COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS
BUILDING & SAFETY DIVISION

BL. # _____

D.O. _____

DATE _____

LOW-RISE RESIDENTIAL BUILDINGS
(3 STORIES OR LESS)
2016 ENERGY STANDARDS
CORRECTION SHEET

JOB NAME: _____ DATE: _____

ADDRESS: _____ PLAN CHECKER: _____

APPLICANT: _____ TELEPHONE: _____

Directions

The above project was reviewed for compliance with the 2016 Building Energy Efficiency Standards per Title 24, Part 1, Article 1, Part 6 of the California Code of Regulations. Before approval of the plans or the issuance of a building permit, the plans/calculations for this project require the information, revisions, and corrections indicated by the circled items below and must be returned to the above plan checker for approval. The approval of plans and calculations does not permit the violation of any County ordinance or State law.

1. Show compliance with all the circled items below and indicate on this correction sheet the location of the corrections on the plans. Applicant or project representative must sign and return this correction sheet with two sets of revised plans/calculations.

2. The energy plans, certificates and calculations shall be signed by the person responsible for their preparation. The signatory shall be the owner, licensed or registered professional to practice in the State of California, or other individual eligible under Division 3 of the Business and Professions Code to sign such documents.

3. Provide a complete "Certificate of Compliance", CF-1R, on the plans by reproducing the forms directly on drawings for each building proposed and for each orientation. Each building requires a separate Certificate of Compliance. Forms shall be legible and shall **not** be taped or stapled to the plans.

4. The Certificate of Compliance shall be signed by the individual with overall responsibility for the design with license number indicated as specified under Division 3 of the Business and Professions Code and by the documentation author.

5. All buildings for which compliance requires HERS field verification, the Certificate of Compliance that is reproduced in the plans shall be a copy of the registered Certificate of Compliance from a HERS provider data registry.

6. _____version _____ is no longer approved for compliance. Provide compliance using an approved version of the software. The list is found here: http://energy.ca.gov/title24/2016standards/2016_computer_prog_list.html

7. Newly constructed low-rise residential buildings, and additions or alterations of existing residential buildings where the addition or alteration increases the building's conditioned volume or size, shall comply with the 2017 County of Los Angeles Green Building Standards Code. (See attached correction sheet)

8. Indicate title of project and address on **all** sheets of plans (tract #, etc.).

9. **Compliance Information:** Submit the following compliance information.

   A) Architectural drawings for existing building.
   B) Manufacturer's data sheets for equipment selected.
   C) CF1R – NCB – 01 – E Prescriptive Newly Constructed Buildings and Additions ≥1,000 ft^2
   D) CF1R – ENV – 02 – E Area Weighted Average Calculation Worksheet.
   E) CF1R – ENV – 03 – E Solar Heat Gain Coefficient (SHGC) Worksheet.
   F) CF1R – ENV – 04 – E Cool Roof and SRI Worksheet
   G) CF1R – PLB – 01 – E Hydronic Heating System Worksheet
   H) CF1R – SRA – 01 – E Solar Ready Buildings – New Construction
   I) CF1R – SRA – 02 – E Minimum Solar Zone Area Worksheet – New Construction
   J) CF1R – ADD – 01 – E Prescriptive Additions <1,000 ft^2
   K) CF1R – ALT – 01 – E Prescriptive Alterations Non-HVAC
   L) CF1R – ALT – 02 – E Prescriptive Alterations HVAC
   M) CF1R – ALT – 03 – E Paper Version of ALT HVAC for CZ 1, 3-7, 16
   N) CF1R – ALT – 04 – E Paper Version of ALT HVAC for CZ 2, 8-15

   NOTE: The appropriate CF2R and CF3R forms must be completed and provided at the time of inspection.

10. **Administrative Requirements:** The following notes (items) represent the administrative requirements for all buildings and shall appear as notes on the plans.

    A) The person in charge of the construction or installation, who is eligible under Division 3 of the Business and Professions Code to accept responsibility for the construction or installation of regulated manufactured devices shall post, or make available with the building permit(s) issued for the building, the Certificate of Installation documentation for manufactured devices regulated by the Appliance Efficiency Regulations or Part 6. Such Certificate of Installation documentation shall be made available to the enforcement agency for all applicable inspections. These certificates shall:

       i) Identify features, materials, components, manufactured devices, and system diagnostic results required to verify compliance with the Appliance Efficiency Regulations and Part 6.

       ii) State the number of the building permit under which the construction or installation was performed. Sections of the certificate(s), for which submittal to a HERS provider data registry is required, shall display the unique registration number assigned by the HERS data registry.

       iii) Include a declaration statement indicating that the constructed or installed features, materials, components, or manufactured devices conform to all applicable codes and regulations, and to the requirements for such devices given in the plans and specifications approved by the local enforcement agency.

       iv) Be signed by the documentation author to certify the documentation is accurate and complete.

v) Be signed by the individual eligible under Division 3 of the Business and Professions Code to accept responsibility for construction, or installation in the applicable classification for the scope of work specified on the Certificate of Installation document(s). Sec. 10-103 (a) 3 A

B) The builder shall provide the building owner or the person(s) responsible for operation and maintenance of the feature, material, component or mechanical device installed (in case of multi-tenant or centrally operated buildings) with the following at the time of occupancy:

i) Compliance information. The appropriate completed and signed Certificate(s) of Compliance, Certificate(s) of Installation, and if applicable Certificate(s) of Verification documentation submitted.

ii) Operating information. The appropriate Certificate(s) of Compliance and a list of the features, materials, components, and mechanical devices installed in the building and instructions on how to operate them correctly and efficiently.

iii) Maintenance information. Required routine maintenance actions shall be clearly stated and incorporated on a readily accessible label. The label may be limited to identifying the operation and maintenance manual.

iv) Ventilation Information. A description of the quantity of outdoor air that the ventilation system is designed to provide to the building conditioned space, and instructions for proper operation and maintenance. Sec. 10-103 (b)

C) The Enforcement agency shall not issue a Certificate of Occupancy until all required Certificates of Verification are posted and made available to the building department for all applicable inspections, and that all Certificates of Verification conform to the specifications of Section 10-103(a)5.
Sec. 10-103 (d) 2

11. Mandatory Measures: The following circled items represent the Mandatory Measures for all buildings and **shall appear as notes on the plans**.

A) Manufactured fenestration products and exterior doors shall:
1) Have a clearly visible temporary label meeting the requirements of Sec. 10-111 (a) 1, not to be removed before inspection by the enforcement agency, listing the certified U-factor, the solar heat gains coefficient (SHGC), and Visible Transmittance (VT) certifying that the air leakage requirements of Sec. 110.6 (a) 1 are met for each product line; and

2) Have a permanent label meeting the requirements of Sec. 10-111 (a) 2 if the product is rated using NFRC procedures.

Sec. 110.6 (a)

B) Field-fabricated fenestration and field-fabricated exterior doors shall be caulked between the fenestration products or exterior door and the building, and shall be weather stripped. EXCEPTION: Unframed glass doors and fire doors.

Sec. 110.6 (b)

C) Joints, penetrations and other openings in the building envelope that are potential sources of air leakage shall be caulked, gasketed, weather stripped, or otherwise sealed to limit infiltration and exfiltration.

Sec. 110.7

D) All insulating material shall be installed in compliance with the flamespread rating and smoke density requirements of the CBC.

Sec. 110.8 (c)

E) No mechanical equipment nor plumbing vents shall be located within the designated “Solar Zone”

areas.

Sec 110.10 (b) 1-B

F) Any roofing product used as a cool roof shall be certified and labeled in accordance with the requirements of Sec. 10-113 by the Cool Roof Rating Council (CRRC) and meet conditions set in Sec. 110.8 (i)

G) New space conditioning equipment shall meet the applicable efficiency requirements of Tables 110.2-(A-K).

Sec. 110.2 (a)

H) All unitary systems not controlled by EMCS shall have setback thermostats; capable to program temperature setpoints for at least four periods within a 24 hr. period.

Sec. 110.2 (2) (c)

I) Heat pumps with supplementary electric resistance heaters shall have controls:
   1) That prevent supplementary heater operation when the heating load can be met by the heat pump alone; and
   2) Cut-on temperature for compression heating is higher than cut-on temperature for supplementary heating, cut-off temperature for compression heating is higher than the cut-off temperature for supplemental heating.

Sec. 110.2 (b)

J) Unfired water tanks (storage tanks or backup storage tanks for solar water heating) shall be externally wrapped with an insulation of R-12 or greater or have internal insulation of R-16 or greater with a label showing the insulation R-value.

Sec. 150.0 (j)

K) All factory fabricated duct systems shall comply with UL 181. This includes all ducts, and closure systems such as collars, connections and splices. Labeled, complying to UL 181.

Sec. 150.0 (m)2

L) For single family dwellings and townhouses ducts connected directly to the air handler, the total leakage of the duct system shall not exceed 5 percent of the nominal system air handler airflow as determined utilizing the procedures in Reference Residential Appendix Section RA3.1.4.3.1. If the single-family dwellings and townhouses are in the “rough-in stage of construction” prior to installation and the air-handling unit is not yet installed the leakage shall not exceed 4 percent of the air-handler systems manufactured listed airflow.

Sec. 150.0 (m)11-A

M) All air distribution system ducts and plenums, including, but not limited to, building cavities, mechanical closets, air-handler boxes and support platforms used as ducts or plenums, shall be installed, sealed and insulated to meet the requirements of the 2016 California Mechanical Code and ANSI/SMACNA - 006.2006 HVAC Duct Construction Standards Metal and Flexible. Supply-air ducts conveying heated or cooled air shall be insulated to a minimum installed level of R-4.2 (R-6.0 in unconditioned space), unless ducts are in conditioned space.

Sec. 150.0 (m)

N) All dwelling buildings shall meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings

Sec. 150.0 (o)

O) The piping for all space conditioning and service water heating systems shall be insulated in accordance with TABLE 120.3 -A.

P) Service water heating systems and equipment shall meet the applicable requirements of the Appliance Efficiency Regulations as required by Sec. 110.1.

Sec. 110.3 (b)

Q) Service hot water systems with circulating pumps or with electrical heat trace systems shall be capable of automatically turning off the system.

Sec. 110.3 (c) 2

R) Instantaneous water heaters with an input rating greater than 6.8 kBTU/hr. (2 kW) shall have isolation valves on both the cold water supply and the hot water pipe leaving the water heater. Hose bibs or other fittings shall be installed on each valve for flushing the water heater when the valves are closed. Provide detail.

Section 110.3 (c) 7

12. **Building Compliance**: The following items represent additional information required on the plans, or comment(s) regarding the energy calculations.

A) Setback thermostats are required for all central heating and cooling systems. A non-setback thermostat may be used when a heating system is non-central.

B) The wrong climate zone was used for this project. Find the correct climate zone here: http://www.energy.ca.gov/maps/renewable/BuildingClimateZonesByZIPCode.pdf. Provide revised calculations.

C) For prescriptive approach, comply with Table 150.1-A and all requirements of climate zone _____. Additions must comply with the requirements of Section 150.1(c), except for the following:

i) For additions that are greater than 700 square feet:

a) Extensions of existing wood-framed walls retaining the dimensions of those walls shall be provided with R-15 insulation for 2x4 framing and R-19 for 2x6 framing.

b) The maximum allowed fenestration area shall be the greater of 175 square feet or 20 percent of the conditioned floor area of the addition.

c) The maximum allowed west-facing fenestration area shall be the greater of 70 square feet or 5 percent of the conditioned floor area of the addition.

ii) For additions that are 700 square feet or less:

a) Extensions of existing wood-framed walls retaining the dimensions of those walls shall be provided with R-15 insulation for 2x4 framing and R-19 for 2x6 framing.

b) The maximum allowed west-facing fenestration area shall not be greater than 60 square feet, AND:

1. For additions that are 400 square feet or less, the maximum allowed fenestration area is the greater of 75 square feet or 30 percent of the conditioned floor area of the addition, OR

2. For additions that are 700 square feet or less but greater than 400 square feet, the maximum allowed fenestration area is the greater of 120 square feet or 25 percent of the conditioned floor area of the addition.

iii) Additions more than 1,000 square feet shall meet the ASHRAE Standard 62.2 Section 4 requirement to provide whole-building ventilation airflow.

a) The whole-building ventilation airflow rate shall be based on the conditioned floor area of the entire dwelling unit comprised of the existing conditioned floor area plus the additional conditioned floor area.

D) Provide a section drawing indicating the proper installation of the roof/ceiling insulation for the High Performance Ventilated Attic (HPVA) Option used.

E) Indicate on the architectural plans the mandatory insulation values, Prescriptive Insulation values, or values modeled in Performance method:

	FRAME TYPE (check off one)			CAVITY INSULATION	CONTINUOUS INSULATION
	WOOD	METAL	CONCRETE		
CEILING/ROOF				R-	R-
EXTERIOR WALLS				R-	R-
DEMISING WALLS				R-	R-
FLOOR (OVER UNCOND SPACE)				R-	R-

Construction assembly (wall, roof, ceiling, and floor) U-factors shall be selected from the 2016 Joint Appendix JA4. Document the applicable Appendix JA4 reference on the energy compliance forms and provide the actual construction assembly details on the architectural drawings consistent with the referenced details.

E) If Quality Insulation Installation (QII) is applied, compliance credit can only be taken for the whole building – roof/ceilings, walls, and floors, and requires field verification by a HERS rater.

F) Verify the following glazing areas and orientations used in the calculations with glazing areas shown on plans. The total fenestration area in the calculations is to match the total fenestration area shown on the plans.

(NEW) N/NE_____ E/SE_____ S/SW_____ W/NW_____ SKY_____

(EXISTING) N/NE_____ E/SE_____ S/SW_____ W/NW_____ SKY_____

G) Indicate the following glazing information on plans:

i) Provide complete window and door dimensions/schedule on plans.

ii) Indicate on drawings all glazing to be DOUBLE GLAZED to match the calculations.

iii) Indicate on drawings all glazing to have NON-METAL FRAMES to match calculations.

iv) Provide a note on the plans indicating glazing areas shall have a U-factor of _____ and a SHGC of _____ to match the values used in the calculations. (NFRC Certified)

v) Specify on floor plans which glazing areas will have exterior shading device(s) to agree with SHGC in the calculations.

H) Special Features:

i) Indicate on the plans the installation of a radiant roof barrier with an Emittance of 0.05 or less as modeled in the calculations. Provide a section drawing indicating the proper installation of the radiant roof barrier.

ii) Indicate on the plans the installation of a cool roof that has been certified by the CRRC and meets the applicable values for both Thermal Emittance and Aged Solar Reflectance:

a) Steep-sloped roofs (Climate Zone 14) – Minimum Thermal Emittance of 0.75 and minimum Aged Solar Reflectance of 0.20, or a minimum SRI of 16.

I) Provide a finish schedule on the plans to verify the thermal mass areas used in the calculations.

J) The furnace (and/or A/C if provided) capacity in BTU/H, the manufacturer's name, model number, and the AFUE (and/or SEER) shall be shown on the plans to match calculations and in compliance with Sections 110.2 and 110.5**. Location of equipment must also be shown** on the plans.

K) Provide heating _____ and cooling _____ load calculations to justify equipment chosen.

L) Specify high efficiency heating/cooling equipment in the plans as modeled in calculations.

M) Water Heater:

i) Manufacturer's name, model number, and size shall be shown on the plans. Water heater(s) location shall also be indicated on the plans.

ii) Provide manufacturer's data sheets to justify the Energy Factor (E.F.) or Recovery Efficiency (R.E) and Standby Loss (SB.L.) for large storage gas water heater(s) specified in calculations.
E.F._____ R.E. _____ SB.L. _____

N) Provide CF-1R-STH form to justify the percent of solar energy contribution from solar water heating.

O) For additions, specify existing equipment that will be utilized, and such equipment shall be modeled in the calculations.

Q) To obtain zonal control, the total non-closable opening area between adjacent thermal zones (i.e. halls, stairwells, or other openings) shall be less than or equal to 40 sf.

R) Submit a complete computer run for all four orientations to allow for a standardized plan approval for each model.

S) Weight averaging of overhangs is not allowed. Model each window and corresponding overhang separate or use the worst case condition (shortest overhang length with the largest overhang height) for compliance.

T) If no cooling is being installed, the calculations must show 13.0 SEER with duct R-value the same as heating. If no ducts are to be installed, the duct insulation shall be modeled per package A (Section 150.1(c) 7.

U) Provide hot water recirculation system information on the plans. Information should include manufacturer's name/model numbers for the pump and timer and temperature control device and piping layout. Indicate insulation of hot water piping compliant with Table 120.3-A

V) Indicate insulation of all hot water piping ¾" or larger

W) Show compliance with Section 150.0 (o) Ventilation for Indoor Air Quality and meet all the requirements of ASHRAE Standard 62.2. Demonstrate compliance through engineered ventilation calculations or comply with the following prescriptive requirements:

1. Whole House Ventilation
   a. Q_R = 0.01*Floor Area+ 7.5(Bed Rooms+1)
   b. 1 sone max
   c. Duct size and length

2. Local Ventilation
   a. Bathroom Fans = 50 CFM switched or 20 CFM continuous
   b. Kitchen hoods = 100CFM (Non-recirculating)
   c. 3 sones max
   d. Duct size and length

X) Provide a Whole House Fan (WHF) that is listed in the Appliance Efficiency Directory and complies with the following:

1. Have installed one or more WHFs whose total Air Flow CFM as listed in the CEC Directory is at least 1.5 CFM/ft^2 of conditioned floor area; and
2. Have at least 1 square foot of attic vent free area for each 750 CFM of rated whole house fan Air Flow CFM; and
3. Provide homeowners who have WHFs with a one page "How to operate your whole house fan" informational sheet

Y) Provide CF1R – SRA form to justify the minimum solar ready/zone area required of the building. Denote these areas on the building plans.

Z) HERS Certification is required for verification of the existing conditions modeled on the CF1R document.

AA) Verify total conditioned floor area and additional conditioned floor area with plans

12. **Additional Corrections:**

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