Agenda Item #:_____

Staff Report
City of Manhattan Beach

TO: Honorable Mayor Ward and Members of the City Council

THROUGH: Richard Thompson, Interim City Manager

FROM: Laurie Jester, Acting Director of Community Development
Carol Jacobson, Building Official
Sona Kalapura, Environmental Programs Manager

DATE: March 16, 2010

SUBJECT: Consideration of Recommendations by the Environmental Task Force to Amend the Municipal Code for Comprehensive Sustainable Building Measures.

RECOMMENDATION:
Staff recommends that the City Council **DISCUSS AND PROVIDE DIRECTION** for staff to prepare amendments to the Manhattan Beach Municipal Code, Title 5 Sanitation and Health, Title 9 Building Regulations, and Title 10 Planning and Zoning, to incorporate a comprehensive set of Sustainable Building Measures as recommended by the Sustainable "Green" Building Subcommittee and the Environmental Task Force.

FISCAL IMPLICATION:
Based on a review of several industry reports, case studies and governmental studies, the cost of the majority of the recommended measures would be zero or an insignificant cost. The residential energy efficiency measures have the most potential for cost variation. The energy efficiency program is extremely flexible, which allows an abundance of choices for the owner. Depending on the options chosen, initial costs may vary between 0% and 5% of total construction cost. On the other hand, a project could choose to incorporate "high end", innovative, state-of-the-art, or experimental designs and features; and costs could increase significantly. Because the market for sustainable products is changing to accommodate these choices, the construction costs could actually decrease.

Some measures represent considerable energy savings with direct payback potential within 1 to 5 years. Incentives from utilities and programs, such as the New Solar Homes Program can provide significant rebates to homes exceeding California Title 24 energy efficiency, which could offset any incremental costs. Recent and impending State laws, such as the California Green Building Standards effective January 1, 2011, will require incorporating sustainable practices, which could also reduce costs as the supply and demand for such goods increase.

There will be some nominal costs associated with staff training, website updates, and public meetings to educate staff, residents, and the construction community, which are included in the

proposed 2010-2011 budget. The Building Official has obtained accreditation for the level of Green Associate for knowledge of green building practices to understand the Leadership in Energy and Environmental Design (LEED®) Green Building Rating System™ and the Principal Building Inspector has earned the designation as a Build It Green Certified Green Building Professional. Other department staff, such as Planners and Plan Check Engineers are expected to complete similar training with the goal of obtaining similar designations. The upcoming fee study will also consider and incorporate costs into permits and applications, if approved by the City Council. Preparation of the required reports to the California Energy Commission has been budgeted in the Community Development Department current budget.

BACKGROUND:

Environmental Task Force

In June, 2008 City Council decided to form a resident-based Environmental Task Force (Task Force) to study environmental issues of priority to the community. Staff solicited applications and on September 2, 2008 Council reviewed these applications and selected 14 residents to serve on the Task Force. Council then appointed two representatives to the Task Force, Mayor Mitch Ward, and Council Member Portia Cohen. The remaining positions were appointed by the Manhattan Beach Unified School District, including Amy Howorth School Board Member, and two student representatives.

The 19-member Task Force had its first meeting on October 15, 2008, and divided into four subcommittees to tackle priority environmental issues identified by City Council: the development of a Climate Action Plan; Water Conservation and Storm Water Management Issues; Waste Reduction and Recycling; and Sustainable ("Green") Building. Since this first meeting of the Task Force the subcommittees have made significant progress on the goals and tasks identified.

Each subcommittee has presented status reports and recommendations to the entire Task Force, and has gained approval on several proposed solutions to the City's environmental challenges. Once the Task Force has approved a set of recommendations, they are presented to City Council for review and direction, and then Staff carries out the recommendations.

Sustainable ("Green") Building Subcommittee

The Green Building subcommittee is comprised of three residents: Casey Beyer, Ben Burkhalter, and Chris Conaway, each bringing unique insight and expertise in the sustainable design, architecture, and energy efficiency areas (see Exhibit A). City Staff provide support to the Subcommittee as well, including Acting Community Development Director, Laurie Jester; Carol Jacobson, Building Official; Sona Kalapura, Environmental Programs Manager; and Esteban Danna, Assistant Planner.

To achieve the goals in the group's mission statement (See Exhibit A) the Sustainable Building Subcommittee developed a four-pronged approach to sustainable development for the City of Manhattan Beach. The first two areas, dealing with public buildings and large non-residential construction, were considered and Ordinance No. 2124 was passed on June 17, 2009. The next two parts include recommendations primarily for new residential construction (energy efficiency standards) as well as sustainable practices and requirements for all construction that are attainable and reasonable for Manhattan Beach. These additional regulations include concerns

regarding stormwater retention and landscaping, which are part of the City Council's 2009-2010 Work Plan.

The Green Building Subcommittee has developed recommendations that are best suited for the environment in Manhattan Beach's largely residential makeup and are intended to augment and supplement the previously adopted ordinances requiring Leadership in Energy and Environmental Design (LEED®) Gold Certification for Public Projects and LEED Silver equivalency for larger Private Sector Projects. LEED is the predominant national non-residential third-party green building rating system, developed by the United States Green Building Council. The rating system provides measurable environmentally sound building design, construction, operations and maintenance solutions. The subcommittee placed specific emphasis on energy efficiency, water conservation, runoff reduction, solid waste reduction and diversion, and air quality and emissions reductions.

If the City Council approves the recommendations, staff would prepare ordinances detailing these recommendations that would amend the Municipal Code Title 5 Sanitation and Health, Title 9 Building Regulations, and Title 10 Planning and Zoning. The draft ordinance would be presented to the Planning Commission, for the Zoning Code amendments, and then to the City Council for their review and consideration.

DISCUSSION:

Green Building Subcommittee Recommendations

The Sustainable Building Subcommittee's recommendations for comprehensive sustainable measures as reviewed and supported through the Environmental Task Force comprise the following five different areas that are typically used in both green regulations and green rating systems (Exhibit B):

1. **Site Sustainability**
    a. Stormwater Retention Design- Low Impact Development & Best Management Practices
    b. Green roofs
2. **Water Efficiency/ Water Use Reduction**
    a. Landscaping and Irrigation
    b. Plumbing Fixtures
3. **Energy**
    a. Energy Efficiency
    b. Renewable Energy
4. **Materials and Resources** - Waste Management and Material Reuse
5. **Air Quality** - Indoor and Outdoor

These recommendations for mandatory measures included reviews of current and impending regulations. The measures would apply generally to residential, non-residential, commercial, and municipal construction. Many of these recommendations are required now or in the near future by the City's Water Conservation Ordinance, California Model Water Efficient Landscape Ordinance, California Energy Efficiency Regulations, and/or the California Green Building Standards (to be effective January 1, 2011). Other reviews included Los Angeles County and Santa Monica Low Impact Development requirements and research of other jurisdictions with

cutting edge sustainable policies, such as Santa Monica, Palo Alto, Los Angeles County and City, San Francisco County and City, Santa Barbara, San Jose, Chula Vista, and Berkeley. City Council has indicated that one of the goals of Manhattan Beach is to be a leader in our sustainable policies. As discussed in the fiscal implications section above, the majority of these measures have insignificant to no net impacts.

1. Site Sustainability Recommendations

STORMWATER RETENTION DESIGN
LOW IMPACT DEVELOPMENT & BEST MANAGEMENT PRACTICES

1a.	**Application**	All New Construction & Major Renovations
	Measures	• Retain 100% of runoff water on site to pre-development standards • Small lots of 7,500 sq ft or less may use prescriptive method that allows no more than 20% of the required yard, setback, parkways, & encroachment area to be non-permeable *or* may use the option of engineered design • Lots over 7,500 sq ft must use engineered design
	Benefit	Reduce runoff and discharge of pollutants Meet or exceed municipal discharge permit

The subcommittee vetted the stormwater retention design, low impact development, Best Management Practices, landscaping and irrigation, and water efficiency recommendations with the Water Subcommittee of the Environmental Task Force. Additionally, Kathleen McGowan (City's consultant for the Municipal Stormwater Permit) reviewed the recommendations for consistency with the current and the impending revised Los Angeles County municipalities Stormwater Permit. Part of the Permit's objectives is to minimize impacts from stormwater and urban runoff as well as maximize the percentage of pervious surfaces to allow percolation of stormwater into the ground. Stormwater retention and encouragement of softscape is part of the 2009-2010 Work Plan.

GREEN ROOFS

1b.	**Application**	All New Construction & Major Renovations & Roof/Deck/Balcony Remodels
	Measures	• Treated as other decks and balconies for height & setbacks • Director may approve green roofs on top of roof level if not useable as a deck, and if fire-life-safety, maintenance, slope, and access are mitigated.
	Benefit	• Reduce stormwater runoff in public system • Filters pollution • Increases thermal & acoustical insulation

A green roof is a roof surface that supports the growth of vegetation over a portion of its area generally for the purpose of water or energy conservation. The roof usually consists of a waterproof, root-safe membrane that is covered by a drainage system, lightweight growing medium, and plants. Green roofs provide a means to decrease stormwater runoff into the public system as well as provide building insulation. To encourage this while balancing height, views, and safety concerns; the recommendation to amend Title 10 Planning and Zoning would provide administrative flexibility for green roofs, which is consistent with the 2009-2010 City Council Work Plan.

2. Water Efficiency/Water Use Reduction Recommendations

LANDSCAPING AND IRRIGATION

2a.	**Application**	All New Construction & Major Renovations
	Measures	• Maximum of 20% of the landscaped area (private property, public parkways, & encroachment areas) may be high water use, such as grass • Small lots of 7,500 sq ft or less may use a basic worksheet *or* may provide an engineered design to allow flexibility • Lots over 7,500 sq. ft. must use a landscape architect for plans & engineered calculations • Director may allow administrative exemptions for hardship or special circumstances
	Benefit	Estimated 20% reduction water usage and runoff discharge.

These recommendations were also discussed with the Water Subcommittee at a joint meeting. The landscaping and irrigation measures exceed the California Model Water Efficient Landscape Ordinance. The California landscape ordinance mandates all cities to require plans for water efficient landscape design, installation, and maintenance for larger landscaped developments. The primary goal is to reduce the water needed to irrigate landscapes. This is accomplished through both the type and sizing of the irrigation system used and the types of plants in the landscaped areas. If a site uses non-potable water use (i.e., graywater, reclaimed water), it is exempt from the water efficiency measures.

PLUMBING FIXTURES

2b.	**Application**	New Construction, Major Renovations, Plumbing Remodels and Additions, Retrofits upon sale and/or transfer of property
	Measures	• Residential Remodel and New Construction applicants may have the alternative of providing a Water Use Budget to reduce water use by 20% *or* install plumbing fixtures that use 20% less water, such as: o toilets, faucets, o showerheads, o weather/sensor based irrigation controls o clothes washers & dishwashers • Residential Water Use Budget or prescriptive plumbing fixture options are same requirements as in 2011 Calif Green Building Standards • Residential to retrofit with WaterSense toilets upon sale of property with exemptions, such as foreclosures or transfers within family • Residential and Non-residential fountains, ponds max 25 sq ft footprint with water recirculation system unless using non-potable water; no fountain overspray
	Benefit	• Estimated 20% reduction water usage • Meet or exceed City Water Conservation Ordinance and Calif Green Building Standards

On January 1, 2011, the California Green Building Standards will require a 20% reduction in potable water use when installing plumbing water fixtures for all new residential construction as well as weather-based and or sensor-based irrigation controls. The subcommittee recommends adopting these measures as leaders of the community in advance of this mandate.

An additional measure would be implemented through the Residential Building Record Reports for sales of property, which require only toilets to be retrofit. Subcommittee members discussed this with a representative of South Bay Association of Realtors as well as other local real estate brokers and agents. These representatives noted that retrofit requirements for property sales or transfer are a common practice. The WaterSense program by the Environmental Protection Agency lists several hundred selections of high efficiency low water-use toilets from major suppliers as well as smaller manufacturers. The local West Basin Municipal Water District often provides toilet rebate incentives for high efficiency toilets and other plumbing fixtures.

3. Energy Recommendations

ENERGY EFFICIENCY

3a.	**Application**	New Construction & Major Renovations; Additions
	Measures	• Exceed Title 24 Calif Residential Energy Efficiency Standards by 20% - residential only • Individual Water Heater efficiency based on size & type – residential and some non-residential • Provide Energy Star light fixtures - non-residential & residential • Major appliances, fixtures, and equipment to be Energy Star efficient - non-residential & residential • New Swim pools and spas to provide 60% of heating from solar energy system - non-residential & residential • Fireplace energy and venting efficiency - non-residential & residential
	Benefit	Estimated 20% to 70% reduction of energy demand

Residential construction is the primary target of the Title 24 energy efficiency recommendation. By improving the energy efficiency of all new construction and major renovations, the City potentially reduces energy demand by 20% to 70%. The subcommittee enlisted the services of a local energy design consultant, who provided energy efficiency "baselines" for five different typical homes built in town (See Exhibit C). These homes meet the current "baseline" requirements for energy efficiency established by the California Title 24 requirements. Next, both 15% and 20% efficiency above the baseline were reviewed. The subcommittee concluded that requirements to meet 20% energy efficiency above the California Title 24 requirements were feasible and reasonable. If the City of Manhattan Beach were to require 20% efficiency above Title 24, this would place Manhattan Beach in a leadership role as many of the jurisdictions have only chosen to require 15% over Title 24.

There is an extremely large toolkit for the designer and owner to choose from in order to reach the 20% above Title 24 energy efficiency goal. There is also a wide variation in potential cost impacts. It is possible to achieve compliance with no net increase to the total construction cost. The probable increase ranges from 0% to 5% of the total construction cost. One example from the toolkit is verification of caulking, insulation, and the heating/air conditioning systems. The verification would be performed by a certified rater from the California Home Energy Rating System (HERS) program. The subcommittee noted that this verification has the potential to substantially increase the energy efficiency and thus reduce the overall operation costs for a minimal expenditure. Some options available include:

- Increasing insulation – added thickness or increased efficiency
- Verifying that caulking around windows, doors, and other opening is not leaking heated or cooled air
- Verifying heating and air conditioning duct leakage is mitigated

- Orientation of glass and shading devices
- Increasing the effectiveness of heaters from 80% to 90% efficiency
- Increasing efficiency of window and glass
- Adding insulation to basement retaining walls and concrete slab edges

Other energy efficiency measures beyond the Title 24 requirements have minimal to no fiscal impacts. These are the "low hanging fruit" that can provide high efficiency for lower costs over the lifetime of the appliances, fixtures, and equipment. In most instances, these measures apply to both residential and non-residential construction. Examples of these requirements include light fixtures, heaters, individual water heaters, and fireplaces, which would need to meet strict energy efficiency requirements. Energy Star is a listing required on some of the fixtures and appliances. Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy that lists products with superior energy efficiency ratings. The heating and insulation of new swimming pools and spas are also addressed to discourage inefficient and fossil-fuel heating that emit greenhouse gas.

RENEWABLE ENERGY

3b.	**Application**	Modification to Title 10 Planning and Zoning
	Measures	• Solar energy systems – continue to waive fees; allow 12" over height if needed to meet Solar Rights Act; Director may exempt height restrictions where fire-life safety, and access issues are mitigated. • Wind turbines – allowed within building footprint; public hearing for other locations
	Benefit	Encourage or Facilitate renewable energy

The renewable energy recommendations would revise Title 10 of the Manhattan Beach Municipal Code to document the City's support of the California Solar Rights Act. It would allow administrative approval of a maximum 12" over the height limit for solar energy systems that meet the Solar Rights Act. The Director would have the flexibility to allow exemptions to the height limit where fire-life safety and access issues are mitigated. Several solar energy system companies have met with staff and plan check guidelines have been refined to meet their concerns while balancing safety and access issues for the Fire and Building regulations. The City continues to waive plan check and permit fees. These actions have resulted in triple the number of permits compared to other cities in the South Bay.

This recommendation also discusses wind energy systems. Small-scale units had been demonstrated to the Environmental Task Force; however, this type of technology is not yet in production. Because there are many concerns regarding the viability of current technology as well as height, view, location, and noise concerns; the subcommittee recommends that wind turbines outside the building footprint area be considered through the public hearing process.

4. Material and Resources Recommendations

WASTE MANAGEMENT and MATERIAL REUSE

4.	**Application**	New Construction & Major Renovations
	Measures	• Waste management - Require 65% waste diversion of construction and demolition debris • Fly ash reuse – Require minimum 20% fly ash in concrete pour in-place cement
	Benefit	• Additional 15% reduction in construction-related waste • Fly ash use diverts waste product & reduces use of Portland cement, which is energy intensive to produce

Improved waste diversion from the landfill and material reuse are the main objectives of these recommendations. The current requirement is to recycle 50% of construction and demolition debris. This proposal would increase the requirement by 15% for a total of a 65% diversion rate. The recent Wells Fargo project diverted more than 80% of their debris from landfills.

Fly ash is a by-product of coal, which is typically burned to produce electricity. Fly ash can be used as a mixture additive to cement, which reduces the amount of Portland cement used. Portland cement is energy intensive to produce. The subcommittee researched the feasibility and viability of combining fly ash in poured in-place concrete and determined it to be practical, inexpensive and locally available. The quality of the concrete works well with 20% fly ash. Fly ash, which is potentially detrimental to the atmosphere, is instead captured and reused for cement.

5. Air Quality Recommendations

INDOOR AND OUTDOOR

5.	**Application**	New Construction and Major Renovations
	Measures	• Indoor - Finishes, Caulks, Sealants, Adhesives – low or no Volatile Organic Compounds (VOC). • Outdoor - Best Management Practices – o Discourage or prohibit material deliveries to construction sites on trash pick up days o Educate and enforce limits on idling of gas or diesel fueled construction vehicles
	Benefit	• Improve indoor air quality • Reduce construction-related traffic and fuel waste

This recommendation expands the current requirements of Low Volatile Organic Compounds (VOC) in caulking. VOC's are harmful vapors that are regulated by a variety of air quality

governmental agencies. The measure brings the City's regulations in line with that of the California Green Building Standards, which will be effective January 1, 2011. The market for low and no VOC finishes, caulks, sealants, and adhesives is growing rapidly; so a wide selection of these items is easily attainable for reasonable costs.

The outdoor air quality recommendations are Best Management Practices that the Residential Construction Officer will implement and enforce.

Next Steps

Staff will develop the appropriate ordinance to implement measures as directed by City Council. Also, the California Public Resources Code (PRC) requires that the City make a determination, as part of the ordinance, that proposed energy efficiency portions of the measures are cost effective. The PRC requires that the energy efficiency information be submitted to the California Energy Commission, who will review the application/ordinance to assure that the proposed standards exceed the current Standards, and by how much (20% per the subcommittee's recommendations).

In order to educate the public and construction community, staff would be trained on the new regulations. Subsequently, staff will conduct public outreach through construction community meetings and newsletter, City cable television public service announcements, and the City's website. It is anticipated that code enforcement of the sustainable measures after final inspections would be minimal; similar to the water conservation measures, which had a strong public outreach - without pro-active enforcement - and the City has reduced water usage by 20%.

CONCLUSION:

Staff recommends that City Council approve the recommendations of the Environmental Task Force, and direct staff to prepare amendments to the Manhattan Beach Municipal Code, Title 5 Sanitation and Health, Title 9 Building Regulations, and Title 10 Planning and Zoning. Draft ordinances to incorporate the mandatory measures would then be presented to the Planning Commission, for the Zoning Code amendments, and then to the City Council for their review and consideration.

Exhibits:

A. Green Building Subcommittee Member Background and Subcommittee Goals
B. Detailed Sustainable Measures Recommendations – Tables 1-5
C. Five examples of Title 24 Reports with 20% Improved Energy Efficiency

Exhibit A. Green Building Subcommittee Member Background and Subcommittee Goals

Member Background

The subcommittee on Sustainable Design (Green Building) is comprised of three residents: Casey Beyer, Ben Burkhalter, and Chris Conaway, each bringing unique insight and expertise in the sustainable design, architecture, and energy efficiency areas. City Staff provide support to the subcommittee including the Acting Community Development Director, Laurie Jester; Carol Jacobson, Building Official; and Esteban Danna, City Planner.

The subcommittee is chaired by Chris Conaway, a LEED AP architect with the international design firm NBBJ in Los Angeles. Chris has been involved with the sustainable design movement since the early 1990s and has just completed his 6th LEED certified building project.

Casey Beyer is an independent consultant in the energy and environmental policy sector.
Ben Burkhalter is an architect with offices located in Manhattan Beach, with a specific focus on energy-efficient design. Ben is currently working on a case study project for a LEED Gold rated single-family residence.

Green Building Subcommittee Mission Statement

The Green Building Subcommittee developed a working mission statement:

- To identify environmentally responsible, sustainable and energy efficient policies for constructing, renovating and occupying the built environment;

- To develop and make recommendations to City Council that will lead towards a healthy and sustainable city; and

- To educate and promote programs that increase awareness and incentivize sustainable building practices.

EXHIBIT B. Detailed Sustainable Measures Recommendations – Tables 1-5

1 a. SITE SUSTAINABILITY

STORMWATER RETENTION DESIGN
LOW IMPACT DEVELOPMENT & BEST MANAGEMENT PRACTICES

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 9 Building Regulations • All new construction • Major renovations (over 50%) • Single & Multi-Residential • Non-residential • Municipal	Design runoff mitigation measures to achieve zero discharge for ¾" rainfall in 24 hr period & retain 100% pre-development runoff capacity Parcels 7,500 sf or less Two Methods: Prescriptive – • Non-permeable surface max 20% required yard &/or setback, parkway, & encroachment areas • Run-off from non-permeable surfaces (e.g., roofs, parking)direct to non-permeable areas &/or approved *****Retention Features. Performance – Licensed Civil Engineer or Landscape Architect design per Calif Stormwater Quality Assn Best Management Practices Handbook & US Environ.Protection Agency NPDES Parcels greater than 7,500 sf may only use Performance method above	Reduce runoff & discharge of pollutants Meet or exceed compliance with Municipal discharge Permit * Retention Features – may include Gray water, captured rain storage, and other systems – Administrative approval to allow some flexibility for placement	Moderate to no net impacts	Santa Barbara; Santa Monica; Palo Alto

EXHIBIT B. Detailed Sustainable Measures Recommendations – Tables 1-5

1 b. SITE SUSTAINABILITY

GREEN ROOFS

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 10 Planning & Zoning • All new construction • Major renovations (over 50%) • Single & Multi-Residential • Non-residential • Roof/Deck/ Balcony remodels	Green Roofs allowed : Where decks & balconies allowed Director exemptions: • Administrative approval where usability at roof level prohibited if fire-life safety, maintenance, slope, & access issues are mitigated	Filters pollution Decreases stormwater runoff into public system Increases thermal & acoustical insulation Lowers need for air conditioning & energy consumption	Very moderate to no net impacts	Los Angeles City; Monterey

EXHIBIT B. Detailed Sustainable Measures Recommendations – Tables 1-5

2 a. WATER EFFICIENCY

WATER USE REDUCTION

LANDSCAPING AND IRRIGATION

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 9 Building Regulations Sites using potable water • All new construction • Major renovations (over 50%) • Single & Multi-Residential • Non-residential • Municipal	Design irrigation to meet requirements for Region 3 per Water Use Classification of Landscape Species (WUCOLS) Plants of high water use – max. 20% total landscaped area on private property, parkways, & encroachment areas per WUCOLS Parcels 7,500 sq ft or less Two Methods: Prescriptive – Standardized Water Budget Worksheet per WUCOLS Performance – Licensed Landscape Architect design & calculations Parcels greater than 7,500 sq ft may only use Performance method above Exemptions: • Sites irrigated w/ non-potable water • Dept Director administrative for hardship or special circumstances	Estimated 20% reduction of water usage Estimated 20% reduction of runoff discharge Meet or exceed compliance with California Model Water Efficient Landscape Ordinance	Very moderate to no net impacts	Santa Barbara; Santa Monica; Palo Alto

EXHIBIT B. Detailed Sustainable Measures Recommendations – Tables 1-5

2 b. WATER EFFICIENCY

WATER USE REDUCTION

PLUMBING FIXTURES

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 9 Building Regulations • All new construction • Additions/ renovations with new plumbing • Single & Multi-Residential • Non-residential • Retrofit toilets upon residential sale/transfer	New Construction, Additions, Renovations with new/replaced plumbing fixtures, such as: • Lavatory faucets, kitchen faucets, toilets, clothes and dishwashers to reduce water use by 20% - residential • Weather &/or sensor-based irrigation controls • Fountains -unless non-potable water, excluding swim pools/spas, max 25 sq ft foot print with water recirculation system; No Overspray. Two Methods: Prescriptive – Specific plumbing fixtures meeting high efficiency standards Performance – Water Use Budget per the Calif Green Building Standards Residential Sale/Transfer Retrofits • Toilets WaterSense rated or equivalent with exemptions (eg: foreclosures; transfer within family)	Estimated 20% reduction of water usage Estimated 20% reduction in effluent discharge Meet or exceed current Manhattan Beach Water Conservation Ordinance & California Green Building Standards effective 1/1/11	Very moderate to no net impacts	Berkeley; Santa Monica; San Francisco

EXHIBIT B. Detailed Sustainable Measures Recommendations – Tables 1-5

3 a. ENERGY

ENERGY EFFICIENCY

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 9 Building Regulations • All new construction • Additions/ renovations • Single & Multi-Residential • Non-residential per MB LEED ordinance • Municipal per MB LEED ordinance	Energy Efficiency: Exceed 2008 Title 24 Calif Energy Efficiency Standards by 20% - Residential Only **RESIDENTIAL & NON-RESIDENTIAL:** Lighting Efficiency – Light fixtures – Energy Star rated Major Appliances, Fixtures, Equipment Efficiency: Energy Star rated - • Exhaust & Ceiling fans • Clothes & Dish Washers • Refrigerators & Freezers • Heating, Ventilating, Air Conditioning • Wine coolers Water heaters – min efficiency req'ts based on size & type Pipe insulation (currently required) Heat traps for non-circulating water heaters & tanks Gas Fireplaces – sealed, direct vent – min 65% efficiency Swim pools & spas - • Solar energy system for 60% minimum heating of new pools/spas • Thermal covers/blankets – minimum R-15 rating • Electric resistance heaters must be powered by renewable energy system	Estimated minimum 20% to 70% reduction of energy demand Meet or exceed LEED requirements, current California Energy Efficiency regulations & California Green Building Standards effective 1/1/11	Moderate to no net impacts Direct operational & Life cycle cost savings	San Jose; Chula Vista; San Francisco

EXHIBIT B. Detailed Sustainable Measures Recommendations – Tables 1-5

3 b. ENERGY
RENEWABLE ENERGY

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 10 Planning & Zoning	Solar Energy Systems: Administrative approval - Max 12" over height if to meet State Solar Rights Act; • Director exemptions where fire-life safety, access issues are mitigated Wind Turbines: Allowed within building footprint; public hearing for other locations: • Small scale units technology not yet viable • Prevailing wind velocities may make this inefficient • Other concerns re: height, location, noise, view, bird capture need to be mitigated	Encourage and/or facilitate renewable energy & resource conservation	Not applicable; voluntary	Hermosa Beach;

EXHIBIT B. Detailed Sustainable Measures Recommendations – Tables 1-5

4. MATERIALS & RESOURCES

WASTE MANAGEMENT & MATERIAL REUSE

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 5 Sanitation & Health and Title 9 Building Regulations • All new construction • Additions/ renovations • Single & Multi-Residential • Non-residential • Municipal	Waste Diversion: Require waste from Construction & Demolition to be recycled – Modify current requirement from 50% to 65%. Fly ash or Similar Supplementary Cementitious Materials (SCM) Reuse: Require use of minimum 20% fly ash in concrete poured in-place cement.	Additional 15% reduction in construction-related waste Use of fly ash diverts waste product and reduces use of Portland cement, which is energy intensive to produce. Meet or exceed LEED requirements and California Green Building Standards effective 1/1/11	Very Moderate to no net impacts	Santa Monica; Los Angeles County; San Francisco

EXHIBIT B. Detailed Sustainable Measures Recommendations – Tables 1-5

5. AIR QUALITY
INDOOR & OUTDOOR

Application	Measures	Purpose/Benefit	Fiscal Impact	Similar Policies
Title 9 Building Regulations & Best Management Practices • All new construction • Additions/ renovations • Single & Multi-Residential • Non-residential • Municipal	Indoor - Finishes, Caulks, Sealants, Adhesives: Low Volatile Organic Compound (VOC) or No -VOC Outdoor - Best Management Practices: • Discourage or prohibit equipment and/or material deliveries to construction sites on Refuse & Recycling Pickup days that block or interfere with traffic flow through Residential Construction Officer & Contractor Meetings • Educate contractors & enforce Calif Air Resources Board limits on idling of gas &/or diesel fueled vehicles to maximum 5 minutes. Exceptions include concrete mixers	Improve indoor air quality Reduce construction-related traffic & fuel waste Meet or exceed LEED requirements and California Green Building Standards effective 1/1/11	Very Moderate to no net impacts	Beverly Hills; San Francisco; Palo Alto

BUILDING ENERGY ANALYSIS REPORT

PROJECT:

East Manhattan Existing + Addition SFR (20%)

Manhattan Beach, CA 90266

Project Designer:

Manhattan Beach, CA 90266

Report Prepared by:

Rick Newton
NEWTON ENERGY
1401 19th Street
Manhattan Beach, CA 90266
310 375-2699

Job Number:

8360P

Date:

1/13/2010

EXHIBIT C
CC Mtg. 3/16/10
#1

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC – www.energysoft.com.

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PERFORMANCE CERTIFICATE: Residential (Part 1 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan E+A SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

Project Address	California Energy Climate Zone	Total Cond. Floor Area	Addition	# of Stories
Manhattan Beach	CA Climate Zone 06	2,742	n/a	2

FIELD INSPECTION ENERGY CHECKLIST

☑ Yes ☐ No HERS Measures -- If Yes, A CF-4R must be provided per Part 2 of 5 of this form.

☑ Yes ☐ No Special Features -- If Yes, see Part 2 of 5 of this form for details.

INSULATION

Construction	Type	Cavity	Area (ft^2)	Special Features (see Part 2 of 5)	Status
Roof	Wood Framed Rafter	R-19	306		New
Wall	Wood Framed	R-13	607		New
Roof	Wood Framed Attic	R-30	1,654		Altered
Wall	Wood Framed	None	2,146		Existing
Floor	Wood Framed w/Crawl Space	None	1,975		Existing
Door	Opaque Door	None	18		New

FENESTRATION

Orientation	Area(ft^2)	U-Factor	SHGC	Overhang	Sidefins	Exterior Shades	Status
Skylight	4.0	0.710	0.73	none	none	None	New
Rear (S)	108.7	0.550	0.67	none	none	Bug Screen	New
Front (NE)	20.0	0.550	0.67	none	none	Bug Screen	New
Right (NW)	20.0	0.550	0.67	none	none	Bug Screen	New
Right (W)	7.0	0.550	0.67	none	none	Bug Screen	New
Left (E)	4.0	0.550	0.67	none	none	Bug Screen	New
Front (N)	13.3	0.550	0.67	none	none	Bug Screen	New
Left (E)	45.4	0.550	0.67	none	none	Bug Screen	Existing
Right (W)	64.0	0.550	0.67	none	none	Bug Screen	Existing
Skylight	11.0	1.190	0.83	none	none	None	Existing
Rear (SW)	7.6	0.550	0.67	none	none	Bug Screen	Existing

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
1	Central Furnace	90% AFUE	No Cooling	13.0 SEER	Setback	Altered

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status
NEW Existing + Addition S)	Ducted	Ducted	Attic, Ceiling Ins, vented	4.2	Altered

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

PERFORMANCE CERTIFICATE: Residential (Part 1 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan E+A SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

Project Address	California Energy Climate Zone	Total Cond. Floor Area	Addition	# of Stories
Manhattan Beach	CA Climate Zone 06	2,742	n/a	2

FIELD INSPECTION ENERGY CHECKLIST

☑ Yes ☐ No HERS Measures -- If Yes, A CF-4R must be provided per Part 2 of 5 of this form.

☑ Yes ☐ No Special Features -- If Yes, see Part 2 of 5 of this form for details.

INSULATION Construction	Type	Cavity	Area (ft^2)	Special Features (see Part 2 of 5)	Status

FENESTRATION Orientation	Area(ft^2)	U-Factor	SHGC	Overhang	Sidefins	Exterior Shades	Status
Left (SE)	7.6	0.550	0.67	none	none	Bug Screen	Existing
Front (NE)	7.6	0.550	0.67	none	none	Bug Screen	Existing
Right (NW)	27.6	0.550	0.67	none	none	Bug Screen	Existing
Front (N)	24.0	0.550	0.67	none	none	Bug Screen	Existing
Rear (S)	164.5	0.550	0.67	none	none	Bug Screen	Existing

HVAC SYSTEMS Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status

HVAC DISTRIBUTION Location	Heating	Cooling	Duct Location	Duct R-Value	Status

WATER HEATING Qty.	Type	Gallons	Min. Eff	Distribution	Status

PERFORMANCE CERTIFICATE: Residential	(Part 2 of 5)	CF-1R
Project Name: *East Manhattan E+A SFR (20%)*	Building Type: ☑ Single Family ☐ Multi Family ☐ Addition Alone ☐ Existing+ Addition/Alteration	Date: *1/13/2010*

SPECIAL FEATURES INSPECTION CHECKLIST

The enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

*The HVAC System Carrier Corp. N9MP1075B12** does not include a cooling system, field verification is not necessary.*

HERS REQUIRED VERIFICATION

Items in this section require field testing and/or verification by a certified HERS Rater. The inspector must receive a completed CF-4R form for each of the measures listed below for final to be given.

The HVAC System NEW Existing + Addition System incorporates HERS verified Duct Leakage. HERS field verification and diagnostic testing is required to verify that duct leakage meets the specified criteria.

PERFORMANCE CERTIFICATE: Residential (Part 3 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan E+A SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

ANNUAL ENERGY USE SUMMARY

TDV (kBtu/ft²-yr)	Standard	Proposed	Margin
Space Heating	39.02	27.31	11.71
Space Cooling	18.68	14.44	4.25
Fans	7.27	5.90	1.38
Domestic Hot Water	15.31	15.31	0.00
Pumps	0.00	0.00	0.00
Totals	80.29	62.95	17.34
Percent Better Than Standard:			21.6 %

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

				Fenestration Area
Building Front Orientation:	(N) 0 deg	Ext. Walls/Roof	Wall Area	
Number of Dwelling Units:	1.00	(N)	683	65
Fuel Available at Site:	Natural Gas	(E)	855	57
Raised Floor Area:	1,975	(S)	807	281
Slab on Grade Area:	0	(W)	946	119
Average Ceiling Height:	8.1	Roof	1,975	15
Fenestration Average U-Factor:	0.55		TOTAL:	536
Average SHGC:	0.67		Fenestration/CFA Ratio:	19.6 %

REMARKS

BASE CASE (6.3%):
15% CASE:
A. Replace Furnace with new 90% AFUE: 6.3% to 11.3%;
B. Duct Leakage Testing (HERS): 11.3% to 16.0%.
C. Insulate Existing Roof to R-30; 16.0% to 21.6%.

STATEMENT OF COMPLIANCE

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 the Administrative Regulations and Part 6 the Efficiency Standards of the California Code of Regulations.

The documentation author hereby certifies that the documentation is accurate and complete.

Documentation Author

Company *NEWTON ENERGY*
Address *1401 19th Street* Name *Rick Newton*
City/State/Zip *Manhattan Beach, CA 90266* Phone *310 375-2699*

Signed *1/13/2010* Date

The individual with overall design responsibility hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, duct sealing, verification of refrigerant charge, 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 & Professions Code)

Company *ure*
Address Name
City/State/Zip *Manhattan Beach, CA 90266* Phone

Signed License # Date

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan E+A SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Roof	*306*	*0.062*	*R-19*					*225*	*24*	*New*	*4.2.2-A6*	*Addition 2nd Floor*
Wall	*60*	*0.102*	*R-13*					*180*	*90*	*New*	*4.3.1-A3*	*Addition 2nd Floor*
Wall	*82*	*0.102*	*R-13*					*45*	*90*	*New*	*4.3.1-A3*	*Addition 2nd Floor*
Wall	*82*	*0.102*	*R-13*					*315*	*90*	*New*	*4.3.1-A3*	*Addition 2nd Floor*
Wall	*159*	*0.102*	*R-13*					*270*	*90*	*New*	*4.3.1-A3*	*Addition 2nd Floor*
Wall	*69*	*0.102*	*R-13*					*90*	*90*	*New*	*4.3.1-A3*	*Addition 2nd Floor*
Wall	*155*	*0.102*	*R-13*					*0*	*90*	*New*	*4.3.1-A3*	*Addition 2nd Floor*
Roof	*457*	*0.032*	*R-30*					*30*	*24*	*Altered*	*4.2.1-A8 (E=4.2.1-A2)*	*Existing Second Floor*
Wall	*145*	*0.356*	*None*					*0*	*90*	*Removed*	*4.3.1-A1*	*Existing Second Floor*
Wall	*94*	*0.356*	*None*					*270*	*90*	*Removed*	*4.3.1-A1*	*Existing Second Floor*
Wall	*59*	*0.356*	*None*					*0*	*90*	*Existing*	*4.3.1-A1*	*Existing Second Floor*
Wall	*184*	*0.356*	*None*					*180*	*90*	*Existing*	*4.3.1-A1*	*Existing Second Floor*
Wall	*208*	*0.356*	*None*					*90*	*90*	*Existing*	*4.3.1-A1*	*Existing Second Floor*
Wall	*110*	*0.356*	*None*					*270*	*90*	*Existing*	*4.3.1-A1*	*Existing Second Floor*
Floor	*1,975*	*0.097*	*None*					*0*	*180*	*Existing*	*4.4.1-A1*	*Existing First Floor*
Roof	*310*	*0.079*	*R-11*					*30*	*24*	*Removed*	*4.2.1-A2*	*Existing First Floor*

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
1	*Skylight*	*4.0*	*0.710*	*Default*	*0.73*	*Default*	*225*	*New*	*Double Metal Clear*	*Addition 2nd Floor*
2	*Window*	*4.0*	*0.550*	*Default*	*0.67*	*Default*	*180*	*New*	*Double Non Metal Clear*	*Addition 2nd Floor*
3	*Window*	*20.0*	*0.550*	*Default*	*0.67*	*Default*	*45*	*New*	*Double Non Metal Clear*	*Addition 2nd Floor*
4	*Window*	*20.0*	*0.550*	*Default*	*0.67*	*Default*	*315*	*New*	*Double Non Metal Clear*	*Addition 2nd Floor*
5	*Window*	*7.0*	*0.550*	*Default*	*0.67*	*Default*	*270*	*New*	*Double Non Metal Clear*	*Addition 2nd Floor*
6	*Window*	*4.0*	*0.550*	*Default*	*0.67*	*Default*	*90*	*New*	*Double Non Metal Clear*	*Addition 2nd Floor*
7	*Window*	*13.3*	*0.550*	*Default*	*0.67*	*Default*	*0*	*New*	*Double Non Metal Clear*	*Addition 2nd Floor*
8	*Window*	*36.7*	*0.550*	*Default*	*0.67*	*Default*	*180*	*New*	*Double Non Metal Clear*	*Existing Second Floor*
9	*Window*	*68.0*	*0.550*	*Default*	*0.67*	*Default*	*180*	*New*	*Double Non Metal Clear*	*Existing Second Floor*
10	*Window*	*110.1*	*0.550*	*Default*	*0.67*	*Default*	*180*	*Removed*	*Double Non Metal Clear*	*Existing Second Floor*
11	*Window*	*8.3*	*0.550*	*Default*	*0.67*	*Default*	*90*	*Existing*	*Double Non Metal Clear*	*Existing Second Floor*
12	*Window*	*4.0*	*0.550*	*Default*	*0.67*	*Default*	*270*	*Removed*	*Double Non Metal Clear*	*Existing Second Floor*
13	*Window*	*14.0*	*0.550*	*Default*	*0.67*	*Default*	*270*	*Existing*	*Double Non Metal Clear*	*Existing Second Floor*
14	*Skylight*	*11.0*	*1.190*	*Default*	*0.83*	*Default*	*30*	*Existing*	*Single Metal Clear*	*Existing First Floor*
15	*Window*	*7.6*	*0.550*	*Default*	*0.67*	*Default*	*225*	*Existing*	*Double Non Metal Clear*	*Existing First Floor*
16	*Window*	*7.6*	*0.550*	*Default*	*0.67*	*Default*	*135*	*Existing*	*Double Non Metal Clear*	*Existing First Floor*

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
1	*None*	*1.00*												
2	*Bug Screen*	*0.76*												
3	*Bug Screen*	*0.76*												
4	*Bug Screen*	*0.76*												
5	*Bug Screen*	*0.76*												
6	*Bug Screen*	*0.76*												
7	*Bug Screen*	*0.76*												
8	*Bug Screen*	*0.76*												
9	*Bug Screen*	*0.76*												
10	*Bug Screen*	*0.76*												
11	*Bug Screen*	*0.76*												
12	*Bug Screen*	*0.76*												
13	*Bug Screen*	*0.76*												
14	*None*	*1.00*												
15	*Bug Screen*	*0.76*												
16	*Bug Screen*	*0.76*												

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan E+A SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Roof	*1,197*	*0.032*	*R-30*					*30*	*24*	*Altered*	*4.2.1-A8 (E=4.2.1-A2)*	*Existing First Floor*
Wall	*191*	*0.356*	*None*					*0*	*90*	*Existing*	*4.3.1-A1*	*Existing First Floor*
Door	*18*	*0.500*	*None*					*0*	*90*	*New*	*4.5.1-A4*	*Existing First Floor*
Wall	*67*	*0.356*	*None*					*225*	*90*	*Existing*	*4.3.1-A1*	*Existing First Floor*
Wall	*26*	*0.356*	*None*					*135*	*90*	*Existing*	*4.3.1-A1*	*Existing First Floor*
Wall	*26*	*0.356*	*None*					*45*	*90*	*Existing*	*4.3.1-A1*	*Existing First Floor*
Wall	*79*	*0.356*	*None*					*315*	*90*	*Existing*	*4.3.1-A1*	*Existing First Floor*
Wall	*87*	*0.356*	*None*					*0*	*90*	*Existing*	*4.3.1-A1*	*Existing First Floor*
Wall	*216*	*0.356*	*None*					*180*	*90*	*Existing*	*4.3.1-A1*	*Existing First Floor*
Wall	*495*	*0.356*	*None*					*90*	*90*	*Existing*	*4.3.1-A1*	*Existing First Floor*
Wall	*397*	*0.356*	*None*					*270*	*90*	*Existing*	*4.3.1-A1*	*Existing First Floor*

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
17	*Window*	*7.6*	*0.550*	*Default*	*0.67*	*Default*	*45*	*Existing*	*Double Non Metal Clear*	*Existing First Floor*
18	*Window*	*20.0*	*0.550*	*Default*	*0.67*	*Default*	*315*	*Existing*	*Double Non Metal Clear*	*Existing First Floor*
19	*Window*	*7.6*	*0.550*	*Default*	*0.67*	*Default*	*315*	*Existing*	*Double Non Metal Clear*	*Existing First Floor*
20	*Window*	*24.0*	*0.550*	*Default*	*0.67*	*Default*	*0*	*Existing*	*Double Non Metal Clear*	*Existing First Floor*
21	*Window*	*136.0*	*0.550*	*Default*	*0.67*	*Default*	*180*	*Existing*	*Double Non Metal Clear*	*Existing First Floor*
22	*Window*	*28.5*	*0.550*	*Default*	*0.67*	*Default*	*180*	*Existing*	*Double Non Metal Clear*	*Existing First Floor*
23	*Window*	*37.1*	*0.550*	*Default*	*0.67*	*Default*	*90*	*Existing*	*Double Non Metal Clear*	*Existing First Floor*
24	*Window*	*50.0*	*0.550*	*Default*	*0.67*	*Default*	*270*	*Existing*	*Double Non Metal Clear*	*Existing First Floor*

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Wd	Overhang Len	Hgt	LExt	RExt	Left Fin Dist	Len	Hgt	Right Fin Dist	Len	Hgt
17	*Bug Screen*	*0.76*												
18	*Bug Screen*	*0.76*												
19	*Bug Screen*	*0.76*												
20	*Bug Screen*	*0.76*												
21	*Bug Screen*	*0.76*												
22	*Bug Screen*	*0.76*												
23	*Bug Screen*	*0.76*												
24	*Bug Screen*	*0.76*												

CERTIFICATE OF COMPLIANCE: Residential (Part 5 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan E+A SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

BUILDING ZONE INFORMATION

System Name	Zone Name	Floor Area (ft^2) New	Existing	Altered	Removed	Volume	Year Built
NEW Existing + Addition System	*Addition 2nd Floor*	*310*				*2,511*	
	Existing Second Floor			*457*		*3,702*	*1956*
	Existing First Floor			*1,975*		*15,998*	*1956*
	Totals	*310*	*0*	*2,432*	*0*		

HVAC SYSTEMS

System Name	Qty.	Heating Type	Min. Eff.	Cooling Type	Min. Eff.	Thermostat Type	Status
NEW Existing + Addition Syster	*1*	*Central Furnace*	*90% AFUE*	*No Cooling*	*13.0 SEER*	*Setback*	*Altered*
pre-altered for above		*Central Furnace*	*80% AFUE*	*No Cooling*	*13.0 SEER*	*Setback*	

HVAC DISTRIBUTION

System Name	Heating	Cooling	Duct Location	Duct R-Value	Ducts Tested?	Status
NEW Existing + Addition System	*Ducted*	*Ducted*	*Attic, Ceiling Ins, vented*	*4.2*	☑	*Altered*
pre-altered for above	*Ducted*	*Ducted*	*Attic, Ceiling Ins, vented*	*2.1*	☐	
					☐	
					☐	
					☐	

WATER HEATING SYSTEMS

System Name	Qty.	Type	Distribution	Rated Input (Btuh)	Tank Cap. (gal)	Energy Factor or RE	Standby Loss or Pilot	Ext. Tank Insul. R-Value	Status
Standard Gas 50 gal or Le	*1*	*Small Gas*	*Kitchen Pipe Ins*	*40,000*	*50*	*0.53*	*n/a*	*n/a*	*Existing*

MULTI-FAMILY WATER HEATING DETAILS

Control	Qty.	HP	Eff. Premium	Hot Water Piping Length (ft) Plenum	Outside	Buried	Add ½" Insulation
			☐				☐
			☐				☐
			☐				☐
			☐				☐
			☐				☐

HYDRONIC HEATING SYSTEM PIPING

System Name	Pipe Length	Pipe Diameter	Insul. Thick.

MANDATORY MEASURES SUMMARY: Residential (Page 1 of 3) MF-1R

Project Name	Date
East Manhattan E+A SFR (20%)	*1/13/2010*

NOTE: Low-rise residential buildings subject to the Standards must comply with all applicable mandatory measures listed, regardless of the compliance approach used. More stringent energy measures listed on the Certificate of Compliance (CF-1R, CF-1R-ADD, or CF-1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandatory Measures Summary shall be incorporated into the permit documents, and the applicable features shall be considered by all parties as minimum component performance specifications whether they are shown elsewhere in the documents or in this summary. Submit all applicable sections of the MF-1R Form with plans.

Building Envelope Measures:

§116(a)1: Doors and windows between conditioned and unconditioned spaces are manufactured to limit air leakage.

§116(a)4: Fenestration products (except field-fabricated windows) have a label listing the certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a).

§117: Exterior doors and windows are weather-stripped; all joints and penetrations are caulked and sealed.

§118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate type and include on CF-6R Form.

§118(i): The thermal emittance and solar reflectance values of the cool roofing material meets the requirements of §118(i) when the installation of a Cool Roof is specified on the CF-1R Form.

*§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.

§150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R-Value.

*§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.

*§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.

§150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(2000) when specified on the CF-1R Form.

§150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.

§150(l): Water absorption rate for slab edge insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch and shall be protected from physical damage and UV light deterioration.

Fireplaces, Decorative Gas Appliances and Gas Log Measures:

§150(e)1A: Masonry or factory-built fireplaces have a closable metal or glass door covering the entire opening of the firebox.

§150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, which is at least six square inches in area and is equipped with a with a readily accessible, operable, and tight-fitting damper and or a combustion-air control device.

§150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building, are prohibited.

Space Conditioning, Water Heating and Plumbing System Measures:

§110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulated appliances are certified by the Energy Commission.

§113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise residential occupancies meet the air release valve, backflow prevention, pump isolation valve, and recirculation loop connection requirements of §113(c)5.

§115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces, household cooking appliances (appliances with an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt), and pool and spa heaters.

§150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMACNA or ACCA.

§150(i): Heating systems are equipped with thermostats that meet the setback requirements of Section 112(c).

§150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the federal minimal standard are externally wrapped with insulation having an installed thermal resistance of R-12 or greater.

§150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-heating system, or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.

§150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating systems, and entire length of recirculating sections of hot water pipes are insulated per Standards Table 150-B.

§150(j)2: Cooling system piping (suction, chilled water, or brine lines),and piping insulated between heating source and indirect hot water tank shall be insulated to Table 150-B and Equation 150-A.

§150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 psi, meets the requirements of Standards Table 123-A.

§150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.

§150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor retardant or is enclosed entirely in conditioned space.

§150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating and Certification Corporation.

Registration Number: Registration Date/Time: HERS Provider:

MANDATORY MEASURES SUMMARY: Residential	(Page 2 of 3)	**MF-1R**
Project Name *East Manhattan E+A SFR (20%)*		Date *1/13/2010*

§150(m)1: All air-distribution system ducts and plenums installed, are sealed and insulated to meet the requirements of CMC Sections 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are insulated to a minimum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used

§150(m)1: Building cavities, support platforms for air handlers, and plenums defined or constructed with materials other than sealed sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cause reductions in the cross-sectional area of the ducts.

§150(m)2D: Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.

§150(m)7: Exhaust fan systems have back draft or automatic dampers.

§150(m)8: Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.

§150(m)9: Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material.

§150(m)10: Flexible ducts cannot have porous inner cores.

§150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2007 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of providing the Whole Building Ventilation required in Section 4 of that Standard.

Pool and Spa Heating Systems and Equipment Measures:

§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate or card with operating instructions; and shall not use electric resistance heating or a pilot light.

§114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe between filter and heater, or dedicated suction and return lines, or built-up connections for future solar heating.

§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover.

§114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.

§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, filters, and valve requirements of §150(p).

Residential Lighting Measures:

§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy that is no lower than the efficacies contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.

§150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §130(d).

§150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an output frequency no less than 20 kHz.

§150(k)5: Permanently installed night lights and night lights integral to a permanently installed luminaire or exhaust fan shall contain only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall not contain a line-voltage socket or line-voltage lamp holder; OR shall be rated to consume no more than five watts of power as determined by §130(d), and shall not contain a medium screw-base socket.

§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applicable requirements of §150(k).

§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7.

§150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting in kitchens shall be high efficacy. EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft^2 or 100 watts for dwelling units larger than 2,500 ft^2 may be exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen are controlled by a manual on occupant sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control system; and all permanently installed luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are high efficacy and controlled by a manual-on occupant sensor.

§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 watts of power per linear foot of illuminated cabinet.

Registration Number: Registration Date/Time: HERS Provider:

§150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luimnaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11.

§150(k)12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the lumiunaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.

§150(k)13: Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photocontrol not having an override or bypass switch that disables the photocontrol; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to §150(k)13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires.

§150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d).

§150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146.

§150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

Registration Number: Registration Date/Time: HERS Provider:

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name	Date
East Manhattan E+A SFR (20%)	1/13/2010
System Name	**Floor Area**
NEW Existing + Addition System	2,742

ENGINEERING CHECKS

Number of Systems	1
Heating System	
Output per System	69,000
Total Output (Btuh)	69,000
Output (Btuh/sqft)	25.2
Cooling System	
Output per System	0
Total Output (Btuh)	0
Total Output (Tons)	0.0
Total Output (Btuh/sqft)	0.0
Total Output (sqft/Ton)	0.0
Air System	
CFM per System	855
Airflow (cfm)	855
Airflow (cfm/sqft)	0.31
Airflow (cfm/Ton)	0.0
Outside Air (%)	0.0 %
Outside Air (cfm/sqft)	0.00
Note: values above given at ARI conditions	

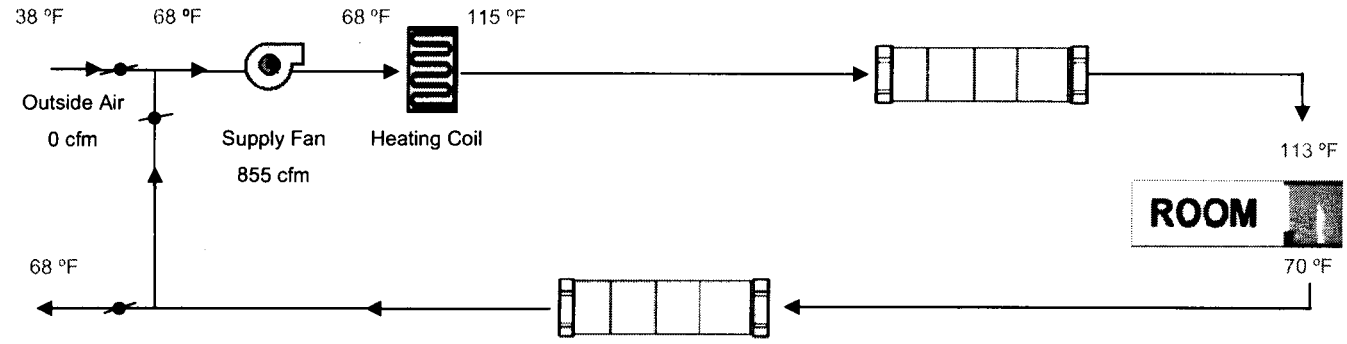
SYSTEM LOAD

	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	**Sensible**	**Latent**	**CFM**	**Sensible**
Total Room Loads	2,144	48,554	3,166	1,101	50,683
Return Vented Lighting		0			
Return Air Ducts		2,862			3,229
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		2,862			3,229
TOTAL SYSTEM LOAD		54,279	3,166		57,141

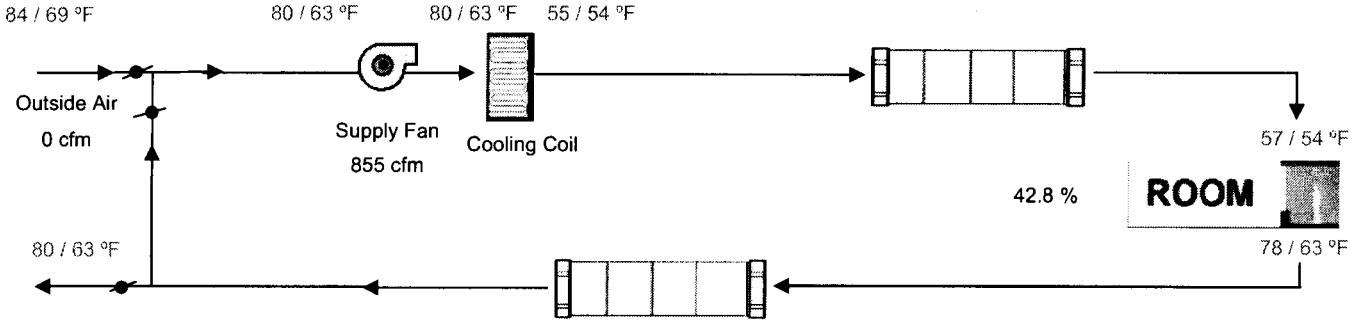
HVAC EQUIPMENT SELECTION

Carrier Corp. N9MP1075B12**	0	0		69,000
Total Adjusted System Output (Adjusted for Peak Design conditions)	0	0		69,000
TIME OF SYSTEM PEAK		Aug 3 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETICS (Airstream Temperatures at Time of Cooling Peak)



BUILDING ENERGY ANALYSIS REPORT

PROJECT:

East Manhattan SFR (20%)

Manhattan Beach, CA 90266

Project Designer:

[redacted]

Manhattan Beach, CA 90266

Report Prepared by:

Rick Newton
NEWTON ENERGY
1401 19th Street
Manhattan Beach, CA 90266
310 375-2699

Job Number:

8152R

Date:

1/12/2010

EXHIBIT C
CC Mtg. 3/16/10
#2

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC – www.energysoft.com.

TABLE OF CONTENTS

PERFORMANCE CERTIFICATE: Residential (Part 1 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	1/12/2010

Project Address	California Energy Climate Zone	Total Cond. Floor Area	Addition	# of Stories
Manhattan Beach	CA Climate Zone 06	3,137	n/a	2

FIELD INSPECTION ENERGY CHECKLIST

☑ Yes ☐ No HERS Measures -- If Yes, A CF-4R must be provided per Part 2 of 5 of this form.

☑ Yes ☐ No Special Features -- If Yes, see Part 2 of 5 of this form for details.

INSULATION

Construction	Type	Cavity	Area (ft^2)	Special Features (see Part 2 of 5)	Status
Floor	Wood Framed w/o Crawl Space	R-30	404		New
Roof	Wood Framed Attic	R-30	1,598	Radiant Barrier	New
Wall	Wood Framed	R-13	2,675		New
Slab	Unheated Slab-on-Grade	R-5	1,512		New
Roof	Wood Framed Rafter	R-30	291		New
Door	Opaque Door	None	21		New

FENESTRATION

Orientation	Area(ft^2)	U-Factor	SHGC	Overhang	Sidefins	Exterior Shades	Status
Skylight	26.8	0.390	0.29	none	none	None	New
Rear (N)	213.5	0.330	0.31	none	none	Bug Screen	New
Front (S)	129.4	0.330	0.31	none	none	Bug Screen	New
Front (S)	54.0	0.330	0.31	none	none	Louvered Sunscreen	New
Right (E)	46.7	0.330	0.31	none	none	Bug Screen	New
Left (W)	30.0	0.330	0.31	none	none	Bug Screen	New
Left (W)	38.0	0.330	0.31	none	none	Louvered Sunscreen	New
Front (S)	84.0	0.330	0.31	6.0	none	Bug Screen	New
Right (E)	17.5	0.330	0.31	11.0	none	Bug Screen	New
Right (E)	16.0	0.330	0.31	3.5	none	Bug Screen	New
Left (W)	20.0	0.330	0.31	3.0	none	Louvered Sunscreen	New

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
1	Central Furnace	95% AFUE	No Cooling	13.0 SEER	Setback	New

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status
Whole House System	Ducted	Ducted	Attic, Ceiling Ins, vented	6.2	New

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status
1	Small Gas	75	0.58	Kitchen Pipe Ins	New

PERFORMANCE CERTIFICATE: Residential (Part 2 of 5)		CF-1R
Project Name *East Manhattan SFR (20%)*	Building Type ☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	Date *1/12/2010*

SPECIAL FEATURES INSPECTION CHECKLIST

The enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

The HVAC System Carrier Corp. 58UVB060-14 does not include a cooling system, field verification is not necessary.

This building incorporates an air retarding wrap which shall be installed to meet the requirements of Section 150 (f) of the Standards.

The Roof R-30 Roof Attic w/ Radiant Barrier includes credit for a Radiant Barrier that is Continuous meeting eligibility and installation criteria as specified in Residential Appendix RA4.2.2.

HERS REQUIRED VERIFICATION

Items in this section require field testing and/or verification by a certified HERS Rater. The inspector must receive a completed CF-4R form for each of the measures listed below for final to be given.

Compliance credit for quality installation of insulation has been used. HERS field verification is required.

PERFORMANCE CERTIFICATE: Residential (Part 3 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/12/2010*

ANNUAL ENERGY USE SUMMARY

TDV (kBtu/ft²-yr)	Standard	Proposed	Margin
Space Heating	7.55	4.01	3.53
Space Cooling	1.08	0.28	0.80
Fans	1.33	1.04	0.29
Domestic Hot Water	12.31	12.21	0.11
Pumps	0.00	0.00	0.00
Totals	22.26	17.54	4.72
Percent Better Than Standard:			21.2 %

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

				Fenestration Area
Building Front Orientation:	(S) 180 deg	Ext. Walls/Roof	Wall Area	
Number of Dwelling Units:	1.00	(S)	594	267
Fuel Available at Site:	Natural Gas	(W)	1,025	88
Raised Floor Area:	404	(N)	853	214
Slab on Grade Area:	1,512	(E)	873	80
Average Ceiling Height:	9.3	Roof	1,916	27
Fenestration Average U-Factor:	0.33		TOTAL:	676
Average SHGC:	0.31		Fenestration/CFA Ratio:	21.5 %

REMARKS

BASE CASE: No R-19 Ceilings. Wall Fenestration U-Factor = 0.33, SHGC = 0.31. Gas Furnace w/ AFUE = 90%, no coolin- assumed SEER = 13.0.
15% CASE: A. Quality Insulation Installation: 0.2% to 5.5% This measure requires verification by a certified HERS Rater.
B. Duct Insulation: R-4.2 to R-6.2; 5.5% to 6.3%.
C. House Wrap Credit: Installed which meets the requirements for compliance credit as explained in Section 4.2 of the Residential Manual: 6.3% to 7.8%
D. Floor Insulation over Garage /Open: R-19 to R-30: 7.8% to 8.4%
E. Gas Furnace AFUE 90% to 95%: 8.4% to 10.1%
F. Slab On Grade: add R-5 to 24": 10.1% to 14%
G. Vaulted Roof upstairs revised to Attic w/ Radiant Barrier: 14% to 21.2% (We can change the R-30 Floor back to R-19.)

STATEMENT OF COMPLIANCE

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 the Administrative Regulations and Part 6 the Efficiency Standards of the California Code of Regulations.

The documentation author hereby certifies that the documentation is accurate and complete.

Documentation Author

Company *NEWTON ENERGY*
Address *1401 19th Street* Name *Rick Newton*
City/State/Zip *Manhattan Beach, CA 90266* Phone *310 375-2699*

1/12/2010
Signed Date

The individual with overall design responsibility hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, duct sealing, verification of refrigerant charge, 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 & Professions Code)

Company
Address Name
City/State/Zip *Manhattan Beach, CA 90266* Phone (

Signed License # Date

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/12/2010*

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Floor	*404*	*0.034*	*R-30*					*0*	*180*	*New*	*4.4.2-A7*	*2nd Floor Zone*
Roof	*1,598*	*0.032*	*R-30*					*30*	*24*	*New*	*4.2.1-A8*	*2nd Floor Zone*
Wall	*229*	*0.102*	*R-13*					*0*	*90*	*New*	*4.3.1-A3*	*2nd Floor Zone*
Wall	*194*	*0.102*	*R-13*					*180*	*90*	*New*	*4.3.1-A3*	*2nd Floor Zone*
Wall	*393*	*0.102*	*R-13*					*90*	*90*	*New*	*4.3.1-A3*	*2nd Floor Zone*
Wall	*372*	*0.102*	*R-13*					*270*	*90*	*New*	*4.3.1-A3*	*2nd Floor Zone*
Slab	*1,512*	*0.580*	*R-5*					*0*	*180*	*New*	*4.4.7-B7*	*1st Floor Zone*
Roof	*291*	*0.035*	*R-30*					*30*	*24*	*New*	*4.2.2-A17*	*1st Floor Zone*
Wall	*122*	*0.102*	*R-13*					*0*	*90*	*New*	*4.3.1-A3*	*1st Floor Zone*
Door	*21*	*0.500*	*None*					*0*	*90*	*New*	*4.5.1-A4*	*1st Floor Zone*
Wall	*268*	*0.102*	*R-13*					*0*	*90*	*New*	*4.3.1-A3*	*1st Floor Zone*
Wall	*133*	*0.102*	*R-13*					*180*	*90*	*New*	*4.3.1-A3*	*1st Floor Zone*
Wall	*400*	*0.102*	*R-13*					*90*	*90*	*New*	*4.3.1-A3*	*1st Floor Zone*
Wall	*565*	*0.102*	*R-13*					*270*	*90*	*New*	*4.3.1-A3*	*1st Floor Zone*

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
1	*Skylight*	*26.8*	*0.390*	*NFRC*	*0.29*	*NFRC*	*30*	*New*	*Velux Comfort+(74) Lowe2/Arg*	*2nd Floor Zone*
2	*Window*	*48.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*0*	*New*	*Jeld-Wen Wood Windows Low-E*	*2nd Floor Zone*
3	*Window*	*32.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*0*	*New*	*Jeld-Wen Wood Windows Low-E*	*2nd Floor Zone*
4	*Window*	*13.4*	*0.330*	*NFRC*	*0.31*	*NFRC*	*180*	*New*	*Jeld-Wen Wood Windows Low-E*	*2nd Floor Zone*
5	*Window*	*48.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*180*	*New*	*Jeld-Wen Wood Windows Low-E*	*2nd Floor Zone*
6	*Window*	*54.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*180*	*New*	*Jeld-Wen Wood Windows Low-E*	*2nd Floor Zone*
7	*Window*	*6.7*	*0.330*	*NFRC*	*0.31*	*NFRC*	*90*	*New*	*Jeld-Wen Wood Windows Low-E*	*2nd Floor Zone*
8	*Window*	*40.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*90*	*New*	*Jeld-Wen Wood Windows Low-E*	*2nd Floor Zone*
9	*Window*	*30.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*270*	*New*	*Jeld-Wen Wood Windows Low-E*	*2nd Floor Zone*
10	*Window*	*38.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*270*	*New*	*Jeld-Wen Wood Windows Low-E*	*2nd Floor Zone*
11	*Window*	*17.5*	*0.330*	*NFRC*	*0.31*	*NFRC*	*0*	*New*	*Jeld-Wen Wood Windows Low-E*	*1st Floor Zone*
12	*Window*	*96.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*0*	*New*	*Jeld-Wen Wood Windows Low-E*	*1st Floor Zone*
13	*Window*	*20.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*0*	*New*	*Jeld-Wen Wood Windows Low-E*	*1st Floor Zone*
14	*Window*	*68.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*180*	*New*	*Jeld-Wen Wood Windows Low-E*	*1st Floor Zone*
15	*Window*	*84.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*180*	*New*	*Jeld-Wen Wood Windows Low-E*	*1st Floor Zone*
16	*Window*	*17.5*	*0.330*	*NFRC*	*0.31*	*NFRC*	*90*	*New*	*Jeld-Wen Wood Windows Low-E*	*1st Floor Zone*

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
1	*None*	*1.00*												
2	*Bug Screen*	*0.76*												
3	*Bug Screen*	*0.76*												
4	*Bug Screen*	*0.76*												
5	*Bug Screen*	*0.76*												
6	*Louvered Sunscreen*	*0.27*												
7	*Bug Screen*	*0.76*												
8	*Bug Screen*	*0.76*												
9	*Bug Screen*	*0.76*												
10	*Louvered Sunscreen*	*0.27*												
11	*Bug Screen*	*0.76*												
12	*Bug Screen*	*0.76*												
13	*Bug Screen*	*0.76*												
14	*Bug Screen*	*0.76*												
15	*Bug Screen*	*0.76*	*8.0*	*6.5*	*6.0*	*0.1*	*6.0*	*6.0*						
16	*Bug Screen*	*0.76*	*5.0*	*3.5*	*11.0*	*0.1*	*6.0*	*6.0*						

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/12/2010*

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Insulation Exterior	Insulation Frame	Insulation Interior	Insulation Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
17	*Window*	*16.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*90*	*New*	*Jeld-Wen Wood Windows Low-E*	*1st Floor Zone*
18	*Window*	*20.0*	*0.330*	*NFRC*	*0.31*	*NFRC*	*270*	*New*	*Jeld-Wen Wood Windows Low-E*	*1st Floor Zone*

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
17	*Bug Screen*	*0.76*	*4.0*	*4.0*	*3.5*	*0.1*	*3.0*	*3.0*						
18	*Louvered Sunscreen*	*0.27*	*6.0*	*6.0*	*3.0*	*0.1*	*3.0*	*3.0*						

CERTIFICATE OF COMPLIANCE: Residential (Part 5 of 5) CF-1R

Project Name	Building Type	Date
East Manhattan SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/12/2010*

BUILDING ZONE INFORMATION

System Name	Zone Name	Floor Area (ft^2) New	Existing	Altered	Removed	Volume	Year Built
Whole House System	*Second Floor*	*1,625*				*14,625*	
	First Floor	*1,512*				*14,515*	
	Totals	*3,137*	*0*	*0*	*0*		

HVAC SYSTEMS

System Name	Qty.	Heating Type	Min. Eff.	Cooling Type	Min. Eff.	Thermostat Type	Status
Whole House System	*1*	*Central Furnace*	*95% AFUE*	*No Cooling*	*13.0 SEER*	*Setback*	*New*

HVAC DISTRIBUTION

System Name	Heating	Cooling	Duct Location	Duct R-Value	Ducts Tested?	Status
Whole House System	*Ducted*	*Ducted*	*Attic, Ceiling Ins, vented*	*6.2*	☐	*New*
					☐	
					☐	
					☐	
					☐	

WATER HEATING SYSTEMS

System Name	Qty.	Type	Distribution	Rated Input (Btuh)	Tank Cap. (gal)	Energy Factor or RE	Standby Loss or Pilot	Ext. Tank Insul. R-Value	Status
A O Smith Water Products	*1*	*Small Gas*	*Kitchen Pipe Ins*	*70,000*	*75*	*0.58*	*n/a*	*n/a*	*New*

MULTI-FAMILY WATER HEATING DETAILS

Control	Qty.	HP	Eff. Premium	Hot Water Piping Length (ft) Plenum	Outside	Buried	Add ½" Insulation
			☐				☐
			☐				☐
			☐				☐
			☐				☐
			☐				☐

HYDRONIC HEATING SYSTEM PIPING

System Name	Pipe Length	Pipe Diameter	Insul. Thick.

MANDATORY MEASURES SUMMARY: Residential (Page 1 of 3) MF-1R

Project Name	Date
East Manhattan SFR (20%)	*1/12/2010*

NOTE: Low-rise residential buildings subject to the Standards must comply with all applicable mandatory measures listed, regardless of the compliance approach used. More stringent energy measures listed on the Certificate of Compliance (CF-1R, CF-1R-ADD, or CF-1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandatory Measures Summary shall be incorporated into the permit documents, and the applicable features shall be considered by all parties as minimum component performance specifications whether they are shown elsewhere in the documents or in this summary. Submit all applicable sections of the MF-1R Form with plans.

Building Envelope Measures:
§116(a)1: Doors and windows between conditioned and unconditioned spaces are manufactured to limit air leakage.
§116(a)4: Fenestration products (except field-fabricated windows) have a label listing the certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a).
§117: Exterior doors and windows are weather-stripped; all joints and penetrations are caulked and sealed.
§118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate type and include on CF-6R Form.
§118(i): The thermal emittance and solar reflectance values of the cool roofing material meets the requirements of §118(i) when the installation of a Cool Roof is specified on the CF-1R Form.
*§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.
§150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R-Value.
*§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.
*§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.
§150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(2000) when specified on the CF-1R Form.
§150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.
§150(l): Water absorption rate for slab edge insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch and shall be protected from physical damage and UV light deterioration.
Fireplaces, Decorative Gas Appliances and Gas Log Measures:
§150(e)1A: Masonry or factory-built fireplaces have a closable metal or glass door covering the entire opening of the firebox.
§150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, which is at least six square inches in area and is equipped with a with a readily accessible, operable, and tight-fitting damper and or a combustion-air control device.
§150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building, are prohibited.
Space Conditioning, Water Heating and Plumbing System Measures:
§110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulated appliances are certified by the Energy Commission.
§113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise residential occupancies meet the air release valve, backflow prevention, pump isolation valve, and recirculation loop connection requirements of §113(c)5.
§115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces, household cooking appliances (appliances with an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt), and pool and spa heaters.
§150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMACNA or ACCA.
§150(i): Heating systems are equipped with thermostats that meet the setback requirements of Section 112(c).
§150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the federal minimal standard are externally wrapped with insulation having an installed thermal resistance of R-12 or greater.
§150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-heating system, or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.
§150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating systems, and entire length of recirculating sections of hot water pipes are insulated per Standards Table 150-B.
§150(j)2: Cooling system piping (suction, chilled water, or brine lines),and piping insulated between heating source and indirect hot water tank shall be insulated to Table 150-B and Equation 150-A.
§150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 psi, meets the requirements of Standards Table 123-A.
§150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.
§150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor retardant or is enclosed entirely in conditioned space.
§150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating and Certification Corporation.

Registration Number: Registration Date/Time: HERS Provider:

§150(m)1: All air-distribution system ducts and plenums installed, are sealed and insulated to meet the requirements of CMC Sections 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are insulated to a minimum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used

§150(m)1: Building cavities, support platforms for air handlers, and plenums defined or constructed with materials other than sealed sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cause reductions in the cross-sectional area of the ducts.

§150(m)2D: Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.

§150(m)7: Exhaust fan systems have back draft or automatic dampers.

§150(m)8: Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.

§150(m)9: Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material.

§150(m)10: Flexible ducts cannot have porous inner cores.

§150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2007 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of providing the Whole Building Ventilation required in Section 4 of that Standard.

Pool and Spa Heating Systems and Equipment Measures:

§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate or card with operating instructions; and shall not use electric resistance heating or a pilot light.

§114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe between filter and heater, or dedicated suction and return lines, or built-up connections for future solar heating.

§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover.

§114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.

§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, filters, and valve requirements of §150(p).

Residential Lighting Measures:

§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy that is no lower than the efficacies contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.

§150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §130(d).

§150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an output frequency no less than 20 kHz.

§150(k)5: Permanently installed night lights and night lights integral to a permanently installed luminaire or exhaust fan shall contain only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall not contain a line-voltage socket or line-voltage lamp holder; OR shall be rated to consume no more than five watts of power as determined by §130(d), and shall not contain a medium screw-base socket.

§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applicable requirements of §150(k).

§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7.

§150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting in kitchens shall be high efficacy. EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft_2 or 100 watts for dwelling units larger than 2,500 ft_2 may be exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen are controlled by a manual on occupant sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control system; and all permanently installed luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are high efficacy and controlled by a manual-on occupant sensor.

§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 watts of power per linear foot of illuminated cabinet.

Registration Number: Registration Date/Time: HERS Provider:

§150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luimnaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11.

§150(k)12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the lumiunaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.

§150(k)13: Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photocontrol not having an override or bypass switch that disables the photocontrol; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to §150(k)13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires.

§150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d).

§150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146.

§150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

Registration Number: Registration Date/Time: HERS Provider:

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name	Date
East Manhattan SFR (20%)	1/12/2010
System Name	**Floor Area**
Whole House System	3,137

ENGINEERING CHECKS	
Number of Systems	1
Heating System	
Output per System	56,000
Total Output (Btuh)	56,000
Output (Btuh/sqft)	17.9
Cooling System	
Output per System	0
Total Output (Btuh)	0
Total Output (Tons)	0.0
Total Output (Btuh/sqft)	0.0
Total Output (sqft/Ton)	0.0
Air System	
CFM per System	1,995
Airflow (cfm)	1,995
Airflow (cfm/sqft)	0.64
Airflow (cfm/Ton)	0.0
Outside Air (%)	0.0 %
Outside Air (cfm/sqft)	0.00
Note: values above given at ARI conditions	

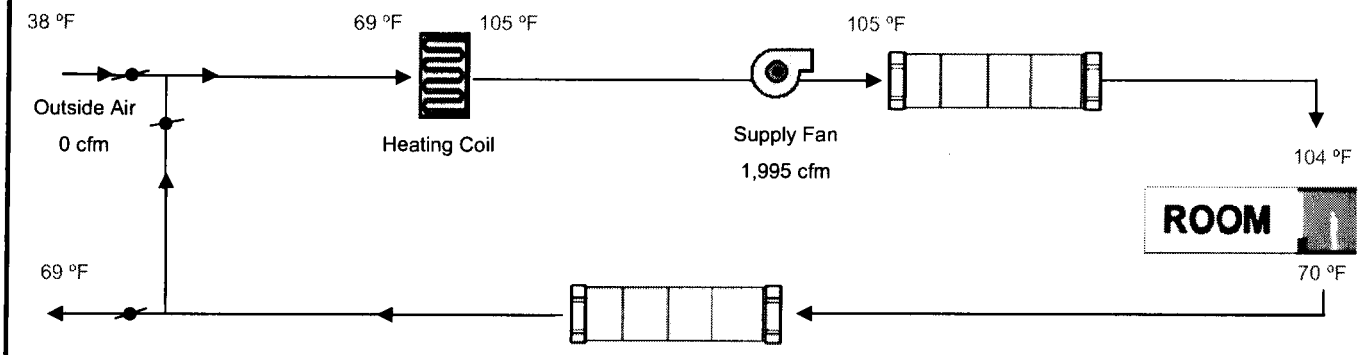
SYSTEM LOAD

	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	**Sensible**	**Latent**	**CFM**	**Sensible**
Total Room Loads	996	24,060	2,477	769	28,336
Return Vented Lighting		0			
Return Air Ducts		1,146			1,554
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		1,146			1,554
TOTAL SYSTEM LOAD		26,352	2,477		31,443

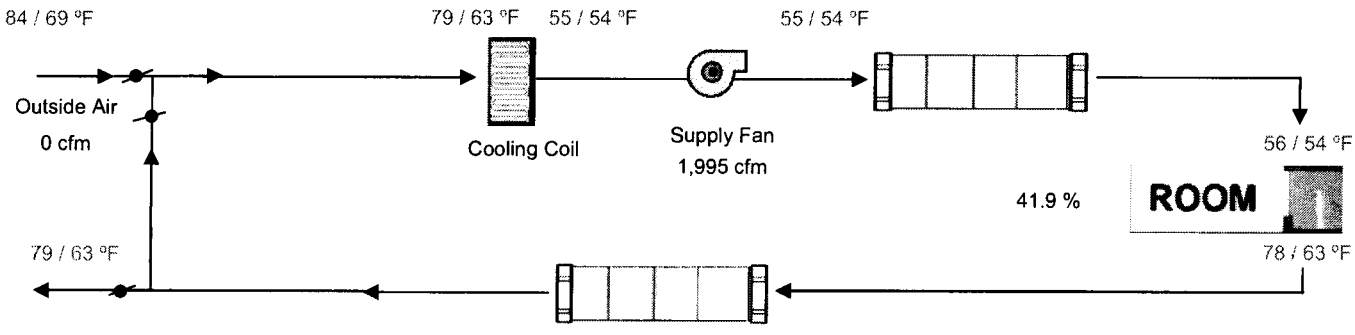
HVAC EQUIPMENT SELECTION

Carrier Corp. 58UVB060-14	0	0		56,000
Total Adjusted System Output (Adjusted for Peak Design conditions)	0	0		56,000
TIME OF SYSTEM PEAK		Aug 3 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETICS (Airstream Temperatures at Time of Cooling Peak)



BUILDING ENERGY ANALYSIS REPORT

PROJECT:

2-Unit Condo (20%) 24.3% Glass
Manhattan Avenue/ Bayview
Manhattan Beach, CA 90266

Project Designer:

Manhattan Beach, CA 90266

Report Prepared by:

Rick Newton
NEWTON ENERGY
1401 19th Street
Manhattan Beach, CA 90266
310 375-2699

Job Number:

8261R

Date:

1/13/2010

EXHIBIT C
CCMtg. 3/16/10
#3

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC – www.energysoft.com.

TABLE OF CONTENTS

PERFORMANCE CERTIFICATE: Residential (Part 1 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 24.3% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

Project Address	California Energy Climate Zone	Total Cond. Floor Area	Addition	# of Stories
Manhattan Avenue/ Bayview M	CA Climate Zone 06	5,202	n/a	3

FIELD INSPECTION ENERGY CHECKLIST

☑ Yes ☐ No HERS Measures -- If Yes, A CF-4R must be provided per Part 2 of 5 of this form.

☑ Yes ☐ No Special Features -- If Yes, see Part 2 of 5 of this form for details.

INSULATION Construction	Type	Cavity	Area (ft^2)	Special Features (see Part 2 of 5)	Status
Roof	Wood Framed Rafter	R-30	2,195		New
Wall	Wood Framed	R-19	4,557		New
Floor	Wood Framed w/o Crawl Space	R-30	470		New
Slab	Unheated Slab-on-Grade	R-5	1,658		New
WallBG	Hollow Unit Masonry	None	1,105	Depth = 109.000"	New
Door	Opaque Door	None	40		New
Roof	Span Deck or Concrete	None	161		New

FENESTRATION Orientation	Area(ft^2)	U-Factor	SHGC	Overhang	Sidefins	Exterior Shades	Status
Rear (N)	372.0	0.320	0.32	none	none	Bug Screen	New
Front (S)	48.0	0.320	0.32	5.0	none	Bug Screen	New
Front (S)	302.3	0.320	0.32	none	none	Bug Screen	New
Front (S)	42.0	0.320	0.32	10.0	none	Bug Screen	New
Left (W)	172.0	0.320	0.32	none	none	Bug Screen	New
Left (W)	48.0	0.320	0.32	14.0	none	Bug Screen	New
Left (W)	103.0	0.320	0.32	5.0	none	Bug Screen	New
Left (W)	95.0	0.320	0.32	10.0	none	Bug Screen	New
Right (E)	31.5	0.320	0.32	none	none	Bug Screen	New
Front (S)	48.0	0.320	0.32	7.0	none	Bug Screen	New

HVAC SYSTEMS Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
1	Central Furnace	80% AFUE	No Cooling	13.0 SEER	Setback	New
1	Central Furnace	80% AFUE	No Cooling	13.0 SEER	Setback	New

HVAC DISTRIBUTION Location	Heating	Cooling	Duct Location	Duct R-Value	Status
Unit A System	Ducted	Ducted	Attic, Ceiling Ins, vented	4.2	New
Unit B System	Ducted	Ducted	Attic, Ceiling Ins, vented	4.2	New

WATER HEATING Qty.	Type	Gallons	Min. Eff	Distribution	Status
2	Small Gas	50	0.60	Kitchen Pipe Ins	New

PERFORMANCE CERTIFICATE: Residential	(Part 2 of 5)	CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 24.3% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

SPECIAL FEATURES INSPECTION CHECKLIST

The enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

The HVAC System Carrier Corp. 310JAV024045 does not include a cooling system, field verification is not necessary.

This building incorporates an air retarding wrap which shall be installed to meet the requirements of Section 150 (f) of the Standards.

HIGH MASS Design - Verify Thermal Mass: 315.0 ft² Covered Slab Floor, 3.500" thick at Basement

HIGH MASS Design - Verify Thermal Mass: 465 sqft Concrete, Heavyweight Exterior Mass, 8.000" thick at Basement

HIGH MASS Design - Verify Thermal Mass: 315.0 ft² Exposed Slab Floor, 3.500" thick at Basement

The HVAC System Carrier Corp. 310JAV024045 does not include a cooling system, field verification is not necessary.

This building incorporates an air retarding wrap which shall be installed to meet the requirements of Section 150 (f) of the Standards.

HIGH MASS Design - Verify Thermal Mass: 65 sqft Concrete, Heavyweight Exterior Mass, 8.000" thick at Basement

HIGH MASS Design - Verify Thermal Mass: 514.0 ft² Covered Slab Floor, 3.500" thick at Basement

HIGH MASS Design - Verify Thermal Mass: 575 sqft Concrete, Heavyweight Exterior Mass, 8.000" thick at Basement

HIGH MASS Design - Verify Thermal Mass: 514.0 ft² Exposed Slab Floor, 3.500" thick at Basement

HERS REQUIRED VERIFICATION

Items in this section require field testing and/or verification by a certified HERS Rater. The inspector must receive a completed CF-4R form for each of the measures listed below for final to be given.

Compliance credit for quality installation of insulation has been used. HERS field verification is required.

The HVAC System Unit A System incorporates HERS verified Duct Leakage. HERS field verification and diagnostic testing is required to verify that duct leakage meets the specified criteria.

Compliance credit for quality installation of insulation has been used. HERS field verification is required.

The HVAC System Unit B System incorporates HERS verified Duct Leakage. HERS field verification and diagnostic testing is required to verify that duct leakage meets the specified criteria.

PERFORMANCE CERTIFICATE: Residential (Part 3 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 24.3% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

ANNUAL ENERGY USE SUMMARY

TDV (kBtu/ft²-yr)	Standard	Proposed	Margin
Space Heating	8.41	4.36	4.05
Space Cooling	1.06	0.40	0.66
Fans	1.70	1.42	0.28
Domestic Hot Water	15.80	15.17	0.63
Pumps	0.00	0.00	0.00
Totals	26.98	21.36	5.62
Percent Better Than Standard:			20.8 %

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

				Fenestration Area
Building Front Orientation:	(S) 160 deg	Ext. Walls/Roof	Wall Area	
Number of Dwelling Units:	2.00	(S)	1,778	440
Fuel Available at Site:	Natural Gas	(W)	989	418
Raised Floor Area:	470	(N)	2,582	372
Slab on Grade Area:	1,658	(E)	510	32
Average Ceiling Height:	8.9	Roof	2,356	0
Fenestration Average U-Factor:	0.32		TOTAL:	1,262
Average SHGC:	0.32		Fenestration/CFA Ratio:	24.3 %

REMARKS

BASE CASE: Framed Walls are insulated to R-19. Basement Retaining Walls ARE insulated to R-13.
20% CASE:
A. Quality Insulation Installation (Needs HERS): 12.9% to 16.3%;
B. Verified Duct Leakage (HERS): 16.3% to 19.7%;
C. House Wrap: 19.7% to 20.8%.

STATEMENT OF COMPLIANCE

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 the Administrative Regulations and Part 6 the Efficiency Standards of the California Code of Regulations.

The documentation author hereby certifies that the documentation is accurate and complete.

Documentation Author

Company *NEWTON ENERGY*
Address *1401 19th Street* Name *Rick Newton*
City/State/Zip *Manhattan Beach, CA 90266* Phone *310 375-2699*

1/13/2010
Signed Date

The individual with overall design responsibility hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, duct sealing, verification of refrigerant charge, 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 & Professions Code)

Company
Address Name
City/State/Zip *Manhattan Beach, CA 90266* Phone

Signed License # Date

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 24.3% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Roof	*900*	*0.036*	*R-30*					*0*	*0*	*New*	*4.2.2-A16*	*2nd Floor Zone*
Wall	*377*	*0.074*	*R-19*					*340*	*90*	*New*	*4.3.1-A5*	*2nd Floor Zone*
Wall	*286*	*0.074*	*R-19*					*160*	*90*	*New*	*4.3.1-A5*	*2nd Floor Zone*
Wall	*130*	*0.074*	*R-19*					*70*	*90*	*New*	*4.3.1-A5*	*2nd Floor Zone*
Wall	*167*	*0.074*	*R-19*					*250*	*90*	*New*	*4.3.1-A5*	*2nd Floor Zone*
Floor	*470*	*0.033*	*R-30*					*0*	*180*	*New*	*4.4.2-A15*	*1st Floor Zone*
Roof	*161*	*0.036*	*R-30*					*0*	*0*	*New*	*4.2.2-A16*	*1st Floor Zone*
Wall	*354*	*0.074*	*R-19*					*340*	*90*	*New*	*4.3.1-A5*	*1st Floor Zone*
Wall	*319*	*0.074*	*R-19*					*160*	*90*	*New*	*4.3.1-A5*	*1st Floor Zone*
Wall	*87*	*0.074*	*R-19*					*70*	*90*	*New*	*4.3.1-A5*	*1st Floor Zone*
Wall	*163*	*0.074*	*R-19*					*250*	*90*	*New*	*4.3.1-A5*	*1st Floor Zone*
Slab	*315*	*0.720*	*R-5*					*0*	*180*	*New*	*4.4.7-B2*	*Basement Zone*
WallBG	*465*	*0.046*	*None*	*8*	*None*	*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A10/4.3.13-J9*	*Basement Zone*
Wall	*168*	*0.074*	*R-19*					*340*	*90*	*New*	*4.3.1-A5*	*Basement Zone*
Wall	*149*	*0.074*	*R-19*					*0*	*90*	*New*	*4.3.1-A5*	*Basement Zone*
Door	*19*	*0.500*	*None*					*0*	*90*	*New*	*4.5.1-A4*	*Basement Zone*

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
1	*Window*	*32.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*340*	*New*	*Deck House Glass*	*2nd Floor Zone*
2	*Window*	*24.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*340*	*New*	*Deck House Glass*	*2nd Floor Zone*
3	*Window*	*24.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*2nd Floor Zone*
4	*Window*	*24.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*2nd Floor Zone*
5	*Window*	*17.3*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*2nd Floor Zone*
6	*Window*	*42.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*2nd Floor Zone*
7	*Window*	*40.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*2nd Floor Zone*
8	*Window*	*30.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*250*	*New*	*Deck House Glass*	*2nd Floor Zone*
9	*Window*	*48.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*250*	*New*	*Deck House Glass*	*2nd Floor Zone*
10	*Window*	*40.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*250*	*New*	*Deck House Glass*	*2nd Floor Zone*
11	*Window*	*16.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*340*	*New*	*Deck House Glass*	*1st Floor Zone*
12	*Window*	*40.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*340*	*New*	*Deck House Glass*	*1st Floor Zone*
13	*Window*	*32.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*1st Floor Zone*
14	*Window*	*48.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*1st Floor Zone*
15	*Window*	*11.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*1st Floor Zone*
16	*Window*	*40.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*250*	*New*	*Deck House Glass*	*1st Floor Zone*

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
1	*Bug Screen*	*0.76*												
2	*Bug Screen*	*0.76*												
3	*Bug Screen*	*0.76*	*7.0*	*3.4*	*5.0*	*0.1*	*4.0*	*4.0*						
4	*Bug Screen*	*0.76*	*8.0*	*3.0*	*5.0*	*0.1*	*4.0*	*4.0*						
5	*Bug Screen*	*0.76*												
6	*Bug Screen*	*0.76*	*7.0*	*6.0*	*10.0*	*0.1*	*6.0*	*6.0*						
7	*Bug Screen*	*0.76*												
8	*Bug Screen*	*0.76*												
9	*Bug Screen*	*0.76*	*6.9*	*7.0*	*14.0*	*0.1*	*6.0*	*6.0*						
10	*Bug Screen*	*0.76*	*6.0*	*9.0*	*5.0*	*0.1*	*4.0*	*4.0*						
11	*Bug Screen*	*0.76*												
12	*Bug Screen*	*0.76*												
13	*Bug Screen*	*0.76*												
14	*Bug Screen*	*0.76*												
15	*Bug Screen*	*0.76*												
16	*Bug Screen*	*0.76*												

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 24.3% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Wall	17	0.074	R-19					250	90	New	4.3.1-A5	Basement Zone
Slab	315	0.720	R-5					0	180	New	4.4.7-B2	Basement Zone
Roof	930	0.036	R-30					0	0	New	4.2.2-A16	2nd Floor Zone
Wall	351	0.074	R-19					340	90	New	4.3.1-A5	2nd Floor Zone
Wall	323	0.074	R-19					160	90	New	4.3.1-A5	2nd Floor Zone
Wall	216	0.074	R-19					70	90	New	4.3.1-A5	2nd Floor Zone
Wall	137	0.074	R-19					250	90	New	4.3.1-A5	2nd Floor Zone
Roof	198	0.036	R-30					0	0	New	4.2.2-A16	1st Floor Zone
Wall	244	0.074	R-19					0	90	New	4.3.1-A5	1st Floor Zone
Door	21	0.500	None					0	90	New	4.5.1-A4	1st Floor Zone
Wall	271	0.074	R-19					340	90	New	4.3.1-A5	1st Floor Zone
Wall	320	0.074	R-19					160	90	New	4.3.1-A5	1st Floor Zone
Wall	46	0.074	R-19					70	90	New	4.3.1-A5	1st Floor Zone
Wall	49	0.074	R-19					250	90	New	4.3.1-A5	1st Floor Zone
Roof	161	0.053	None			30	Wood	0	0	New	4.2.6-A7	Basement Zone
Roof	6	0.036	R-30					0	0	New	4.2.2-A16	Basement Zone

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
17	Window	8.0	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	1st Floor Zone
18	Window	32.0	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	1st Floor Zone
19	Window	8.0	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	Basement Zone
20	Window	32.0	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	Basement Zone
21	Window	10.0	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	Basement Zone
22	Window	20.0	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	Basement Zone
23	Window	20.0	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	Basement Zone
24	Window	18.0	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	2nd Floor Zone
25	Window	48.0	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	2nd Floor Zone
26	Window	42.0	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
27	Window	12.0	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
28	Window	40.0	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
29	Window	4.5	0.320	NFRC	0.32	NFRC	70	New	Deck House Glass	2nd Floor Zone
30	Window	12.0	0.320	NFRC	0.32	NFRC	70	New	Deck House Glass	2nd Floor Zone
31	Window	63.0	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	2nd Floor Zone
32	Window	32.0	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	2nd Floor Zone

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
17	Bug Screen	0.76												
18	Bug Screen	0.76												
19	Bug Screen	0.76												
20	Bug Screen	0.76												
21	Bug Screen	0.76												
22	Bug Screen	0.76												
23	Bug Screen	0.76	6.7	12.0	10.0	0.1	6.0	6.0						
24	Bug Screen	0.76												
25	Bug Screen	0.76												
26	Bug Screen	0.76												
27	Bug Screen	0.76												
28	Bug Screen	0.76												
29	Bug Screen	0.76												
30	Bug Screen	0.76												
31	Bug Screen	0.76	7.0	9.0	5.0	0.1	4.0	4.0						
32	Bug Screen	0.76												

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 24.3% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Wall	90	0.074	R-19					160	90	New	4.3.1-A5	Basement Zone
WallBG	65	0.046	None	8	None	13	Wood	0	90	New	4.3.5-A10/4.3.13-J9	Basement Zone
Slab	514	0.720	R-5					0	180	New	4.4.7-B2	Basement Zone
WallBG	575	0.046	None	8	None	13	Wood	0	90	New	4.3.5-A10/4.3.13-J9	Basement Zone
Wall	256	0.074	R-19					340	90	New	4.3.1-A5	Basement Zone
Wall	38	0.074	R-19					250	90	New	4.3.1-A5	Basement Zone
Slab	514	0.720	R-5					0	180	New	4.4.7-B2	Basement Zone

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
33	Window	60.0	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	1st Floor Zone
34	Window	8.0	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	1st Floor Zone
35	Window	24.0	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	1st Floor Zone
36	Window	48.0	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	1st Floor Zone
37	Window	15.0	0.320	NFRC	0.32	NFRC	70	New	Deck House Glass	1st Floor Zone
38	Window	35.0	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	1st Floor Zone
39	Window	28.0	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	Basement Zone
40	Window	84.0	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	Basement Zone
41	Window	10.0	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	Basement Zone
42	Window	40.0	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	Basement Zone

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
33	Bug Screen	0.76												
34	Bug Screen	0.76												
35	Bug Screen	0.76												
36	Bug Screen	0.76	7.0	6.9	7.0	0.1	8.0	8.0						
37	Bug Screen	0.76												
38	Bug Screen	0.76	7.0	5.0	10.0	0.1	6.0	6.0						
39	Bug Screen	0.76												
40	Bug Screen	0.76												
41	Bug Screen	0.76												
42	Bug Screen	0.76	6.7	6.0	10.0	0.1	6.0	6.0						

CERTIFICATE OF COMPLIANCE: Residential (Part 5 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 24.3% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

BUILDING ZONE INFORMATION

System Name	Zone Name	Floor Area (ft^2) New	Existing	Altered	Removed	Volume	Year Built
Unit A System	Second Floor	900				8,910	
	First Floor	1,014				8,213	
	Basement	630				5,103	
Unit B System	Second Floor	930				8,370	
	First Floor	646				6,848	
	Basement	1,082				8,764	
	Totals	5,202	0	0	0		

HVAC SYSTEMS

System Name	Qty.	Heating Type	Min. Eff.	Cooling Type	Min. Eff.	Thermostat Type	Status
Unit A System	1	Central Furnace	80% AFUE	No Cooling	13.0 SEER	Setback	New
Unit B System	1	Central Furnace	80% AFUE	No Cooling	13.0 SEER	Setback	New

HVAC DISTRIBUTION

System Name	Heating	Cooling	Duct Location	Duct R-Value	Ducts Tested?	Status
Unit A System	Ducted	Ducted	Attic, Ceiling Ins, vented	4.2	☑	New
Unit B System	Ducted	Ducted	Attic, Ceiling Ins, vented	4.2	☑	New
					☐	
					☐	
					☐	

WATER HEATING SYSTEMS

System Name	Qty.	Type	Distribution	Rated Input (Btuh)	Tank Cap. (gal)	Energy Factor or RE	Standby Loss or Pilot	Ext. Tank Insul. R-Value	Status
A.O. SMITH FPS-50-224	2	Small Gas	Kitchen Pipe Ins	43,000	50	0.60	n/a	n/a	New

MULTI-FAMILY WATER HEATING DETAILS

Control	Qty.	HP	Eff. Premium	Hot Water Piping Length (ft) Plenum	Outside	Buried	Add ½" Insulation
			☐				☐
			☐				☐
			☐				☐
			☐				☐
			☐				☐

HYDRONIC HEATING SYSTEM PIPING

System Name	Pipe Length	Pipe Diameter	Insul. Thick.

MANDATORY MEASURES SUMMARY: Residential (Page 1 of 3) MF-1R

Project Name	Date
2-Unit Condo (20%) 24.3% Glass	*1/13/2010*

NOTE: Low-rise residential buildings subject to the Standards must comply with all applicable mandatory measures listed, regardless of the compliance approach used. More stringent energy measures listed on the Certificate of Compliance (CF-1R, CF-1R-ADD, or CF-1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandatory Measures Summary shall be incorporated into the permit documents, and the applicable features shall be considered by all parties as minimum component performance specifications whether they are shown elsewhere in the documents or in this summary. Submit all applicable sections of the MF-1R Form with plans.

Building Envelope Measures:

§116(a)1: Doors and windows between conditioned and unconditioned spaces are manufactured to limit air leakage.

§116(a)4: Fenestration products (except field-fabricated windows) have a label listing the certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a).

§117: Exterior doors and windows are weather-stripped; all joints and penetrations are caulked and sealed.

§118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate type and include on CF-6R Form.

§118(i): The thermal emittance and solar reflectance values of the cool roofing material meets the requirements of §118(i) when the installation of a Cool Roof is specified on the CF-1R Form.

*§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.

§150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R-Value.

*§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.

*§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.

§150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(2000) when specified on the CF-1R Form.

§150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.

§150(l): Water absorption rate for slab edge insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch and shall be protected from physical damage and UV light deterioration.

Fireplaces, Decorative Gas Appliances and Gas Log Measures:

§150(e)1A: Masonry or factory-built fireplaces have a closable metal or glass door covering the entire opening of the firebox.

§150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, which is at least six square inches in area and is equipped with a with a readily accessible, operable, and tight-fitting damper and or a combustion-air control device.

§150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building, are prohibited.

Space Conditioning, Water Heating and Plumbing System Measures:

§110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulated appliances are certified by the Energy Commission.

§113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise residential occupancies meet the air release valve, backflow prevention, pump isolation valve, and recirculation loop connection requirements of §113(c)5.

§115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces, household cooking appliances (appliances with an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt), and pool and spa heaters.

§150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMACNA or ACCA.

§150(i): Heating systems are equipped with thermostats that meet the setback requirements of Section 112(c).

§150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the federal minimal standard are externally wrapped with insulation having an installed thermal resistance of R-12 or greater.

§150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-heating system, or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.

§150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating systems, and entire length of recirculating sections of hot water pipes are insulated per Standards Table 150-B.

§150(j)2: Cooling system piping (suction, chilled water, or brine lines),and piping insulated between heating source and indirect hot water tank shall be insulated to Table 150-B and Equation 150-A.

§150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 psi, meets the requirements of Standards Table 123-A.

§150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.

§150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor retardant or is enclosed entirely in conditioned space.

§150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating and Certification Corporation.

Registration Number: Registration Date/Time: HERS Provider:

MANDATORY MEASURES SUMMARY: Residential (Page 2 of 3)	**MF-1R**
Project Name *2-Unit Condo (20%) 24.3% Glass*	Date *1/13/2010*

§150(m)1: All air-distribution system ducts and plenums installed, are sealed and insulated to meet the requirements of CMC Sections 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are insulated to a minimum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used

§150(m)1: Building cavities, support platforms for air handlers, and plenums defined or constructed with materials other than sealed sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cause reductions in the cross-sectional area of the ducts.

§150(m)2D: Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.

§150(m)7: Exhaust fan systems have back draft or automatic dampers.

§150(m)8: Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.

§150(m)9: Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material.

§150(m)10: Flexible ducts cannot have porous inner cores.

§150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2007 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of providing the Whole Building Ventilation required in Section 4 of that Standard.

Pool and Spa Heating Systems and Equipment Measures:

§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate or card with operating instructions; and shall not use electric resistance heating or a pilot light.

§114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe between filter and heater, or dedicated suction and return lines, or built-up connections for future solar heating.

§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover.

§114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.

§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, filters, and valve requirements of §150(p).

Residential Lighting Measures:

§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy that is no lower than the efficacies contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.

§150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §130(d).

§150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an output frequency no less than 20 kHz.

§150(k)5: Permanently installed night lights and night lights integral to a permanently installed luminaire or exhaust fan shall contain only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall not contain a line-voltage socket or line-voltage lamp holder; OR shall be rated to consume no more than five watts of power as determined by §130(d), and shall not contain a medium screw-base socket.

§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applicable requirements of §150(k).

§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7.

§150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting in kitchens shall be high efficacy. EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft_2 or 100 watts for dwelling units larger than 2,500 ft_2 may be exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen are controlled by a manual on occupant sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control system; and all permanently installed luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are high efficacy and controlled by a manual-on occupant sensor.

§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 watts of power per linear foot of illuminated cabinet.

Registration Number: Registration Date/Time: HERS Provider:

§150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luimnaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11.

§150(k)12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the lumiunaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.

§150(k)13: Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photocontrol not having an override or bypass switch that disables the photocontrol; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to §150(k)13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires.

§150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d).

§150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146.

§150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

Registration Number: Registration Date/Time: HERS Provider:

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name	Date
2-Unit Condo (20%) 24.3% Glass	1/13/2010
System Name	**Floor Area**
Unit A System	2,544

ENGINEERING CHECKS	
Number of Systems	1
Heating System	
Output per System	35,000
Total Output (Btuh)	35,000
Output (Btuh/sqft)	13.8
Cooling System	
Output per System	0
Total Output (Btuh)	0
Total Output (Tons)	0.0
Total Output (Btuh/sqft)	0.0
Total Output (sqft/Ton)	0.0
Air System	
CFM per System	1,995
Airflow (cfm)	1,995
Airflow (cfm/sqft)	0.78
Airflow (cfm/Ton)	0.0
Outside Air (%)	0.0 %
Outside Air (cfm/sqft)	0.00
Note: values above given at ARI conditions	

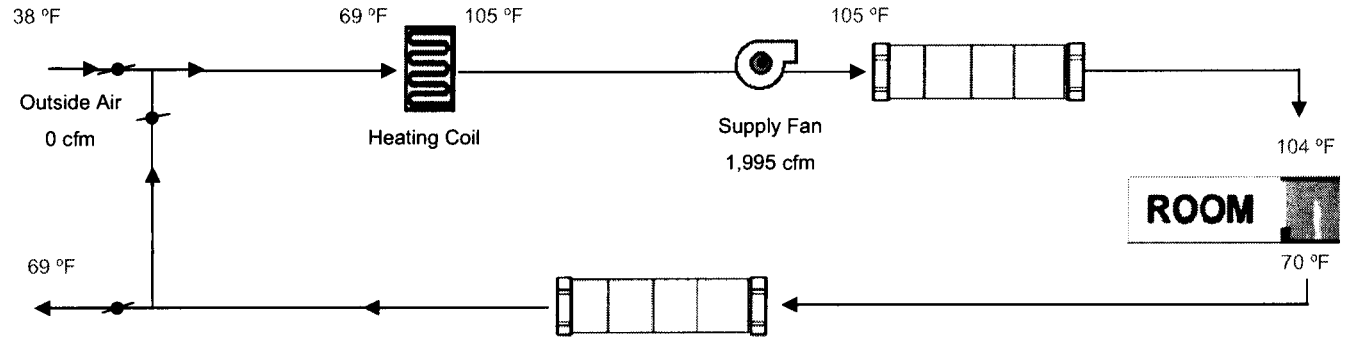
SYSTEM LOAD

	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	Sensible	Latent	CFM	Sensible
Total Room Loads	1,523	36,042	3,106	564	20,849
Return Vented Lighting		0			
Return Air Ducts		2,125			1,328
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		2,125			1,328
TOTAL SYSTEM LOAD		40,292	3,106		23,505

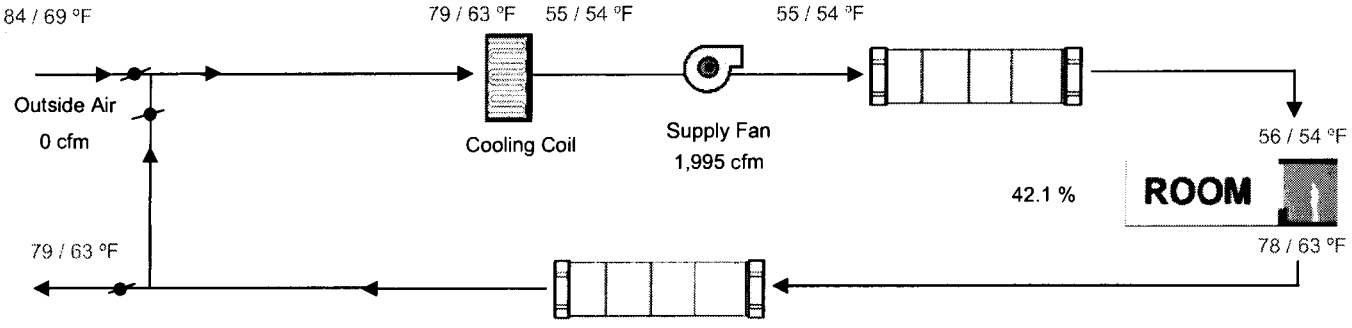
HVAC EQUIPMENT SELECTION

Carrier Corp. 310JAV024045	0	0		35,000
Total Adjusted System Output (Adjusted for Peak Design conditions)	0	0		35,000
TIME OF SYSTEM PEAK		Aug 3 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETICS (Airstream Temperatures at Time of Cooling Peak)



HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name	Date
2-Unit Condo (20%) 24.3% Glass	1/13/2010
System Name	**Floor Area**
Unit B System	2,658

ENGINEERING CHECKS

Number of Systems	1
Heating System	
Output per System	35,000
Total Output (Btuh)	35,000
Output (Btuh/sqft)	13.2
Cooling System	
Output per System	0
Total Output (Btuh)	0
Total Output (Tons)	0.0
Total Output (Btuh/sqft)	0.0
Total Output (sqft/Ton)	0.0
Air System	
CFM per System	1,995
Airflow (cfm)	1,995
Airflow (cfm/sqft)	0.75
Airflow (cfm/Ton)	0.0
Outside Air (%)	0.0 %
Outside Air (cfm/sqft)	0.00
Note: values above given at ARI conditions	

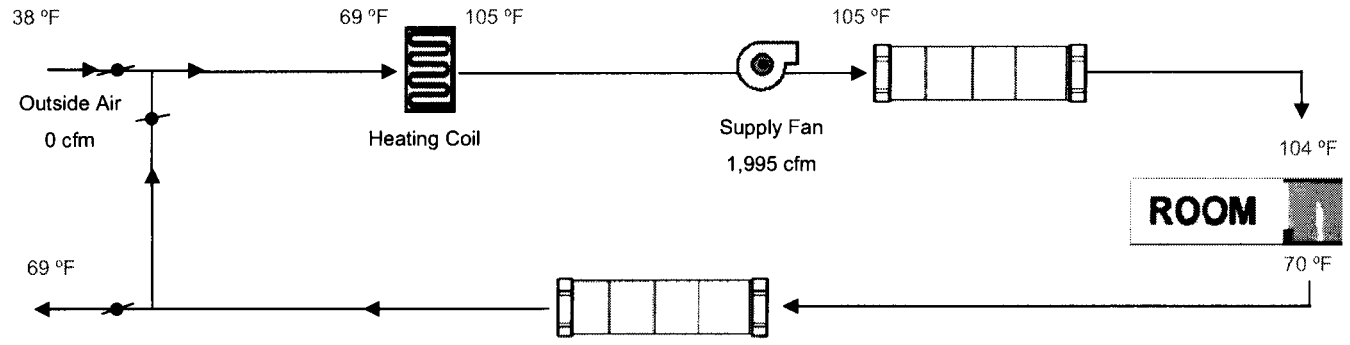
SYSTEM LOAD

	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	**Sensible**	**Latent**	**CFM**	**Sensible**
Total Room Loads	1,462	34,669	3,137	594	21,933
Return Vented Lighting		0			
Return Air Ducts		2,044			1,397
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		2,044			1,397
TOTAL SYSTEM LOAD		38,757	3,137		24,728

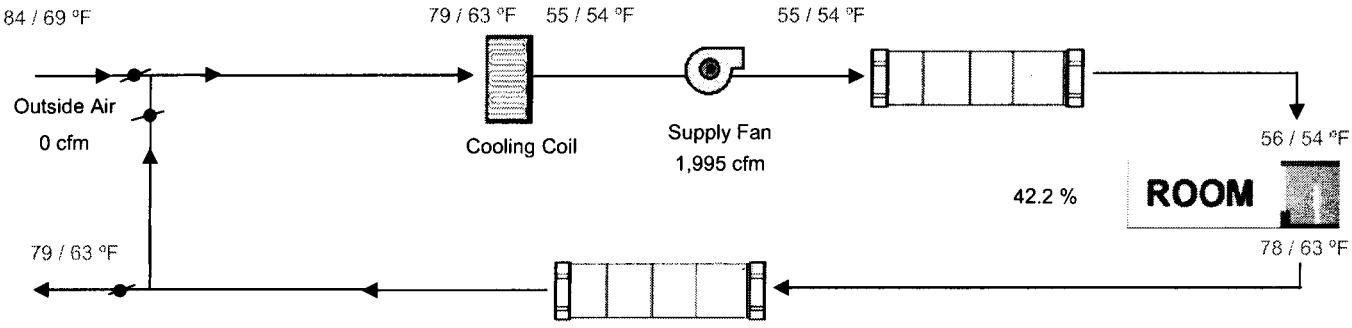
HVAC EQUIPMENT SELECTION

Carrier Corp. 310JAV024045	0	0		35,000
Total Adjusted System Output (Adjusted for Peak Design conditions)	0	0		35,000
TIME OF SYSTEM PEAK	Aug 3 PM			Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETICS (Airstream Temperatures at Time of Cooling Peak)



BUILDING ENERGY ANALYSIS REPORT

PROJECT:

2-Unit Condo (20%) 39.5% Glass
Manhattan Avenue/ Bayview
Manhattan Beach, CA 90266

Project Designer:

Manhattan Beach, CA 90266

Report Prepared by:

Rick Newton
NEWTON ENERGY
1401 19th Street
Manhattan Beach, CA 90266
310 375-2699

Job Number:

8261R

Date:

1/13/2010

EXHIBIT C
CC Mtg. 3/16/10
#4

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC – www.energysoft.com.

TABLE OF CONTENTS

PERFORMANCE CERTIFICATE: Residential (Part 1 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 39.5% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

Project Address	California Energy Climate Zone	Total Cond. Floor Area	Addition	# of Stories
Manhattan Avenue Bayview M	CA Climate Zone 06	5,202	n/a	3

FIELD INSPECTION ENERGY CHECKLIST

☑ Yes ☐ No HERS Measures -- If Yes, A CF-4R must be provided per Part 2 of 5 of this form.

☑ Yes ☐ No Special Features -- If Yes, see Part 2 of 5 of this form for details.

INSULATION Construction	Type	Cavity	Area (ft^2)	Special Features (see Part 2 of 5)	Status
Roof	Wood Framed Attic	R-30	1,830	Radiant Barrier	New
Wall	Wood Framed	R-19	3,765		New
Floor	Wood Framed w/o Crawl Space	R-30	470		New
Roof	Wood Framed Rafter	R-30	365		New
Slab	Unheated Slab-on-Grade	R-5	1,658		New
WallBG	Hollow Unit Masonry	None	1,105	Depth = 109.000"	New
Door	Opaque Door	None	40		New
Roof	Span Deck or Concrete	None	161		New

FENESTRATION Orientation	Area(ft^2)	U-Factor	SHGC	Overhang	Sidefins	Exterior Shades	Status
Rear (N)	734.4	0.320	0.32	none	none	Bug Screen	New
Front (S)	54.0	0.320	0.32	5.0	none	Bug Screen	New
Front (S)	442.4	0.320	0.32	none	none	Bug Screen	New
Front (S)	68.5	0.320	0.32	10.0	none	Bug Screen	New
Left (W)	266.4	0.320	0.32	none	none	Bug Screen	New
Left (W)	73.3	0.320	0.32	14.0	none	Bug Screen	New
Left (W)	210.6	0.320	0.32	5.0	none	Bug Screen	New
Left (W)	109.3	0.320	0.32	10.0	none	Bug Screen	New
Right (E)	41.2	0.320	0.32	none	none	Bug Screen	New
Front (S)	53.4	0.320	0.32	7.0	none	Bug Screen	New

HVAC SYSTEMS Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
1	Central Furnace	90% AFUE	No Cooling	13.0 SEER	Setback	New
1	Central Furnace	90% AFUE	No Cooling	13.0 SEER	Setback	New

HVAC DISTRIBUTION Location	Heating	Cooling	Duct Location	Duct R-Value	Status
Unit A System	Ducted	Ducted	Attic, Ceiling Ins, vented	6.2	New
Unit B System	Ducted	Ducted	Attic, Ceiling Ins, vented	6.2	New

WATER HEATING Qty.	Type	Gallons	Min. Eff	Distribution	Status
2	Small Gas	50	0.60	Kitchen Pipe Ins	New

PERFORMANCE CERTIFICATE: Residential	(Part 2 of 5)	CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 39.5% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

SPECIAL FEATURES INSPECTION CHECKLIST

The enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

*The HVAC System Carrier Corp. N9MP2050B12** does not include a cooling system, field verification is not necessary.*

This building incorporates an air retarding wrap which shall be installed to meet the requirements of Section 150 (f) of the Standards.

HIGH MASS Design - Verify Thermal Mass: 315.0 ft² Covered Slab Floor, 3.500" thick at Basement

HIGH MASS Design - Verify Thermal Mass: 465 sqft Concrete, Heavyweight Exterior Mass, 8.000" thick at Basement

HIGH MASS Design - Verify Thermal Mass: 315.0 ft² Exposed Slab Floor, 3.500" thick at Basement

*The HVAC System Carrier Corp. N9MP2050B12** does not include a cooling system, field verification is not necessary.*

This building incorporates an air retarding wrap which shall be installed to meet the requirements of Section 150 (f) of the Standards.

HIGH MASS Design - Verify Thermal Mass: 65 sqft Concrete, Heavyweight Exterior Mass, 8.000" thick at Basement

HIGH MASS Design - Verify Thermal Mass: 514.0 ft² Covered Slab Floor, 3.500" thick at Basement

HIGH MASS Design - Verify Thermal Mass: 575 sqft Concrete, Heavyweight Exterior Mass, 8.000" thick at Basement

HIGH MASS Design - Verify Thermal Mass: 514.0 ft² Exposed Slab Floor, 3.500" thick at Basement

The Roof R-30 Roof Attic - Radiant Barrier includes credit for a Radiant Barrier that is Continuous meeting eligibility and installation criteria as specified in Residential Appendix RA4.2.2.

HERS REQUIRED VERIFICATION

Items in this section require field testing and/or verification by a certified HERS Rater. The inspector must receive a completed CF-4R form for each of the measures listed below for final to be given.

Compliance credit for quality installation of insulation has been used. HERS field verification is required.

The HVAC System Unit A System incorporates HERS verified Duct Leakage. HERS field verification and diagnostic testing is required to verify that duct leakage meets the specified criteria.

Compliance credit for quality installation of insulation has been used. HERS field verification is required.

The HVAC System Unit B System incorporates HERS verified Duct Leakage. HERS field verification and diagnostic testing is required to verify that duct leakage meets the specified criteria.

PERFORMANCE CERTIFICATE: Residential (Part 3 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 39.5% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

ANNUAL ENERGY USE SUMMARY

TDV (kBtu/ft²-yr)	Standard	Proposed	Margin
Space Heating	8.40	3.48	4.92
Space Cooling	1.04	1.24	-0.20
Fans	1.69	1.63	0.06
Domestic Hot Water	15.80	15.17	0.63
Pumps	0.00	0.00	0.00
Totals	26.93	21.52	5.42
Percent Better Than Standard:			20.1 %

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

				Fenestration Area
Building Front Orientation:	(S) 160 deg	Ext. Walls/Roof	Wall Area	
Number of Dwelling Units:	2.00	(S)	1,778	618
Fuel Available at Site:	Natural Gas	(W)	989	660
Raised Floor Area:	470	(N)	2,582	734
Slab on Grade Area:	1,658	(E)	510	41
Average Ceiling Height:	8.9	Roof	2,356	0
Fenestration Average U-Factor:	0.32		TOTAL:	2,054
Average SHGC:	0.32		Fenestration/CFA Ratio:	39.5 %

REMARKS

BASE CASE: Framed Walls are insulated to R-19. Basement Retaining Walls ARE insulated to R-13.
20% CASE:
A. Quality Insulation Installation (Needs HERS): 1.0% to 4.4%;
B. Verified Duct Leakage (HERS): 4.4% to 8.7%;
C. Change R-30 Vault to R-30 Attic w/ Radiant Barrier: 8.7% to 13.0%; D. AFUE 80% to 90%: 13.0% to 15.3%.
20% CASE: A. House Wrap 15.3% to 16.3%;
E. Better Fenestration -0.32/0.32: 16.3% to 17.1%;
F. Added R-7.5 Rigid to Outside of Retaining Walls: 17.1% to 17.8%;
G. Added R-5 for 12" to Slab Edge: 17.8% to 18.6%;

STATEMENT OF COMPLIANCE

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 the Administrative Regulations and Part 6 the Efficiency Standards of the California Code of Regulations.

The documentation author hereby certifies that the documentation is accurate and complete.

Documentation Author

Company *NEWTON ENERGY*
Address *1401 19th Street* Name *Rick Newton*
City/State/Zip *Manhattan Beach, CA 90266* Phone *310 375-2699*

Signed *1/13/2010* Date

The individual with overall design responsibility hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, duct sealing, verification of refrigerant charge, 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 & Professions Code)

Company *Michael Lee Architects, Inc.*
Address *2200 Highland Avenue* Name *Michael Lee*
City/State/Zip *Manhattan Beach, CA 90266* Phone *(310) 545-5771*

Signed License # Date

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 39.5% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Roof	900	0.032	R-30					0	0	New	4.2.1-A8	2nd Floor Zone
Wall	341	0.074	R-19					340	90	New	4.3.1-A5	2nd Floor Zone
Wall	217	0.074	R-19					160	90	New	4.3.1-A5	2nd Floor Zone
Wall	130	0.074	R-19					70	90	New	4.3.1-A5	2nd Floor Zone
Wall	83	0.074	R-19					250	90	New	4.3.1-A5	2nd Floor Zone
Floor	470	0.033	R-30					0	180	New	4.4.2-A15	1st Floor Zone
Roof	161	0.036	R-30					0	0	New	4.2.2-A16	1st Floor Zone
Wall	304	0.074	R-19					340	90	New	4.3.1-A5	1st Floor Zone
Wall	250	0.074	R-19					160	90	New	4.3.1-A5	1st Floor Zone
Wall	87	0.074	R-19					70	90	New	4.3.1-A5	1st Floor Zone
Wall	127	0.074	R-19					250	90	New	4.3.1-A5	1st Floor Zone
Slab	315	0.720	R-5					0	180	New	4.4.7-B2	Basement Zone
WallBG	465	0.046	None	8	None	13	Wood	0	90	New	4.3.5-A10/4.3.13-J9	Basement Zone
Wall	125	0.074	R-19					340	90	New	4.3.1-A5	Basement Zone
Wall	149	0.074	R-19					0	90	New	4.3.1-A5	Basement Zone
Door	19	0.500	None					0	90	New	4.5.1-A4	Basement Zone

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
1	Window	51.0	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	2nd Floor Zone
2	Window	41.2	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	2nd Floor Zone
3	Window	30.0	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
4	Window	24.0	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
5	Window	17.3	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
6	Window	68.5	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
7	Window	76.5	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
8	Window	74.5	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	2nd Floor Zone
9	Window	73.3	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	2nd Floor Zone
10	Window	53.8	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	2nd Floor Zone
11	Window	22.2	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	1st Floor Zone
12	Window	83.7	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	1st Floor Zone
13	Window	59.3	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	1st Floor Zone
14	Window	89.3	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	1st Floor Zone
15	Window	11.0	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	1st Floor Zone
16	Window	41.3	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	1st Floor Zone

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
1	Bug Screen	0.76												
2	Bug Screen	0.76												
3	Bug Screen	0.76	8.0	3.8	5.0	0.1	4.0	4.0						
4	Bug Screen	0.76	8.0	3.0	5.0	0.1	4.0	4.0						
5	Bug Screen	0.76												
6	Bug Screen	0.76	9.9	6.9	10.0	0.1	6.0	6.0						
7	Bug Screen	0.76												
8	Bug Screen	0.76												
9	Bug Screen	0.76	9.9	7.4	14.0	0.1	6.0	6.0						
10	Bug Screen	0.76	6.0	9.0	5.0	0.1	4.0	4.0						
11	Bug Screen	0.76												
12	Bug Screen	0.76												
13	Bug Screen	0.76												
14	Bug Screen	0.76												
15	Bug Screen	0.76												
16	Bug Screen	0.76												

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 39.5% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Wall	12	0.074	R-19					250	90	New	4.3.1-A5	Basement Zone
Slab	315	0.720	R-5					0	180	New	4.4.7-B2	Basement Zone
Roof	930	0.032	R-30					0	0	New	4.2.1-A8	2nd Floor Zone
Wall	287	0.074	R-19					340	90	New	4.3.1-A5	2nd Floor Zone
Wall	297	0.074	R-19					160	90	New	4.3.1-A5	2nd Floor Zone
Wall	206	0.074	R-19					70	90	New	4.3.1-A5	2nd Floor Zone
Wall	32	0.074	R-19					250	90	New	4.3.1-A5	2nd Floor Zone
Roof	198	0.036	R-30					0	0	New	4.2.2-A16	1st Floor Zone
Wall	244	0.074	R-19					0	90	New	4.3.1-A5	1st Floor Zone
Door	21	0.500	None					0	90	New	4.5.1-A4	1st Floor Zone
Wall	192	0.074	R-19					340	90	New	4.3.1-A5	1st Floor Zone
Wall	311	0.074	R-19					160	90	New	4.3.1-A5	1st Floor Zone
Wall	46	0.074	R-19					70	90	New	4.3.1-A5	1st Floor Zone
Wall	40	0.074	R-19					250	90	New	4.3.1-A5	1st Floor Zone
Roof	161	0.053	None			30	Wood	0	0	New	4.2.6-A7	Basement Zone
Roof	6	0.036	R-30					0	0	New	4.2.2-A16	Basement Zone

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
17	Window	18.9	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	1st Floor Zone
18	Window	55.5	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	1st Floor Zone
19	Window	28.0	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	Basement Zone
20	Window	54.8	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	Basement Zone
21	Window	10.0	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	Basement Zone
22	Window	23.3	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	Basement Zone
23	Window	21.3	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	Basement Zone
24	Window	38.3	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	2nd Floor Zone
25	Window	91.8	0.320	NFRC	0.32	NFRC	340	New	Deck House Glass	2nd Floor Zone
26	Window	43.4	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
27	Window	17.4	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
28	Window	59.3	0.320	NFRC	0.32	NFRC	160	New	Deck House Glass	2nd Floor Zone
29	Window	4.5	0.320	NFRC	0.32	NFRC	70	New	Deck House Glass	2nd Floor Zone
30	Window	21.7	0.320	NFRC	0.32	NFRC	70	New	Deck House Glass	2nd Floor Zone
31	Window	156.8	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	2nd Floor Zone
32	Window	42.9	0.320	NFRC	0.32	NFRC	250	New	Deck House Glass	2nd Floor Zone

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
17	Bug Screen	0.76												
18	Bug Screen	0.76												
19	Bug Screen	0.76												
20	Bug Screen	0.76												
21	Bug Screen	0.76												
22	Bug Screen	0.76												
23	Bug Screen	0.76	6.7	12.0	10.0	0.1	6.0	6.0						
24	Bug Screen	0.76												
25	Bug Screen	0.76												
26	Bug Screen	0.76												
27	Bug Screen	0.76												
28	Bug Screen	0.76												
29	Bug Screen	0.76												
30	Bug Screen	0.76												
31	Bug Screen	0.76	9.0	17.4	5.0	0.1	4.0	4.0						
32	Bug Screen	0.76												

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 39.5% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Wall	*85*	*0.074*	*R-19*					*160*	*90*	*New*	*4.3.1-A5*	*Basement Zone*
WallBG	*65*	*0.046*	*None*	*8*	*None*	*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A10/4.3.13-J9*	*Basement Zone*
Slab	*514*	*0.720*	*R-5*					*0*	*180*	*New*	*4.4.7-B2*	*Basement Zone*
WallBG	*575*	*0.046*	*None*	*8*	*None*	*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A10/4.3.13-J9*	*Basement Zone*
Wall	*166*	*0.074*	*R-19*					*340*	*90*	*New*	*4.3.1-A5*	*Basement Zone*
Wall	*34*	*0.074*	*R-19*					*250*	*90*	*New*	*4.3.1-A5*	*Basement Zone*
Slab	*514*	*0.720*	*R-5*					*0*	*180*	*New*	*4.4.7-B2*	*Basement Zone*

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
33	*Window*	*139.3*	*0.320*	*NFRC*	*0.32*	*NFRC*	*340*	*New*	*Deck House Glass*	*1st Floor Zone*
34	*Window*	*11.5*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*1st Floor Zone*
35	*Window*	*24.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*1st Floor Zone*
36	*Window*	*53.4*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*1st Floor Zone*
37	*Window*	*15.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*70*	*New*	*Deck House Glass*	*1st Floor Zone*
38	*Window*	*44.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*250*	*New*	*Deck House Glass*	*1st Floor Zone*
39	*Window*	*33.4*	*0.320*	*NFRC*	*0.32*	*NFRC*	*160*	*New*	*Deck House Glass*	*Basement Zone*
40	*Window*	*173.4*	*0.320*	*NFRC*	*0.32*	*NFRC*	*340*	*New*	*Deck House Glass*	*Basement Zone*
41	*Window*	*10.7*	*0.320*	*NFRC*	*0.32*	*NFRC*	*340*	*New*	*Deck House Glass*	*Basement Zone*
42	*Window*	*44.0*	*0.320*	*NFRC*	*0.32*	*NFRC*	*250*	*New*	*Deck House Glass*	*Basement Zone*

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
33	*Bug Screen*	*0.76*												
34	*Bug Screen*	*0.76*												
35	*Bug Screen*	*0.76*												
36	*Bug Screen*	*0.76*	*7.7*	*7.0*	*7.0*	*0.1*	*8.0*	*8.0*						
37	*Bug Screen*	*0.76*												
38	*Bug Screen*	*0.76*	*8.0*	*5.5*	*10.0*	*0.1*	*6.0*	*6.0*						
39	*Bug Screen*	*0.76*												
40	*Bug Screen*	*0.76*												
41	*Bug Screen*	*0.76*												
42	*Bug Screen*	*0.76*	*6.7*	*12.0*	*10.0*	*0.1*	*6.0*	*6.0*						

CERTIFICATE OF COMPLIANCE: Residential (Part 5 of 5) CF-1R

Project Name	Building Type	Date
2-Unit Condo (20%) 39.5% Glass	☐ Single Family ☐ Addition Alone ☑ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

BUILDING ZONE INFORMATION

System Name	Zone Name	Floor Area (ft^2) New	Existing	Altered	Removed	Volume	Year Built
Unit A System	Second Floor	900				8,910	
	First Floor	1,014				8,213	
	Basement	630				5,103	
Unit B System	Second Floor	930				8,370	
	First Floor	646				6,848	
	Basement	1,082				8,764	
	Totals	5,202	0	0	0		

HVAC SYSTEMS

System Name	Qty.	Heating Type	Min. Eff.	Cooling Type	Min. Eff.	Thermostat Type	Status
Unit A System	1	Central Furnace	90% AFUE	No Cooling	13.0 SEER	Setback	New
Unit B System	1	Central Furnace	90% AFUE	No Cooling	13.0 SEER	Setback	New

HVAC DISTRIBUTION

System Name	Heating	Cooling	Duct Location	Duct R-Value	Ducts Tested?	Status
Unit A System	Ducted	Ducted	Attic, Ceiling Ins, vented	6.2	☑	New
Unit B System	Ducted	Ducted	Attic, Ceiling Ins, vented	6.2	☑	New
					☐	
					☐	
					☐	

WATER HEATING SYSTEMS

System Name	Qty.	Type	Distribution	Rated Input (Btuh)	Tank Cap. (gal)	Energy Factor or RE	Standby Loss or Pilot	Ext. Tank Insul. R-Value	Status
A.O. SMITH FPS-50-224	2	Small Gas	Kitchen Pipe Ins	43,000	50	0.60	n/a	n/a	New

MULTI-FAMILY WATER HEATING DETAILS

Control	Qty.	HP	Eff. Premium	Hot Water Piping Length (ft) Plenum	Outside	Buried	Add ½" Insulation
			☐				☐
			☐				☐
			☐				☐
			☐				☐
			☐				☐

HYDRONIC HEATING SYSTEM PIPING

System Name	Pipe Length	Pipe Diameter	Insul. Thick.

MANDATORY MEASURES SUMMARY: Residential (Page 1 of 3) MF-1R

Project Name	Date
2-Unit Condo (20%) 39.5% Glass	*1/13/2010*

NOTE: Low-rise residential buildings subject to the Standards must comply with all applicable mandatory measures listed, regardless of the compliance approach used. More stringent energy measures listed on the Certificate of Compliance (CF-1R, CF-1R-ADD, or CF-1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandatory Measures Summary shall be incorporated into the permit documents, and the applicable features shall be considered by all parties as minimum component performance specifications whether they are shown elsewhere in the documents or in this summary. Submit all applicable sections of the MF-1R Form with plans.

Building Envelope Measures:

§116(a)1: Doors and windows between conditioned and unconditioned spaces are manufactured to limit air leakage.

§116(a)4: Fenestration products (except field-fabricated windows) have a label listing the certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a).

§117: Exterior doors and windows are weather-stripped; all joints and penetrations are caulked and sealed.

§118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate type and include on CF-6R Form.

§118(i): The thermal emittance and solar reflectance values of the cool roofing material meets the requirements of §118(i) when the installation of a Cool Roof is specified on the CF-1R Form.

*§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.

§150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R-Value.

*§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.

*§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.

§150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(2000) when specified on the CF-1R Form.

§150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.

§150(l): Water absorption rate for slab edge insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch and shall be protected from physical damage and UV light deterioration.

Fireplaces, Decorative Gas Appliances and Gas Log Measures:

§150(e)1A: Masonry or factory-built fireplaces have a closable metal or glass door covering the entire opening of the firebox.

§150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, which is at least six square inches in area and is equipped with a with a readily accessible, operable, and tight-fitting damper and or a combustion-air control device.

§150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building, are prohibited.

Space Conditioning, Water Heating and Plumbing System Measures:

§110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulated appliances are certified by the Energy Commission.

§113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise residential occupancies meet the air release valve, backflow prevention, pump isolation valve, and recirculation loop connection requirements of §113(c)5.

§115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces, household cooking appliances (appliances with an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt), and pool and spa heaters.

§150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMACNA or ACCA.

§150(i): Heating systems are equipped with thermostats that meet the setback requirements of Section 112(c).

§150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the federal minimal standard are externally wrapped with insulation having an installed thermal resistance of R-12 or greater.

§150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-heating system, or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.

§150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating systems, and entire length of recirculating sections of hot water pipes are insulated per Standards Table 150-B.

§150(j)2: Cooling system piping (suction, chilled water, or brine lines),and piping insulated between heating source and indirect hot water tank shall be insulated to Table 150-B and Equation 150-A.

§150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 psi, meets the requirements of Standards Table 123-A.

§150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.

§150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor retardant or is enclosed entirely in conditioned space.

§150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating and Certification Corporation.

Registration Number: Registration Date/Time: HERS Provider:

MANDATORY MEASURES SUMMARY: Residential (Page 2 of 3)	**MF-1R**
Project Name *2-Unit Condo (20%) 39.5% Glass*	Date *1/13/2010*

§150(m)1: All air-distribution system ducts and plenums installed, are sealed and insulated to meet the requirements of CMC Sections 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are insulated to a minimum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used
§150(m)1: Building cavities, support platforms for air handlers, and plenums defined or constructed with materials other than sealed sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cause reductions in the cross-sectional area of the ducts.
§150(m)2D: Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
§150(m)7: Exhaust fan systems have back draft or automatic dampers.
§150(m)8: Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.
§150(m)9: Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material.
§150(m)10: Flexible ducts cannot have porous inner cores.
§150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2007 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of providing the Whole Building Ventilation required in Section 4 of that Standard.
Pool and Spa Heating Systems and Equipment Measures:
§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate or card with operating instructions; and shall not use electric resistance heating or a pilot light.
§114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe between filter and heater, or dedicated suction and return lines, or built-up connections for future solar heating.
§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover.
§114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.
§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, filters, and valve requirements of §150(p).
Residential Lighting Measures:
§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy that is no lower than the efficacies contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.
§150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §130(d).
§150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an output frequency no less than 20 kHz.
§150(k)5: Permanently installed night lights and night lights integral to a permanently installed luminaire or exhaust fan shall contain only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall not contain a line-voltage socket or line-voltage lamp holder; OR shall be rated to consume no more than five watts of power as determined by §130(d), and shall not contain a medium screw-base socket.
§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applicable requirements of §150(k).
§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7.
§150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting in kitchens shall be high efficacy. EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft_2 or 100 watts for dwelling units larger than 2,500 ft_2 may be exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen are controlled by a manual on occupant sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control system; and all permanently installed luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are high efficacy and controlled by a manual-on occupant sensor.
§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 watts of power per linear foot of illuminated cabinet.

Registration Number: Registration Date/Time: HERS Provider:

§150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luimnaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11.

§150(k)12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the lumiunaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.

§150(k)13: Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photocontrol not having an override or bypass switch that disables the photocontrol; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to §150(k)13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires.

§150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d).

§150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146.

§150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

Registration Number: Registration Date/Time: HERS Provider:

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name	Date
2-Unit Condo (20%) 39.5% Glass	1/13/2010
System Name	**Floor Area**
Unit A System	2,544

ENGINEERING CHECKS

Number of Systems	1
Heating System	
Output per System	44,000
Total Output (Btuh)	44,000
Output (Btuh/sqft)	17.3
Cooling System	
Output per System	0
Total Output (Btuh)	0
Total Output (Tons)	0.0
Total Output (Btuh/sqft)	0.0
Total Output (sqft/Ton)	0.0
Air System	
CFM per System	1,995
Airflow (cfm)	1,995
Airflow (cfm/sqft)	0.78
Airflow (cfm/Ton)	0.0
Outside Air (%)	0.0 %
Outside Air (cfm/sqft)	0.00
Note: values above given at ARI conditions	

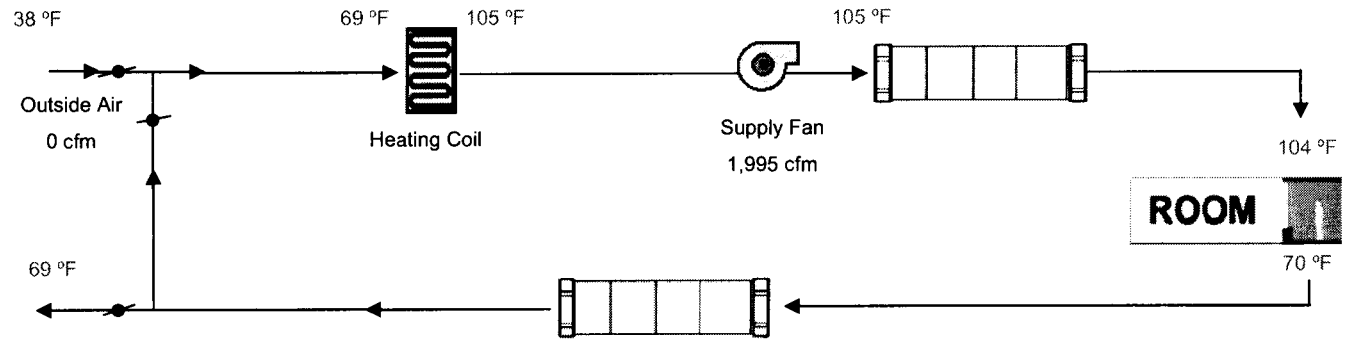
SYSTEM LOAD

	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	**Sensible**	**Latent**	**CFM**	**Sensible**
Total Room Loads	2,111	49,703	3,106	644	23,807
Return Vented Lighting		0			
Return Air Ducts		2,367			1,305
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		2,367			1,305
TOTAL SYSTEM LOAD		54,438	3,106		26,417

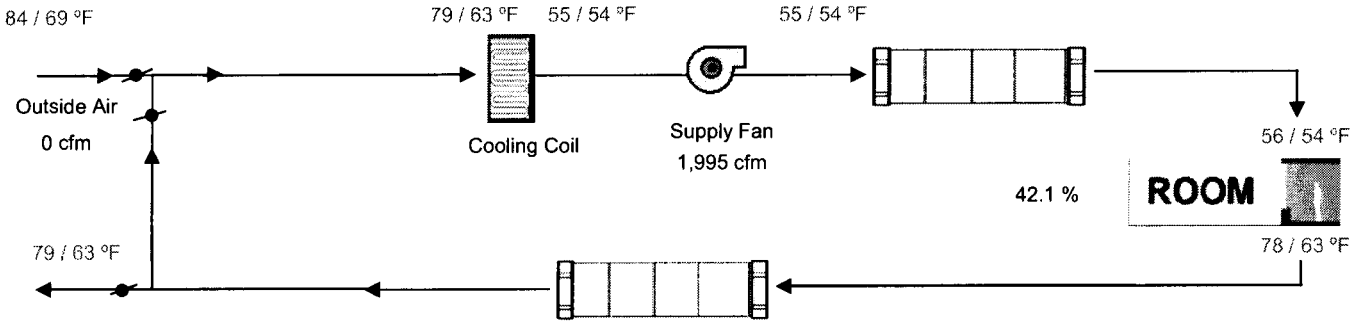
HVAC EQUIPMENT SELECTION

Carrier Corp. N9MP2050B12**		0	0	44,000
Total Adjusted System Output (Adjusted for Peak Design conditions)		0	0	44,000
TIME OF SYSTEM PEAK		Aug 3 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETICS (Airstream Temperatures at Time of Cooling Peak)



HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name	Date
2-Unit Condo (20%) 39.5% Glass	1/13/2010
System Name	**Floor Area**
Unit B System	2,658

ENGINEERING CHECKS

Number of Systems	1
Heating System	
Output per System	44,000
Total Output (Btuh)	44,000
Output (Btuh/sqft)	16.6
Cooling System	
Output per System	0
Total Output (Btuh)	0
Total Output (Tons)	0.0
Total Output (Btuh/sqft)	0.0
Total Output (sqft/Ton)	0.0
Air System	
CFM per System	1,995
Airflow (cfm)	1,995
Airflow (cfm/sqft)	0.75
Airflow (cfm/Ton)	0.0
Outside Air (%)	0.0 %
Outside Air (cfm/sqft)	0.00
Note: values above given at ARI conditions	

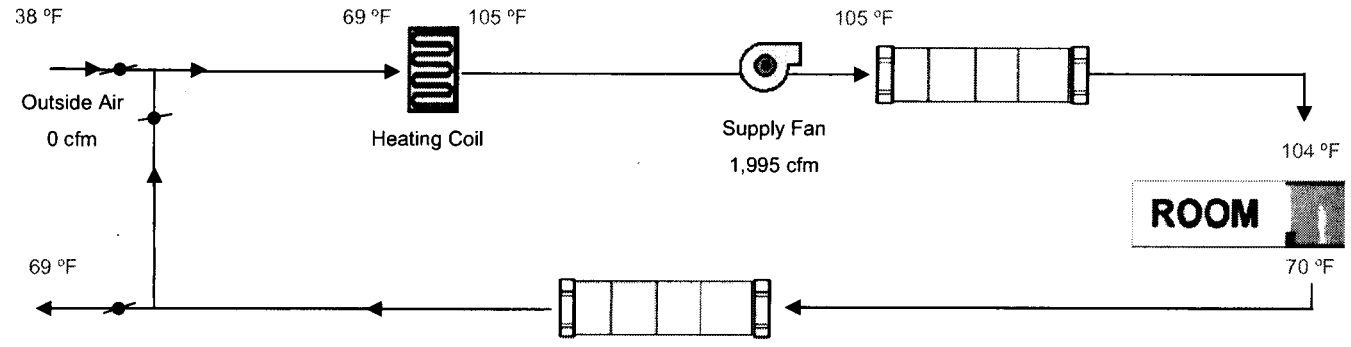
SYSTEM LOAD

	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	**Sensible**	**Latent**	**CFM**	**Sensible**
Total Room Loads	2,107	49,603	3,137	676	24,973
Return Vented Lighting		0			
Return Air Ducts		2,363			1,369
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		2,363			1,369
TOTAL SYSTEM LOAD		54,328	3,137		27,711

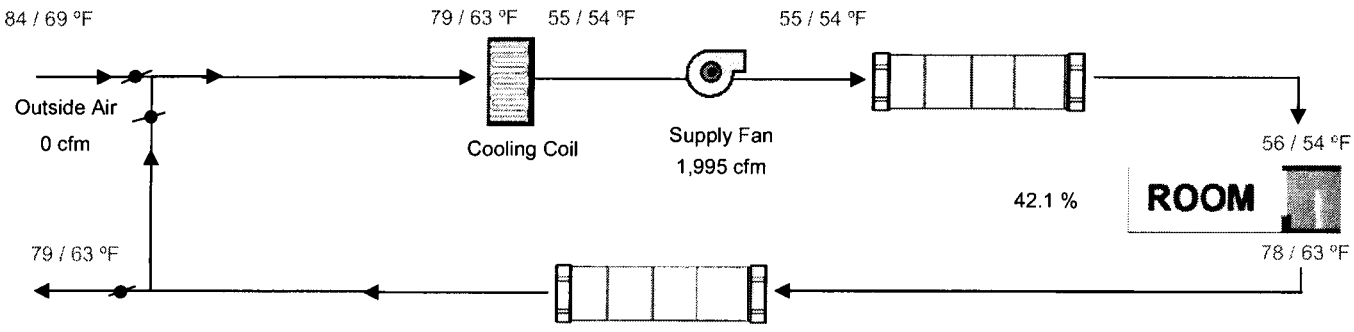
HVAC EQUIPMENT SELECTION

Carrier Corp. N9MP2050B12**	0	0		44,000
Total Adjusted System Output (Adjusted for Peak Design conditions)	0	0		44,000
TIME OF SYSTEM PEAK		Aug 3 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETICS (Airstream Temperatures at Time of Cooling Peak)



BUILDING ENERGY ANALYSIS REPORT

PROJECT:

The Strand SFR (20%)
The Strand
Manhattan Beach, CA 90266

Project Designer:

Manhattan Beach, CA

Report Prepared by:

Rick Newton
NEWTON ENERGY
1401 19th Street
Manhattan Beach, CA 90266
310 375-2699

Job Number:

7273R

Date:

1/13/2010

EXHIBIT C
CC Mtg. 3/16/10
#5

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2008 Building Energy Efficiency Standards.

This program developed by EnergySoft, LLC – www.energysoft.com.

TABLE OF CONTENTS

PERFORMANCE CERTIFICATE: Residential (Part 1 of 5) CF-1R

Project Name	Building Type	Date
The Strand SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	1/13/2010

Project Address	California Energy Climate Zone	Total Cond. Floor Area	Addition	# of Stories
The Strand Manhattan Beach	CA Climate Zone 06	5,551	n/a	3

FIELD INSPECTION ENERGY CHECKLIST

☑ Yes ☐ No HERS Measures -- If Yes, A CF-4R must be provided per Part 2 of 5 of this form.

☑ Yes ☐ No Special Features -- If Yes, see Part 2 of 5 of this form for details.

INSULATION

Construction	Type	Cavity	Area (ft^2)	Special Features (see Part 2 of 5)	Status
Roof	Wood Framed Rafter	R-30	1,971		New
Floor	Wood Framed w/o Crawl Space	R-30	656		New
Wall	Wood Framed	R-19	4,838		New
Door	Opaque Door	None	23		New
Roof	Wood Framed Rafter	R-38	751		New
Slab	Unheated Slab-on-Grade	None	2,115		New
WallBG	Hollow Unit Masonry	None	1,381	Depth = 30.000"	New

FENESTRATION

Orientation	Area(ft^2)	U-Factor	SHGC	Overhang	Sidefins	Exterior Shades	Status
Skylight	12.6	0.370	0.29	none	none	None	New
Skylight	6.3	0.370	0.29	none	none	None	New
Skylight	20.0	0.370	0.29	none	none	None	New
Skylight	6.3	0.370	0.29	none	none	None	New
Left (W)	401.0	1.086	0.51	none	none	Bug Screen	New
Rear (N)	362.0	0.370	0.32	none	none	Bug Screen	New
Right (E)	98.0	0.370	0.32	none	none	Bug Screen	New
Front (S)	220.5	0.370	0.32	none	none	Bug Screen	New
Right (E)	36.0	0.340	0.33	none	none	Bug Screen	New

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
2	Central Furnace	91% AFUE	Split Air Conditioner	13.0 SEER	Setback	New

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status
Whole House Systems	Ducted	Ducted	Attic, Ceiling Ins, vented	6.2	New

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status
1	Large Gas	74	0.78	Kitchen Pipe Ins	New

PERFORMANCE CERTIFICATE: Residential (Part 2 of 5)		CF-1R
Project Name *The Strand SFR (20%)*	Building Type ☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	Date *1/13/2010*

SPECIAL FEATURES INSPECTION CHECKLIST

The enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification to be used with the performance approach. The enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

The DHW System A O Smith Water Products FPSH-75 is a non-NAECA large storage gas water heater. Verify DHW details.

This building incorporates an air retarding wrap which shall be installed to meet the requirements of Section 150 (f) of the Standards.

HERS REQUIRED VERIFICATION

Items in this section require field testing and/or verification by a certified HERS Rater. The inspector must receive a completed CF-4R form for each of the measures listed below for final to be given.

Compliance credit for quality installation of insulation has been used. HERS field verification is required.

The HVAC System Whole House Systems incorporates HERS verified Duct Leakage. HERS field verification and diagnostic testing is required to verify that duct leakage meets the specified criteria.

PERFORMANCE CERTIFICATE: Residential (Part 3 of 5) CF-1R

Project Name	Building Type	Date
The Strand SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

ANNUAL ENERGY USE SUMMARY

TDV (kBtu/ft²-yr)	Standard	Proposed	Margin
Space Heating	10.19	7.81	2.38
Space Cooling	0.86	1.16	-0.30
Fans	1.07	1.12	-0.06
Domestic Hot Water	6.96	5.02	1.94
Pumps	0.00	0.00	0.00
Totals	19.07	15.11	3.96
Percent Better Than Standard:			20.8 %

BUILDING COMPLIES - HERS VERIFICATION REQUIRED

				Fenestration Area
Building Front Orientation:	(SE) 142 deg	Ext. Walls/Roof	Wall Area	
Number of Dwelling Units:	1.00	(SE)	2,011	221
Fuel Available at Site:	Natural Gas	(SW)	956	401
Raised Floor Area:	656	(NW)	2,557	362
Slab on Grade Area:	2,115	(NE)	454	134
Average Ceiling Height:	10.2	Roof	2,767	45
Fenestration Average U-Factor:	0.63		TOTAL:	1,163
Average SHGC:	0.39		Fenestration/CFA Ratio:	20.9 %

REMARKS

BASE CASE: Retaining Walls in basement are insulated. West Facing Glazing is monolithic. Quality Insulation Installation has been specified - This measure requires verification by a certified HERS Rater. Duct Testing has been specified. - This measure requires verification by a certified HERS Rater.
20% over Case: A. R-4.2 Ducts to R-6.2: 0.4% to 1.9%;
B. R-13 Walls to R-19: 1.9% to 11.7%;
C. R-19 Floor to R-30 Floor: 11.7% to 12.2%;
D. R-30 Roof Deck to R-38: 12.2% to 12.8%;
E. House Wrap Credit: 12.8% to 15.2%;
F. 80% AFUE Furnace to 91%: 15.2% to 20.8%.

STATEMENT OF COMPLIANCE

This certificate of compliance lists the building features and specifications needed to comply with Title 24, Parts 1 the Administrative Regulations and Part 6 the Efficiency Standards of the California Code of Regulations.

The documentation author hereby certifies that the documentation is accurate and complete.

Documentation Author

Company *NEWTON ENERGY*
Address *1401 19th Street* Name *Rick Newton*
City/State/Zip *Manhattan Beach, CA 90266* Phone *310 375-2699*

1/13/2010
Signed Date

The individual with overall design responsibility hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application, and recognizes that compliance using duct design, duct sealing, verification of refrigerant charge, 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 & Professions Code)

Company
Address Name
City/State/Zip *Manhattan Beach, CA 90267* Phone (

Signed License # Date

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
The Strand SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Exterior	Frame	Interior	Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Roof	*497*	*0.036*	*R-30*					*251*	*1*	*New*	*4.2.2-A16*	*2nd Floor Zone*
Roof	*496*	*0.036*	*R-30*					*341*	*1*	*New*	*4.2.2-A16*	*2nd Floor Zone*
Roof	*482*	*0.036*	*R-30*					*71*	*1*	*New*	*4.2.2-A16*	*2nd Floor Zone*
Roof	*496*	*0.036*	*R-30*					*161*	*1*	*New*	*4.2.2-A16*	*2nd Floor Zone*
Floor	*598*	*0.034*	*R-30*					*0*	*180*	*New*	*4.4.2-A7*	*2nd Floor Zone*
Wall	*251*	*0.074*	*R-19*					*251*	*90*	*New*	*4.3.1-A5*	*2nd Floor Zone*
Wall	*841*	*0.074*	*R-19*					*341*	*90*	*New*	*4.3.1-A5*	*2nd Floor Zone*
Wall	*231*	*0.074*	*R-19*					*71*	*90*	*New*	*4.3.1-A5*	*2nd Floor Zone*
Wall	*855*	*0.074*	*R-19*					*161*	*90*	*New*	*4.3.1-A5*	*2nd Floor Zone*
Floor	*58*	*0.034*	*R-30*					*0*	*180*	*New*	*4.4.2-A7*	*1st Floor Zone*
Wall	*157*	*0.074*	*R-19*					*251*	*90*	*New*	*4.3.1-A5*	*1st Floor Zone*
Wall	*494*	*0.074*	*R-19*					*341*	*90*	*New*	*4.3.1-A5*	*1st Floor Zone*
Wall	*123*	*0.074*	*R-19*					*0*	*90*	*New*	*4.3.1-A5*	*1st Floor Zone*
Door	*23*	*0.500*	*None*					*0*	*90*	*New*	*4.5.1-A4*	*1st Floor Zone*
Wall	*89*	*0.074*	*R-19*					*71*	*90*	*New*	*4.3.1-A5*	*1st Floor Zone*
Wall	*613*	*0.074*	*R-19*					*161*	*90*	*New*	*4.3.1-A5*	*1st Floor Zone*

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments
1	*Skylight*	*12.6*	*0.370*	*NFRC*	*0.29*	*NFRC*	*251*	*New*	*Velux Comfort (75) Lowe2/Arg*	*2nd Floor Zone*
2	*Skylight*	*6.3*	*0.370*	*NFRC*	*0.29*	*NFRC*	*341*	*New*	*Velux Comfort (75) Lowe2/Arg*	*2nd Floor Zone*
3	*Skylight*	*20.0*	*0.370*	*NFRC*	*0.29*	*NFRC*	*71*	*New*	*Velux Comfort (75) Lowe2/Arg*	*2nd Floor Zone*
4	*Skylight*	*6.3*	*0.370*	*NFRC*	*0.29*	*NFRC*	*161*	*New*	*Velux Comfort (75) Lowe2/Arg*	*2nd Floor Zone*
5	*Window*	*112.0*	*1.086*	*COG*	*0.51*	*COG*	*251*	*New*	*PPG Azuria Mono.Non-Metal*	*2nd Floor Zone*
6	*Window*	*130.0*	*0.370*	*NFRC*	*0.32*	*NFRC*	*341*	*New*	*IWC 5300 Vinyl/Low-E*	*2nd Floor Zone*
7	*Window*	*86.0*	*0.370*	*NFRC*	*0.32*	*NFRC*	*71*	*New*	*IWC 5300 Vinyl/Low-E*	*2nd Floor Zone*
8	*Window*	*138.0*	*0.370*	*NFRC*	*0.32*	*NFRC*	*161*	*New*	*IWC 5300 Vinyl/Low-E*	*2nd Floor Zone*
9	*Window*	*150.0*	*1.086*	*COG*	*0.51*	*COG*	*251*	*New*	*PPG Azuria Mono.Non-Metal*	*1st Floor Zone*
10	*Window*	*110.0*	*0.370*	*NFRC*	*0.32*	*NFRC*	*341*	*New*	*IWC 5300 Vinyl/Low-E*	*1st Floor Zone*
11	*Window*	*36.0*	*0.340*	*NFRC*	*0.33*	*NFRC*	*71*	*New*	*Andersen Permashield*	*1st Floor Zone*
12	*Window*	*12.0*	*0.370*	*NFRC*	*0.32*	*NFRC*	*71*	*New*	*IWC 5300 Vinyl/Low-E*	*1st Floor Zone*
13	*Window*	*40.5*	*0.370*	*NFRC*	*0.32*	*NFRC*	*161*	*New*	*IWC 5300 Vinyl/Low-E*	*1st Floor Zone*
14	*Window*	*139.0*	*1.086*	*COG*	*0.51*	*COG*	*251*	*New*	*PPG Azuria Mono.Non-Metal*	*Basement Zone*
15	*Window*	*122.0*	*0.370*	*NFRC*	*0.32*	*NFRC*	*341*	*New*	*IWC 5300 Vinyl/Low-E*	*Basement Zone*
16	*Window*	*42.0*	*0.370*	*NFRC*	*0.32*	*NFRC*	*161*	*New*	*IWC 5300 Vinyl/Low-E*	*Basement Zone*

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt
1	*None*	*1.00*												
2	*None*	*1.00*												
3	*None*	*1.00*												
4	*None*	*1.00*												
5	*Bug Screen*	*0.76*												
6	*Bug Screen*	*0.76*												
7	*Bug Screen*	*0.76*												
8	*Bug Screen*	*0.76*												
9	*Bug Screen*	*0.76*												
10	*Bug Screen*	*0.76*												
11	*Bug Screen*	*0.76*												
12	*Bug Screen*	*0.76*												
13	*Bug Screen*	*0.76*												
14	*Bug Screen*	*0.76*												
15	*Bug Screen*	*0.76*												
16	*Bug Screen*	*0.76*												

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
The Strand SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Insulation Exterior	Insulation Frame	Insulation Interior	Insulation Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
Roof	*751*	*0.029*	*R-38*					*71*	*1*	*New*	*4.2.2-A18*	*Basement Zone*
Slab	*2,115*	*0.730*	*None*					*0*	*180*	*New*	*4.4.7-A1*	*Basement Zone*
Wall	*147*	*0.074*	*R-19*					*251*	*90*	*New*	*4.3.1-A5*	*Basement Zone*
Wall	*454*	*0.074*	*R-19*					*341*	*90*	*New*	*4.3.1-A5*	*Basement Zone*
Wall	*323*	*0.074*	*R-19*					*161*	*90*	*New*	*4.3.1-A5*	*Basement Zone*
Wall	*260*	*0.074*	*R-19*					*0*	*90*	*New*	*4.3.1-A5*	*Basement Zone*
WallBG	*80*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*19*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*12*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*70*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*51*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*35*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*56*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*63*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*14*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*50*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt

CERTIFICATE OF COMPLIANCE: Residential (Part 4 of 5) CF-1R

Project Name	Building Type	Date
The Strand SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

OPAQUE SURFACE DETAILS

Surface Type	Area	U-Factor	Insulation Cavity	Insulation Exterior	Insulation Frame	Insulation Interior	Insulation Frame	Azm	Tilt	Status	Joint Appendix 4	Location/Comments
WallBG	*129*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*151*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*577*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*
WallBG	*74*	*0.076*	*None*			*13*	*Wood*	*0*	*90*	*New*	*4.3.5-A9/4.3.13-A6*	*Basement Zone*

FENESTRATION SURFACE DETAILS

ID	Type	Area	U-Factor[1]		SHGC[2]		Azm	Status	Glazing Type	Location/Comments

(1) U-Factor Type: 116-A = Default Table from Standards, NFRC = Labeled Value
(2) SHGC Type: 116-B = Default Table from Standards, NFRC = Labeled Value

EXTERIOR SHADING DETAILS

ID	Exterior Shade Type	SHGC	Window Hgt	Window Wd	Overhang Len	Overhang Hgt	Overhang LExt	Overhang RExt	Left Fin Dist	Left Fin Len	Left Fin Hgt	Right Fin Dist	Right Fin Len	Right Fin Hgt

CERTIFICATE OF COMPLIANCE: Residential (Part 5 of 5) CF-1R

Project Name	Building Type	Date
The Strand SFR (20%)	☑ Single Family ☐ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration	*1/13/2010*

BUILDING ZONE INFORMATION

System Name	Zone Name	Floor Area (ft^2) New	Existing	Altered	Removed	Volume	Year Built
Whole House Systems	*2nd Floor*	*2,008*				*19,277*	
	1st Floor	*1,428*				*14,708*	
	Basement	*2,115*				*22,419*	
	Totals	*5,551*	*0*	*0*	*0*		

HVAC SYSTEMS

System Name	Qty.	Heating Type	Min. Eff.	Cooling Type	Min. Eff.	Thermostat Type	Status
Whole House Systems	*2*	*Central Furnace*	*91% AFUE*	*Split Air Conditioner*	*13.0 SEER*	*Setback*	*New*

HVAC DISTRIBUTION

System Name	Heating	Cooling	Duct Location	Duct R-Value	Ducts Tested?	Status
Whole House Systems	*Ducted*	*Ducted*	*Attic, Ceiling Ins, vented*	*6.2*	☑	*New*
					☐	
					☐	
					☐	
					☐	

WATER HEATING SYSTEMS

System Name	Qty.	Type	Distribution	Rated Input (Btuh)	Tank Cap. (gal)	Energy Factor or RE	Standby Loss or Pilot	Ext. Tank Insul. R-Value	Status
A O Smith Water Products	*1*	*Large Gas*	*Kitchen Pipe Ins*	*80,000*	*74*	*0.78*	*0.00 %*	*0.0*	*New*

MULTI-FAMILY WATER HEATING DETAILS

Control	Qty.	HP	Eff. Premium	Hot Water Piping Length (ft) Plenum	Outside	Buried	Add ½" Insulation
			☐				☐
			☐				☐
			☐				☐
			☐				☐
			☐				☐

HYDRONIC HEATING SYSTEM PIPING

System Name	Pipe Length	Pipe Diameter	Insul. Thick.

MANDATORY MEASURES SUMMARY: Residential (Page 1 of 3) MF-1R

Project Name	Date
The Strand SFR (20%)	*1/13/2010*

NOTE: Low-rise residential buildings subject to the Standards must comply with all applicable mandatory measures listed, regardless of the compliance approach used. More stringent energy measures listed on the Certificate of Compliance (CF-1R, CF-1R-ADD, or CF-1R-ALT Form) shall supersede the items marked with an asterisk (*) below. This Mandatory Measures Summary shall be incorporated into the permit documents, and the applicable features shall be considered by all parties as minimum component performance specifications whether they are shown elsewhere in the documents or in this summary. Submit all applicable sections of the MF-1R Form with plans.

Building Envelope Measures:

§116(a)1: Doors and windows between conditioned and unconditioned spaces are manufactured to limit air leakage.

§116(a)4: Fenestration products (except field-fabricated windows) have a label listing the certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a).

§117: Exterior doors and windows are weather-stripped; all joints and penetrations are caulked and sealed.

§118(a): Insulation specified or installed meets Standards for Insulating Material. Indicate type and include on CF-6R Form.

§118(i): The thermal emittance and solar reflectance values of the cool roofing material meets the requirements of §118(i) when the installation of a Cool Roof is specified on the CF-1R Form.

*§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.

§150(b): Loose fill insulation shall conform with manufacturer's installed design labeled R-Value.

*§150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.

*§150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.

§150(f): Air retarding wrap is tested, labeled, and installed according to ASTM E1677-95(2000) when specified on the CF-1R Form.

§150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.

§150(l): Water absorption rate for slab edge insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch and shall be protected from physical damage and UV light deterioration.

Fireplaces, Decorative Gas Appliances and Gas Log Measures:

§150(e)1A: Masonry or factory-built fireplaces have a closable metal or glass door covering the entire opening of the firebox.

§150(e)1B: Masonry or factory-built fireplaces have a combustion outside air intake, which is at least six square inches in area and is equipped with a with a readily accessible, operable, and tight-fitting damper and or a combustion-air control device.

§150(e)2: Continuous burning pilot lights and the use of indoor air for cooling a firebox jacket, when that indoor air is vented to the outside of the building, are prohibited.

Space Conditioning, Water Heating and Plumbing System Measures:

§110-§113: HVAC equipment, water heaters, showerheads, faucets and all other regulated appliances are certified by the Energy Commission.

§113(c)5: Water heating recirculation loops serving multiple dwelling units and High-Rise residential occupancies meet the air release valve, backflow prevention, pump isolation valve, and recirculation loop connection requirements of §113(c)5.

§115: Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces, household cooking appliances (appliances with an electrical supply voltage connection with pilot lights that consume less than 150 Btu/hr are exempt), and pool and spa heaters.

§150(h): Heating and/or cooling loads are calculated in accordance with ASHRAE, SMACNA or ACCA.

§150(i): Heating systems are equipped with thermostats that meet the setback requirements of Section 112(c).

§150(j)1A: Storage gas water heaters rated with an Energy Factor no greater than the federal minimal standard are externally wrapped with insulation having an installed thermal resistance of R-12 or greater.

§150(j)1B: Unfired storage tanks, such as storage tanks or backup tanks for solar water-heating system, or other indirect hot water tanks have R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.

§150(j)2: First 5 feet of hot and cold water pipes closest to water heater tank, non-recirculating systems, and entire length of recirculating sections of hot water pipes are insulated per Standards Table 150-B.

§150(j)2: Cooling system piping (suction, chilled water, or brine lines),and piping insulated between heating source and indirect hot water tank shall be insulated to Table 150-B and Equation 150-A.

§150(j)2: Pipe insulation for steam hydronic heating systems or hot water systems >15 psi, meets the requirements of Standards Table 123-A.

§150(j)3A: Insulation is protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind.

§150(j)3A: Insulation for chilled water piping and refrigerant suction lines includes a vapor retardant or is enclosed entirely in conditioned space.

§150(j)4: Solar water-heating systems and/or collectors are certified by the Solar Rating and Certification Corporation.

Registration Number: Registration Date/Time: HERS Provider:

§150(m)1: All air-distribution system ducts and plenums installed, are sealed and insulated to meet the requirements of CMC Sections 601, 602, 603, 604, 605 and Standard 6-5; supply-air and return-air ducts and plenums are insulated to a minimum installed level of R-4.2 or enclosed entirely in conditioned space. Openings shall be sealed with mastic, tape or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape shall be used

§150(m)1: Building cavities, support platforms for air handlers, and plenums defined or constructed with materials other than sealed sheet metal, duct board or flexible duct shall not be used for conveying conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms shall not be compressed to cause reductions in the cross-sectional area of the ducts.

§150(m)2D: Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.

§150(m)7: Exhaust fan systems have back draft or automatic dampers.

§150(m)8: Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.

§150(m)9: Insulation shall be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind. Cellular foam insulation shall be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation that can cause degradation of the material.

§150(m)10: Flexible ducts cannot have porous inner cores.

§150(o): All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2-2007 Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings. Window operation is not a permissible method of providing the Whole Building Ventilation required in Section 4 of that Standard.

Pool and Spa Heating Systems and Equipment Measures:

§114(a): Any pool or spa heating system shall be certified to have: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater; a permanent weatherproof plate or card with operating instructions; and shall not use electric resistance heating or a pilot light.

§114(b)1: Any pool or spa heating equipment shall be installed with at least 36" of pipe between filter and heater, or dedicated suction and return lines, or built-up connections for future solar heating.

§114(b)2: Outdoor pools or spas that have a heat pump or gas heater shall have a cover.

§114(b)3: Pools shall have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.

§150(p): Residential pool systems or equipment meet the pump sizing, flow rate, piping, filters, and valve requirements of §150(p).

Residential Lighting Measures:

§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy that is no lower than the efficacies contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.

§150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §130(d).

§150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an output frequency no less than 20 kHz.

§150(k)5: Permanently installed night lights and night lights integral to a permanently installed luminaire or exhaust fan shall contain only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall not contain a line-voltage socket or line-voltage lamp holder; OR shall be rated to consume no more than five watts of power as determined by §130(d), and shall not contain a medium screw-base socket.

§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applicable requirements of §150(k).

§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7.

§150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting in kitchens shall be high efficacy. EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft^2 or 100 watts for dwelling units larger than 2,500 ft^2 may be exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen are controlled by a manual on occupant sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control system; and all permanently installed luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are high efficacy and controlled by a manual-on occupant sensor.

§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 watts of power per linear foot of illuminated cabinet.

Registration Number: Registration Date/Time: HERS Provider:

§150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luimnaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11.

§150(k)12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the lumiunaire is airtight with air leakage less then 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.

§150(k)13: Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photocontrol not having an override or bypass switch that disables the photocontrol; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception1 to §150(k)13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires.

§150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d).

§150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146.

§150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

Registration Number: Registration Date/Time: HERS Provider:

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name	Date
The Strand SFR (20%)	1/13/2010
System Name	**Floor Area**
Whole House Systems	5,551

ENGINEERING CHECKS	
Number of Systems	2
Heating System	
Output per System	37,000
Total Output (Btuh)	74,000
Output (Btuh/sqft)	13.3
Cooling System	
Output per System	23,000
Total Output (Btuh)	46,000
Total Output (Tons)	3.8
Total Output (Btuh/sqft)	8.3
Total Output (sqft/Ton)	1,448.1
Air System	
CFM per System	800
Airflow (cfm)	1,600
Airflow (cfm/sqft)	0.29
Airflow (cfm/Ton)	417.4
Outside Air (%)	0.0 %
Outside Air (cfm/sqft)	0.00
Note: values above given at ARI conditions	

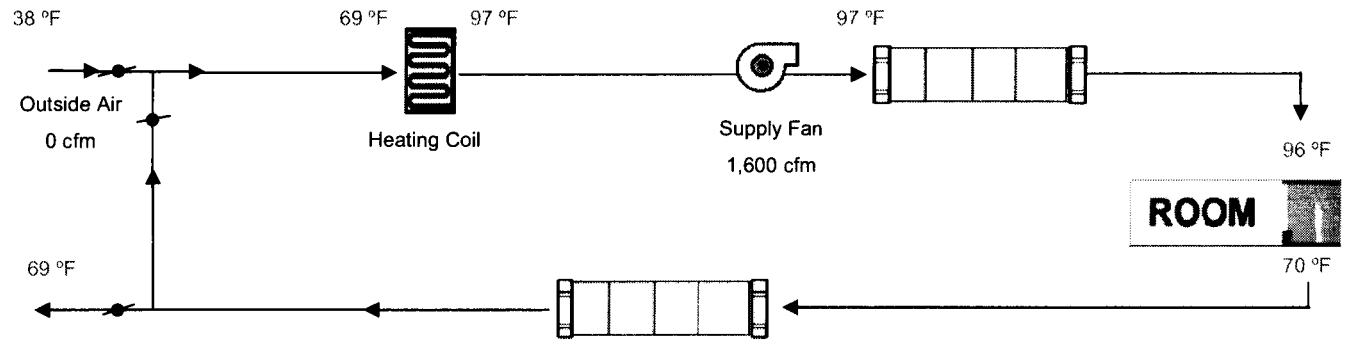
SYSTEM LOAD

	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	Sensible	Latent	CFM	Sensible
Total Room Loads	2,297	53,874	3,140	2,123	59,758
Return Vented Lighting		0			
Return Air Ducts		2,743			3,277
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		814			-814
Supply Air Ducts		2,743			3,277
TOTAL SYSTEM LOAD		60,173	3,140		65,498

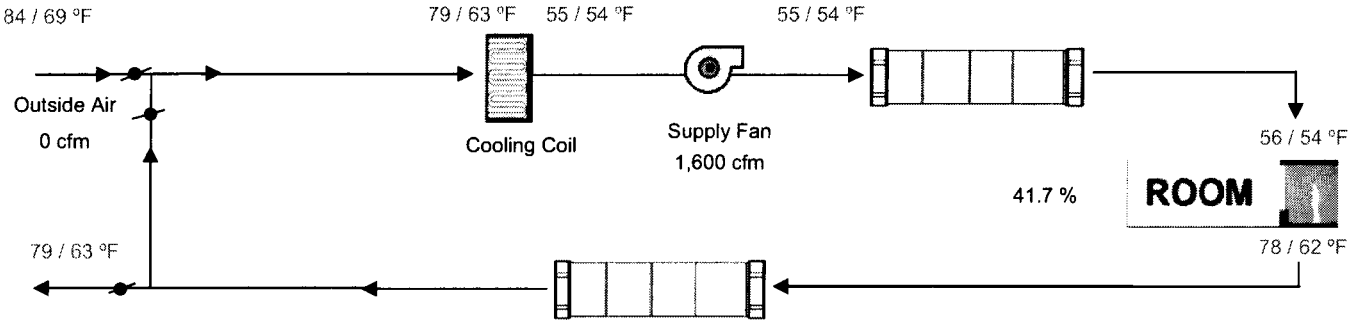
HVAC EQUIPMENT SELECTION

Carrier Corp. 340AAV024040xx	40,849	4,475		74,000
Total Adjusted System Output (Adjusted for Peak Design conditions)	40,849	4,475		74,000
TIME OF SYSTEM PEAK		Aug 3 PM		Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETICS (Airstream Temperatures at Time of Cooling Peak)



ENERGY USE AND COST SUMMARY — ECON-1

Project Name: *The Strand SFR (20%)*

Date: *1/13/2010*

Rate: **Fuel Type:** *Electricity*

	STANDARD			PROPOSED			MARGIN		
	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)	Energy Use (kWh)	Peak Demand (kW)	Cost ($)
Jan	46	1		44	1		3	0	
Feb	52	6		60	6		-8	0	
Mar	43	3		37	0		6	2	
Apr	44	4		47	6		-3	-2	
May	24	0		23	0		1	0	
Jun	63	7		91	10		-28	-3	
Jul	36	7		47	8		-11	-1	
Aug	43	7		60	8		-16	-1	
Sep	104	8		122	9		-17	-1	
Oct	24	5		32	7		-8	-2	
Nov	38	3		34	3		4	0	
Dec	72	6		62	4		9	2	
Year	590	8		660	10		-69	-2	
CO_2		lbs/yr			lbs/yr			lbs/yr	

Rate: **Fuel Type:** *Natural Gas*

	STANDARD			PROPOSED			MARGIN		
	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)	Energy Use (therms)	Peak Demand (kBtu/hr)	Cost ($)
Jan	96	135		73	119		23	17	
Feb	79	121		60	103		19	18	
Mar	81	110		59	90		21	20	
Apr	54	102		40	86		14	16	
May	37	93		26	77		11	15	
Jun	21	6		15	5		6	1	
Jul	22	6		15	5		6	1	
Aug	21	6		15	5		6	1	
Sep	21	6		15	5		6	1	
Oct	22	35		16	27		6	8	
Nov	52	115		40	94		13	21	
Dec	115	138		89	114		25	25	
Year	620	138		463	119		157	20	
CO_2		lbs/yr			lbs/yr			lbs/yr	

Annual Totals	Energy	Demand	Cost	Cost/sqft	Virtual Rate
Electricity	*660* kWh	*10* kW	$ *0*	$ *0.00* /sqft	$ *0.00* /kWh
Natural Gas	*463* therms	*119* kBtu/hr	$ *0*	$ *0.00* /sqft	$ *0.00* /therm
		Total	$ *0*	$ *0.00* /sqft	

Avoided CO_2 Emissions: *0* lbs/yr

UTILITY INCENTIVE WORKSHEET — UTIL-1R

Project Name: *The Strand SFR (20%)*

Date: *1/13/2010*

Step 1 ANNUAL TDV ENERGY USE (kBtu/sqft-yr)

ENERGY COMPONENT	Standard	Proposed	Margin
Space Heating	10.19	7.81	2.38
Space Cooling	0.86	1.16	-0.30
Indoor Fans	1.07	1.12	-0.06
Domestic Hot Water	6.96	5.02	1.94
Pumps	0.00	0.00	0.00
TOTALS:	19.07	15.11	3.96

Step 2 PERCENT BELOW TITLE 24

	Margin		Standard	% Below Title 24*
	3.96	/	19.07	20.8 %
	Cooling		**Standard**	
	-0.30	/	0.86	-35.0 %

Incentive Eligibility		Yes	No
Owner Incentive	(>=15%)	☑	☐
NSHP Incentive	(>=30%)	☐	☑

Conditioned Floor Area = 5,551.0 ft²

Number of Bedrooms = 5

Step 3 ANNUAL SITE ENERGY USE

Single Orientation

Average 2pm - 5pm Peak Demand (kW)	Standard	Proposed	Margin
	1.3	1.5	-0.2

ENERGY COMPONENT	Standard		Proposed		Margin	
	Electricity (kWh)	Natural Gas (therms)	Electricity (kWh)	Natural Gas (therms)	Electricity (kWh)	Natural Gas (therms)
Space Heating	0	359	0	275	0	84
Space Cooling	185	0	251	0	-66	0
Indoor Fans	405	0	409	0	-3	0
Domestic Hot Water	0	260	0	188	0	73
Pumps	0	0	0	0	0	0
TOTALS:	590	620	660	463	-69	157

Step 4 POTENTIAL OWNER INCENTIVE CALCULATION

Potential incentives indicated on this report are available only through the California Advanced Homes Program for new construction and are NOT GUARANTEED. Projects must meet all other program requirements to qualify. Potential incentives are subject to program limitations.

	% Below Title-24* (from step 2)	Incentive Rate		Savings (from Step 3)		Subtotal
Electricity (kWh)	20.8 %	0.60 $/kWh	x	0 kWh	=	$0
Electricity (kW)	20.8 %	104 $/kW	x	0.0 kW	=	$0
Natural Gas	20.8 %	2.38 $/therm	x	157 therm	=	$373
Base Incentive					=	$373
Energy Star Incentive		n/a	x 10%		=	n/a
Green Home Incentive		n/a	x 10%		=	n/a
Compact Home Incentive		n/a	x 15%		=	n/a
Photovoltaic Incentive		n/a	x	n/a DC Rating kW	=	n/a
NSHP					=	n/a
Total					=	$373

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*% Below in this equation is limited to 45%