc.

✓ 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.

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.

Equip Type (pkg. heat pump)	CEC Certified Mfr. Name and Model Number	# of Identical Systems	Efficiency (SEER or EER) (≥CF-1R value)	Duct Location (attic, etc.)	Duct R-value	Cooling Load (Btu/hr)	Cooling Capacity (Btu/hr)
Air Conditioner	RUUD UAND-048JAZ	1	13	Attic	R-6	48k	48k

Cooling Equipment

Equip Type (pkg. heat pump)	CEC Certified Mfr. Name and Model Number	# of Identical Systems	Efficiency (AFUE, etc.) (≥CF-1R value)	Duct Location (attic, etc.)	Duct or Piping R-value	Heating Load (Btu/hr)	Heating Capacity (Btu/hr)
Furnace	RUUD UGPN07NAMGR	1	80	Attic	R-6	75k	75k
	1600 CFM						

Heating Equipment

HVAC SYSTEMS:

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).

Site Address	5800 Bosco Way CA 95824
Permit Number	Permit by contractor
INSTALLATION CERTIFICATE	
(Page 3 of 12) CF-6R	

INSTALLATION CERTIFICATE

Site Address

5800 Bosco Way CA 95824

Permit Number Permit by contractor

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:

- 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)	67		
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 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:	1,600	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Pass if Leakage Percentage \leq 6% for Final or \leq 4% at Rough-in: [100 x [(Line # 1) / (Line # 2)]]	4.19%	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ALTERATIONS: Duct System and/or HVAC Equipment Change-Out				
4	Enter Tested Leakage Flow in CFM from Pre-Test of Existing Duct System Prior to Duct System Alteration and/or Equipment Change-Out.	67		
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.	-67		
6	Enter Reduction in Leakage for Altered Duct System [(Line # 4) Minus (Line # 5)] - (Only if Applicable)		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Enter Tested Leakage Flow in CFM to Outside (Only if Applicable)	4.19%	<input type="checkbox"/>	<input type="checkbox"/>
8	Entire New Duct System - Pass if Leakage Percentage \leq 6% for Final or \leq 4% at Rough-in: [100 x [(Line # 5) / (Line # 2)]]		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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 \leq 15% [100 x [(Line # 5) / (Line # 2)]]	4.19%	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Pass if Leakage to Outside Percentage \leq 10% [100 x [(Line # 7) / (Line # 2)]]	4.19%	<input type="checkbox"/>	<input type="checkbox"/>
11	Pass if Leakage Reduction Percentage \geq 60% [100 x [(Line # 6) / (Line # 4)]]	0%	<input type="checkbox"/>	<input type="checkbox"/>
12	Pass if Sealing of all Accessible Leaks and Verification by Smoke Test and Visual Inspection		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pass if One of Lines # 9 through # 12 pass				

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	Champion Heat And Air, Inc.
Signature:	Date: 12/4/06

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

INSTALLATION CERTIFICATE

Site Address	5800 Bosco Way CA 95824	Permit Number	Permit by contractor
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THERMOSTATIC EXPANSION VALVE (TXV)

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

✓	★ 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

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	
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 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)		°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)		°F

INSTALLATION CERTIFICATE

Site Address	5800 Bosco Way CA 95824	Permit Number	Permit by contractor
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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.

<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	System Passes
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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) _____ x difference in length = _____ ounces (+ = add) (- = remove)		

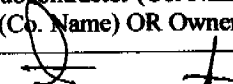
Measured Airflow Method for Adequate Airflow Verification available in RACM, Appendix RD2.6

Calculated Airflow: Cooling Capacity (Btu/hr) _____ X 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.

<input checked="" type="checkbox"/>	<input type="checkbox"/> Yes	<input type="checkbox"/> No	System Passes
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Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner	Champion Heat And Air, Inc.
Signature: 	Date: 12/4/06

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