

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 0611885

Insp Area: 2

Thos Bros: 336G3

Site Address: 7512 POCKET RD SAC

Parcel No: 031-1020-002

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR
AIR SOLUTIONS
910 T&U ALLEY
SACRAMENTO CA 95818

OWNER
ZARGHAMI KHEYROLLAH S
7512 POCKET RD
SACRAMENTO, CA 95831

ARCHITECT

Nature of Work: PAPERLESS, C/O PKG UNIT-SMOKE DETECTORS ARE REQ'D PER 2001 CBC-COMPLIANCE DOCUMENTS ARE DUE AT FINAL

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

Lender's Name _____ Lender's Address _____

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class C20 License Number 757806 Date 08 08 06 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. 7000, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, CITY OF SACRAMENTO with a contractor(s) licensed pursuant to the Contractors License Law).

I am exempt under Sec. _____ B & PC for this reason: AUG 08 2006

Date _____ Owner Signature _____

PAID
CITY OF SACRAMENTO
AUG 08 2006
NEW CITY HALL

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 08 08 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 NO EMPLOYEES Policy Number _____ 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 08 08 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.

FBP10901

CITY OF SACRAMENTO
PLANNING & BUILDING DEPARTMENT
 BUILDING DIVISION
 1231 I Street, Suite 200, Sacramento, CA 95814
 Help Line: 1-916-264-5681 OR 1-888-EZ-PERMIT
 Inspection: 1-916-264-4771

North Permit Center 1-916-264-2364
 2101 Arden Blvd, Suite 200, Sacramento, CA 95821
 Fax # 916-264-1901

TAXED PERMIT APPLICATION
 (certain restrictions apply)

0011885
41234-2

Permit request must be received in this office by 5:00 P.M. to be processed the following work day.
 Note: Contractors must have a correct certificate of Worker's Compensation Insurance.

PAID
 CITY OF SACRAMENTO
 AUG 08 2006
 NEW CITY HALL

Job Address: 1512. POKER RD
 Contact Person: TOM SHIRKINS
 Property Owner: B03 ZARGHANI
 Address: 1512. POKER RD
 City/State/Zip: SACRAMENTO CA 95821
 Phone: (916) 421-8881

NATURE OF REQUEST: Indicate from the selections below in which the details under description of work:
 RESIDENTIAL
 COMMERCIAL (General)
 VAC (Industrial Only)
 Change-out
 New
 Electrical
 Plumbing
 Mechanical
 Fire Alarm
 Gas
 Dry Rot or Termites
 Damage Repairs (Describe Location Below)
 Minor Electrical and/or
 Kitchen Plumbing
 Electrical Service Change if
 New electric circuits
 Re-wire
 Water Service
 Sewer Service
 Replacement
 Gas Line Replacement
 Re-plumb
 Water
 Waste
 Public Utilities Safety
 Inspection (Qualification and single apartment units Only)
 SWAJD
 PG&B

<input type="checkbox"/> Rooftop (excluding tile) <input type="checkbox"/> Tear-Out <input type="checkbox"/> Resublet <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"/> Hardz <input type="checkbox"/> Vinyl <input type="checkbox"/> Stucco	<input checked="" type="checkbox"/> VAC (Industrial Only) <input type="checkbox"/> Change-out <input type="checkbox"/> New <input type="checkbox"/> Electrical <input type="checkbox"/> Plumbing <input type="checkbox"/> Mechanical <input type="checkbox"/> Fire Alarm <input type="checkbox"/> Gas <input type="checkbox"/> Dry Rot or Termites <input type="checkbox"/> Damage Repairs (Describe Location Below)	<input type="checkbox"/> Minor Electrical and/or <input type="checkbox"/> Kitchen Plumbing <input type="checkbox"/> Electrical Service Change if <input type="checkbox"/> New electric circuits <input type="checkbox"/> Re-wire <input type="checkbox"/> Water Service <input type="checkbox"/> Sewer Service <input type="checkbox"/> 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 (Qualification and single apartment units Only) <input type="checkbox"/> SWAJD <input type="checkbox"/> PG&B
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REMOVE EXISTING GROUND MOUNT PACKAGE UNIT

DESCRIPTION OF WORK:

*Design Review approval may be required.
 *Design Review approval may be required.

CERTIFICATE OF COMPLIANCE: RESIDENTIAL (Page 1 of 5)		CF-1R
Project Title HVAC Changeout	Date 7/31/06	Building Permit # 0611885
Project Address 7512 Pocket Rd		Plan Check / Date
Sacramento CA 95831		Field Check / Date
Documentation Author Tom Simkins	Telephone (916) 444-7896	Enforcement Agency Use Only
Compliance Method (Prescriptive)	Climate Zone 12	

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

GENERAL INFORMATION

Total Conditioned Floor Area (CFA) 2705 ft²

Average Ceiling Height: _____ ft

Check Applicable Boxes

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

- Maximum Allowed Total Fenestration Area _____ ft² (from WS-4R)
- Maximum Allowed West Facing Fenestration Area _____ ft² (from WS-4R)
- Number of Stories: 2 Number of Dwelling Units: 1
- Floor Construction Type: raised Slab/Raised Floor (circle one or both)
- Front Orientation: _____ North / South / East / West : All Orientations (input front orientation in degrees from True North and circle one).

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

OPAQUE SURFACES INCLUDING OPAQUE DOORS

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

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

CERTIFICATE OF COMPLIANCE: RESIDENTIAL (Page 2 of 5)		CF-1R
<i>Project Title</i>		<i>Date</i>
HVAC Changeout		7/31/06

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 ²)	U-factor ²	U-factor Source ³	SHGC ⁴	SHGC Source ⁵	Exterior Shading/Overhangs ^{6,7} ✓ box if WS-3R is included
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

N/A

- 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(d)(3)(C) and in Section 3.2.3 of the Residential Manual.
- 2) Enter values in this column from either NFRC Certified Label or from Standards Default Table 116-A.
- 3) Indicate source either from NFRC or Table 116-A.
- 4) Enter values in this column from NFRC or from Standards Default Table 116B or adjusted SHGC from WS-3R.
- 5) Indicate source either from NFRC, Table 116B or WS-3R.
- 6) Shading Devices are defined in Table 3-3 in the Residential Manual and see WS-3R to calculate Exterior Shading devices.
- 7) See Section 3.2.4 in the Residential Manual.

HVAC SYSTEMS

Heating Equipment Type and Capacity (furnace, heat pump, boiler, etc.)	Minimum Efficiency (AFUE or HSEFF)	Distribution Type and Location (ducts, attic, etc.)	Duct or Piping R-Value	Thermostat Type	Configuration (split or package)
Gas Furnace	80	crawl space	R 4.2	attic	pkg

Cooling Equipment Type and Capacity (A/C, heat pump, evap. cooling)	Minimum Efficiency (SEER or EER)	Distribution Type and Location (ducts, attic, etc.)	Duct or Piping R-Value	Thermostat Type	Configuration (split or package)
Air Conditioning	13/11	crawl space	R 4.2	attic	pkg

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

Project Title HVAC Changeout Date 8/11/06
7/31/06

SEALED DUCTS and TXVs (or Alternative Measures)

A signed CF-1R Form must be provided to the building department for each home for which the following are required.

<input checked="" type="checkbox"/>	Sealed Ducts (all climate zones) (Installer testing and certification and HERS rater field verification required.)
<input type="checkbox"/>	TXVs, readily accessible (climate zones 2 and 8-15 only) (Installer testing and certification and HERS Rater field verification required.)
<input type="checkbox"/>	Refrigerant Charge (climate zones 2 and 8-15 only) (Installer testing and certification and HERS Rater field verification required.)
OR	
<input type="checkbox"/>	Alternative to Sealed Ducts and Refrigerant Charge/TXVs (See Package D Alternative Package Features for Project Climate Zone in the RM Appendix B Table 151-C, Footnotes 7-14.)
OR	
<input type="checkbox"/>	No ducts installed.
<input type="checkbox"/>	New ducts from existing space conditioning equipment, not exceeding 40ft. in length.
<input type="checkbox"/>	For additions and alterations, duct systems that are not documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Residential ACM Manual. Duct systems with more than 40 linear feet in unconditioned spaces shall meet the requirements of Section 150(m) and duct insulation requirements of Package D.

WATER HEATING SYSTEMS

<input checked="" type="checkbox"/>	
<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 (See RM Table 5-4, Alternative Water Heating Systems for recirculation requirements)

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

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

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

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

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

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

Project Title
HVAC Changeout

Date
7/31/06

SPECIAL FEATURES REQUIRING BUILDING OFFICIAL or HERS RATER VERIFICATION

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

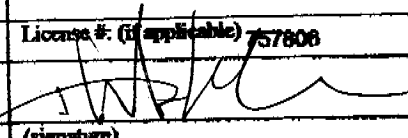
Category	Building Official Verification of Special Features	HERS Rater Verification	HERS Rater Diagnostic Testing	Measure
Ducts				
<input type="checkbox"/>	Y			100% of ducts in crawlspace/basement
<input type="checkbox"/>		Y		Buried ducts
<input type="checkbox"/>		Y		Diagnostic supply duct location,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

CERTIFICATE OF COMPLIANCE: RESIDENTIAL		(Page 5 of 5)	CF-1R
Project Title HVAC Changeout	Date 7/31/06		

Special Remarks

COMPLIANCE STATEMENT

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

Designer or Owner (per Business and Professions Code)		Documentation Author	
Name: Same	Name: Tom Simkins	Name: Tom Simkins	
Title/Firm:	Title/Firm: Air Solutions	Title/Firm: Air Solutions	
Address:	Address: 910 T And U Alley	Address: 910 T And U Alley	
		Sacramento, CA 95818	
Telephone:	Telephone: (916) 444-7896	Telephone: (916) 444-7896	
License #:	License #: (if applicable) 757808	License #: (if applicable) 757808	
(signature)	(date)	(signature) 	(date) 7/31/06

Enforcement Agency

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

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING (Page 1 of 8) CF-4R	
Project Address 7512 Pocket Rd	Builder or Installer Name Air Solutions
Builder or Installer Contact Tom Simkins Telephone <small>(916) 444-7896</small>	Plan/Permit (Additions or Alterations) Number 0611885
HERS Rater Debble Thompson-CC2004227 Telephone <small>916-882-8730</small>	Sample Group Number 3 of 7
Compliance Method (Prescriptive)	Climate Zone 12
Certifying Signature <i>[Signature]</i> Date 8/10/06	Sample House Number 3
Firm Capitol Energy Consultants	HERS Provider CalCerts
Street Address: 1709 Adonis Way	City/State/Zip: Sacramento CA 95864

Copies to: BUILDER, HERS PROVIDER AND BUILDING DEPARTMENT

HERS RATER COMPLIANCE STATEMENT

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

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

MINIMUM REQUIREMENTS FOR DUCT LEAKAGE REDUCTION COMPLIANCE CREDIT
 Procedures for field verification and diagnostic testing of air distribution systems are available in RACM, Appendix RC4.3.

Duct Diagnostic Leakage Testing Results

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

System Passes as a Sample

CERTIFICATE OF FIELD VERIFICATION & DIAGNOSTIC TESTING (Page 3 of 8)		CF-4R
Project Address 7512 Pocket Rd	Builder Name Air Solutions	
Builder Contact Tom Simkins	Telephone (916) 444-7896	Plan Number
HERS Rater Debbie Thompson-CC2004227	Telephone 916-682-8730	Sample Group Number 3 of 7
Compliance Method (Prescriptive)		Climate Zone 12
Certifying Signature	Date 8/10/06	Sample House Number 3
Firm Capitol Energy Consultants		HERS Provider CalCerts
Street Address 1709 Adonis Way		City/State/Zip Sacramento CA 95864

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

THERMOSTATIC EXPANSION VALVE (TXV)

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

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

REFRIGERANT CHARGE MEASUREMENT

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

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

Charge amount

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.
--	--

INSTALLATION CERTIFICATE		(Page 3 of 12) CF-6R
Site Address 7512 Pocket Rd	Permit Number 0611885	

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 (APUE, etc.) ¹ (\geq CF-1R value)	Duct Location (attic, etc.)	Duct or Piping R-value	Heating Load (Btu/hr)	Heating Capacity (Btu/hr)
Furnace-PKG	Carrier	1	80	crawlspace	R 4.2		
	48XP030060						

Cooling Equipment

Equip Type (pkg. heat pump)	CEC Certified Mfr. Name and Model Number	# of Identical Systems	Efficiency (SEER or EER) ¹ (\geq CF-1R value)	Duct Location (attic, etc.)	Duct R-value	Cooling Load (Btu/hr)	Cooling Capacity (Btu/hr)
A/C-PKG	SAMPLE	1	13/11	crawlspace	R 4.2		5 TON

1. \geq 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.

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	Air Solutions
Signature: 	Date: 8/7/06

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

INSTALLATION CERTIFICATE		(Page 4 of 12) CF-6R
Site Address 7512 Pocket Rd	Permit Number 0611885	

INSTALLER COMPLIANCE STATEMENT FOR DUCT LEAKAGE

INSTALLER COMPLIANCE STATEMENT

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

INSTALLER VISUAL INSPECTION AT FINAL CONSTRUCTION STAGE FOR NEW DUCTS:

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

DUCT LEAKAGE REDUCTION

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

NEW CONSTRUCTION:		Measured Values	
1	Duct Pressurization Test Results (CFM @ 25 Pa) Enter Tested Leakage Flow in CFM:		
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:	2000	✓ ✓
3	Pass if Leakage Percentage < 6% for Final or < 4% at Rough-in without air handle: [100 x [(Line # 1) / (Line # 2)]]		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
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.		
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.	294	
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. [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)]]	14.7%	<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 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 standards.

Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner	Air Solutions
Signature:	Date: 8/7/06

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

INSTALLATION CERTIFICATE		(Page 5 of 12) CF-6R
Site Address 7512 Pocket Rd	Permit Number 0611885	

THERMOSTATIC EXPANSION VALVE (TXV) **pkg unit - txv exempt**
Procedures for field verification of thermostatic expansion valves are available in RACM, Appendix RI.

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

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

Outdoor Unit Serial #	
Location	
Outdoor Unit Make	N/A
Outdoor Unit Model	N/A
Cooling Capacity	N/A ton/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 (T _{supply, db})		°F
Return (evaporator entering) air dry-bulb temperature (T _{return, db})		°F
Return (evaporator entering) air wet-bulb temperature (T _{return, wb})		°F
Evaporator saturation temperature (T _{evaporator, sat})		°F
Suction line temperature (T _{suction, db})	N/A	°F
Condenser (entering) air dry-bulb temperature (T _{condenser, db})		°F

Superheat Charge Method Calculations for Refrigerant Charge

Actual Superheat = T _{suction, db} - T _{evaporator, 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} - T _{supply, db}		°F
Target Temperature Split (from Table RD3)		°F
Actual Temperature Split - Target Temperature Split (System passes if between -3°F and +3°F or, upon remeasurement, if between -3°F and -10°F)		°F

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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) \times difference in length = _____ ounces \div _____ (remove)		

N/A

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

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

Alternate Charge Measurement Summary:

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

<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	Air Solutions
Signature:	Date: 8/7/06

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

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FAN WATT DRAW

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

Method For Fan Watt Draw Measurement

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

	Measured Fan Watt Draw	Watts
Measured Fan Flow (enter total cfm from airflow verification)		cfm
Enter results of Watts/cfm		Watts/cfm

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Measured fan watt/cfm flow is equal to or lower than the fan watt/cfm flow documented in CR	<input type="checkbox"/>	<input type="checkbox"/>
Yes is a pass			Pass	Fail

ADEQUATE AIRFLOW VERIFICATION

Procedures for measuring the airflow are available in RACM, Appendix RE3.1.

Method For Airflow Measurement

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

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

<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Measured airflow is greater than the criteria in Table RE-2	<input type="checkbox"/>	<input type="checkbox"/>
Yes is a pass			Pass	Fail

MAXIMUM COOLING CAPACITY

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

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

HIGH EER AIR CONDITIONER

Procedures for verification are available in RACM, Appendix RI.

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

Installing Subcontractor (Co. Name) OR General Contractor (Co. Name) OR Owner	Air Solutions
Signature:	Date: 8/7/06

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