Prescriptive Residential Alterations That Do Not Require HERS Field Verification

CERTIFICATE OF INSTALLATION		CF2R-ALT-05-E
Prescriptive Residential Alterations That Do Not Require HERS Field Verification		(Page 1 of 15)
Project Name:	Enforcement Agency:	Permit Number:
Dwelling Address:	City	Zip Code

This compliance document is only applicable to simple alterations that do not require HERS verification for compliance. When HERS verification is required, a CF1R-ALT-01 shall first be registered with a HERS Provider Data Registry.

Alterations to Space Conditioning Systems that are exempt from HERS verification requirements may use the CF1R-ALT-05 and CF2R- ALT-05 Compliance Documents. Possible exemptions from duct leakage testing include: less than 40 ft of ducts were added or replaced; or the existing duct system was insulated with asbestos; or the existing duct system was previously tested and passed by a HERS Rater. If space conditioning systems are altered and are not exempt from HERS verification, then a CF1R-ALT-02 must be completed and registered with a HERS Provider Data Registry.

Alterations that utilize close Cell Spray Polyurethane Foam (ccSPF) with a density of 1.5 to less than 2.5 pounds per cubic foot having an R-value other than 5.8 per inch, or Open Cell Spray Polyurethane Foam (ocSPF) with a density of 0.4 to less than 1.5 pounds per cubic foot having an R-value of 3.6 per inch, shall complete and register a CF1R-ALT-01 with a HERS Provider Data Registry.

If more than one person has responsibility for installation of the items on this certificate, each person shall prepare and sign a certificate applicable to the portion of construction for which they are responsible. Alternatively, the person with chief responsibility for construction shall prepare and sign this certificate for the entire construction. All applicable Mandatory Measures shall be met. Temporary labels shall not be removed before verification by the building inspector.

A. GENERAL INFORMATION					
01	**Project Name:**		02	**Date Prepared:**	
03	**Project Location:**		04	**Building Front Orientation (deg):**	
05	**CA City:**		06	**Number of Dwelling Units with Additions:**	
07	**Zip Code:**		08	**Fuel Type:**	
09	**Climate Zone:**		10	**Total Conditioned Floor Area (ft^2) (Addition):**	
11	**Building Type**		12	**Slab Area (ft^2):**	
13	**Project Scope:**				

R. POOL AND SPA SYSTEM TYPE

1. Pool and Spa System: Pick from: Pool only, Spa only, or Pool and Spa.

S. POOL AND SPA SYSTEMS AND EQUIPMENT REQUIREMENTS

Before any pool or spa heating system or equipment may be installed, the manufacturer must certify to the Energy Commission that the system or equipment complies with §110.4 and §110.5. The requirements include minimum heating efficiency according to Appliance Efficiency Regulations, an on-off switch outside the heater, permanent and weatherproof operating instructions, no continuous pilot light, and no electric resistance heating.

T. POOL AND SPA SYSTEM INSTALLATION REQUIREMENTS

A time switch or similar control mechanism must be installed as part of the pool water circulation control system that will allow all pumps to be set or programmed to run only during the off-peak electric demand period and for the minimum time necessary to maintain the water in the condition required by applicable public health standards.

U. POOL AND PUMP SIZING AND FLOW RATE SPECIFICATION

The pool filtration flow rate may not be greater than the rate needed to turn over the pool water volume in 6 hours or 36 gpm, whichever is greater. Calculate Max Flow Rate using the following equation:

$$\text{Max Flow Rate (gpm)} = \frac{\text{Pool Volume (gallons)}}{360\text{min.}}$$

Pool piping must be sized according to the maximum flow rate needed for all auxiliary loads. Show work to calculate return and suction line flow rate, minimum filter area, and the maximum pump flow rate correspond to the pool volume in accordance to section 150.0(p), or refer to Table 1 below for the prescriptive values. The maximum velocity allowed is 8 fps in the return line and 6 fps in the suction line, and the maximum pump flow rate is less than 6 hour filtration turnover.

3. Indicate whether or not the alternative calculation is used.
6. Volume of Pool: The Pool volume in gallons (gal).
7. Filter Type: Select from Cartridge, Sand, or DE.
8. Requirements:
    a. Required Min Return Pipe Diameter: The minimum diameter required of the return pipe in inches (in).
    b. Required Min Suction Pipe Diameter: The minimum diameter required of the suction pipe in inches (in).
    c. Required Min Filter Area: The minimum filter area required in square feet (ft^2)
    d. Required Max Pump Flow: The maximum pump flow required in gallons per minute (gpm).
9. Return Pipe Diameter (in): The diameter of the return pipe in inches (in).
10. Suction Pipe Diameter (in): The diameter of the suction pipe in inches (in).
11. Filter Surface Area: The surface area of the filter in square feet (ft^2).
12. Max Pump Flow Rate: The maximum pump flow rate in gallons per minute (gpm).
13. Measured Flow Rate Return Line: The measured flow rate of the return line in feet per second (fps).
14. Measured Flow Rate Suction Line: The measured flow rate of the suction line in feet per second (fps).
15. Compliance Statement: Verify that an alternative compliance calculation or flow test result is provided for this pool or spa use (U. 03 = Yes), and verify whether U. 13 is less than or equal to U. 08, and U. 14 is less than or equal to U. 06. Indicate Yes or No. If no, project fails prescriptive compliance.

V. POOL SYSTEM PIPING

There must be a length of straight pipe that is greater than or equal to at least 4 inches pipe diameters installed before the pump. Refer to Table 2 below for the required pipe length. Traditional hard 90° elbows are not allowed. All elbows must be sweep elbows or a type of elbow that has a pressure drop less than the pressure drop of straight pipe with a length of 30 pipe diameters.

W. POOL FILTERS AND VALVES

Backwash valves must be sized to the diameter of the return pipe or two inches, whichever is greater. Multiport backwash valves have a high pressure drop and are discouraged.

Table 1
Pool sizing (Values are based on a maximum allowable turnover rate of 6-hours)
Note: *For pumps greater than 1 hp. The maximum Pump Flow is the lowest speed default filtration*

Max Pool Volume (gallons)	Min Pipe D or Greater (inches)		Min Filter Area or more (square feet)			Max Pump Flow (gpm)
	Return	Suction	Cartridge	Sand	DE	
13,000	1.5	1.5	100	2.4	20	36
17,000	1.5	2	130	3.1	25	47
21,000	2	2	160	3.9	30	58
28,000	2	2.5	210	5.2	40	78
42,000	2.5	3	320	7.8	60	117
48,000	3	3	360	8.9	70	133

Table 2
Pipe Diameter/Pipe Length

Pipe Diameter (inch)	Required Pipe Length leading into pump (inch)
1.5	6
2	8
2.5	10
3	12

DOCUMENTATION DECLARATION STATEMENTS

1. The person who prepared the CF2R will sign and complete the fields for their name, company (if applicable), address, phone number, certification information (if applicable), date and signature.
2. The person who is assuming responsibility for the project being built to comply with Title 24, Part 6, will complete the fields for their name, company (if applicable), address, phone number, license number (if applicable), date and signature.

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U. POOL PUMP SIZING AND FLOW RATE SPECIFICATION (SECTION 150.0(p))				
01	The pool pump specified is listed in the CEC database of certified pool pumps.			
02	The pool pump flow rate shall not exceed the maximum pump flow rate calculated based on pool sizing in the table below. The return pipe diameter, suction pipe diameter, and filter area shall be at least as large as the required minimums shown in the table. Alternatively, a flow calculation or flow test result shall be provided to demonstrate that the pump flow rate is less than 6 hour filtration turnover, and the return pipe flow rate does not exceed 8 feet per second and that the suction pipe flow rate does not exceed 6 feet per second.			
03	An alternative compliance calculation or a flow test result is provided for this pool or spa use (must attach flow calculation or flow test result to this form)			
04	The pump is capable of operating at 2 or more speeds (not applicable if pump is less than 1 horsepower).			
05	Each auxiliary pool load is served by either a separate pump, or the system is served by a multi-speed pump.			
06	Volume of pool (gallons):			
07	Filter Type (Cartridge, Sand, DE):			
	08a Required Min Return Pipe Diameter (inches)	08b Required Min Suction Pipe Diameter (inches)	08c Required Min Filter Area (ft^2)	08d Required Max Pump Flow (gpm)
09	Return Pipe Diameter (inches).			
10	Suction Pipe Diameter (inches).			
11	Filter Surface Area (ft^2).			
12	Max Pump Flow Rate (gallons per minute).			
13	Measured flow rate return line (feet per second)			
14	Measured flow rate suction line (feet per second)			
15	Compliance statement	U. 03 = Yes, U. 13 ≤ U. 08, and U. 14 ≤ U. 06	☐ Yes	☐ No
The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.				

V. POOL SYSTEM PIPING (Section 150.0(p)2)	
01	The suction side pipe is straight for at least 4 pipe diameters before entering the pump (See table below for the required straight run lengths for various pipe sizes).
02	All elbows are sweep elbows, or an elbow type that has a pressure drop that is less than the pressure drop of a straight pipe with a length of 30 pipe diameters.
The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.	

W. POOL FILTERS AND VALVES (Section 150.0(p)3 and 4)	
01	If a filter is used in a pool intended for public use: The size of the filter is at least the size specified in NSF/ANSI 50.
02	If a backwash valve is used: The diameter of the backwash valve is at least 2 inches, or the diameter of the return pipe, whichever is greater.
The responsible person's signature on this compliance document affirms that all applicable requirements in this table have been met.	

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1. I certify that this Certificate of Installation documentation is accurate and complete.	
Documentation Author Name:	Documentation Author Signature:
Documentation Author Company Name:	Date Signed:
Address:	CEA/HERS Certification Identification (If applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Installation is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code in the applicable classification to accept responsibility for the system design, construction, or installation of features, materials, components, or manufactured devices for the scope of work identified on this Certificate of Installation, and attest to the declarations in this statement (responsible builder/installer), otherwise I am an authorized representative of the responsible builder/installer.
3. The constructed or installed features, materials, components or manufactured devices (the installation) identified on this Certificate of Installation conforms to all applicable codes and regulations, and the installation conforms to the requirements given on the plans and specifications approved by the enforcement agency.
4. I reviewed a copy of the Certificate of Compliance approved by the enforcement agency that identifies the specific requirements for the scope of construction or installation identified on this Certificate of Installation, and I have ensured that the requirements that apply to the construction or installation have been met.
5. I will ensure that a registered copy of this Certificate of Installation shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a registered copy of this Certificate of Installation is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Builder/Installer Name:	Responsible Builder/Installer Signature:	
Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)	Position With Company (Title):	
Address:	CSLB License:	
City/State/Zip:	Phone	Date Signed:

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300.