

**GENERAL NOTES**

The contractor shall furnish all material, labor, scaffolding, utensils, and apparatus required for the work shown on these plans and pay for the full freightage cartage, taxes, and handling of material associated with the work.

All work shall comply and conform to all codes and regulations, including the 2019 CBC, CMC, CPC, CEC, CRC, & CAL Green, & 2019 California Energy requirements, and all local, state and federal requirements, codes and regulations, unless otherwise noted.

Contractor shall be solely responsible for job and worksite safety.

All work is to be performed in accordance with these plans and specifications and to the satisfaction of the owner.

Bidders shall visit the site and familiarize themselves with all existing conditions, and be prepared to carry out the work within the existing limitations.

Verify all dimensions in the field, written dimensions have precedence over scaled dimensions. Any discrepancies between drawings and/or specifications and actual conditions shall be brought to the attention of the architect for immediate clarification prior to proceeding with the work.

Change orders shall be in writing. Substitutions will be considered, but do not substitute materials, equipment, or methods without specific advanced approval by the architect.

Contractor shall notify the architect of all modifications to drawing by the building department and of all changes requested by the inspector.

Follow manufacturer's instructions carefully. Manufacturer's operating instructions and guarantees shall be given to the owner at the end of the job.

All features of construction not fully shown shall be of the same type and character as that shown for similar conditions. For special conditions or discrepancies, notify the architect before bidding or proceeding with work.

All material shall be of the best of their respective kinds, new, and subject to the approval of the owner. All work is to be performed in the best manner by skilled workmen.

It is the responsibility of the contractor & sub-contractors to notify the architect and/or engineer of any discrepancies, inconsistencies, errors or omissions in the plans & specifications which might affect the work, prior to proceeding with the work.

**TREES TO BE REMOVED**

NUMBER	SPECIES	SIZE	CONDITION
2	REDWOOD	32"	FAIR



**LIST OF CONSULTANTS**

**ARCHITECT**  
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**CONSTRUCTION-PHASE STORM-WATER MANAGEMENT**

Contractor to install straw wattles around work area (as shown on site plan)

Contractor shall be responsible that no mud or muddy water leaves the property.

Sweep or scrape up soils tracked onto the road at the end of each day, do not hose into street, gutter, or storm drain.

The site shall be monitored by the contractor/owner after rain event to verify erosion control measure are functioning.

**GRADING & DRAINAGE NOTES**

No grading required except for foundation excavations & finish shaping for proper drainage.

All existing drainage pattern to remain.

Shape final grades to slope away from structure (5% slope for 10', pavements to slope 2% away from structure).

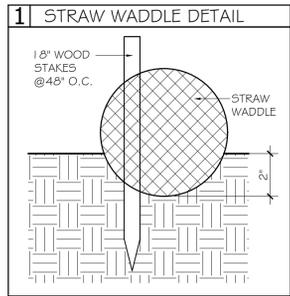
Swales to discharge into landscaped areas and away from adjacent buildings / properties.

Downspouts to discharge across splash-blocks & into landscaped areas away from structures.

Water shall not be allowed to pond adjacent to foundations

**DRAWING INDEX**

SHEET	DESCRIPTION
SHEET A1	SITE PLAN, PROJECT DATA, LIST OF CONSULTANT, VICINITY MAP, GENERAL & SITE NOTES
SHEET A2	FLOOR PLAN, ROOF PLAN, PLAN NOTES, CAL GREEN BUILDING MANDATORY NOTES
SHEET A3	ELEVATIONS, SECTION, 2019 LOW RISE RESIDENTIAL MANDATORY NOTES
SHEET A4	T-24 CERTIFICATE
SHEET S1	GENERAL NOTES & SHEAR WALL SCHEDULE
SHEET S2	A.D.U. FOUNDATION & ROOF FRAMING PLAN
SHEET S3	CABANA FOUNDATION & ROOF FRAMING PLAN
SHEET S4	FOUNDATION & FRAMING DETAILS
SHEET S5	TYPICAL FRAMING DETAILS & SCHEDULES
SHEET WSW1	STRONG WALL ANCHORAGE DETAILS
SHEET WSW2	STRONG WALL FRAMING DETAILS



**PROJECT DATA**

**PROJECT DESCRIPTION:**  
PROPOSED [N] POOL HOUSE  
REMOVE ONE TREE

**PROJECT ADDRESS:**  
47 ALPINE AVE, LOS GATOS, CA 95030

**PROJECT OWNERS:** STEPHEN ROTHROCK & THERESA KEATING

**APN:** 529-38-031

**ZONING:** R-1-20

**AVERAGE SLOPE:** 26.6% (PER SURVEYOR'S CALCULATION)

**GROSS LOT SIZE:** 32,928 SQ.FT. ≈ ± 0.76 ACRES (DATA PER SURVEYOR)

**SLOPE REDUCTION:** 0.3 + (6.6) (0.03) = 0.498

**NET LOT SIZE FOR FAR CALCULATION:** (1-0.498) x 32,928 = 16,529 ±

**TYPE OF CONSTRUCTION:** V-B

**BUILDING OCCUPANCY:** R-3

**MAX. ALLOWED FLOOR AREA:** 0.35 - [(16,529 - 5) + 25] x 0.2] = 0.257768  
0.257768 x 16,529 = 4,261 SQ. FT.

**MAX. ALLOWED FLOOR AREA FOR ACCESSORY DWELLING UNIT:** 1,200 SQ.FT.

**MAX. ALLOWABLE ACCESSORY BUILDING AREA:** 19,425 SQ.FT. BUILDING ENVELOPE x 0.15 = 2914 SQ.FT.

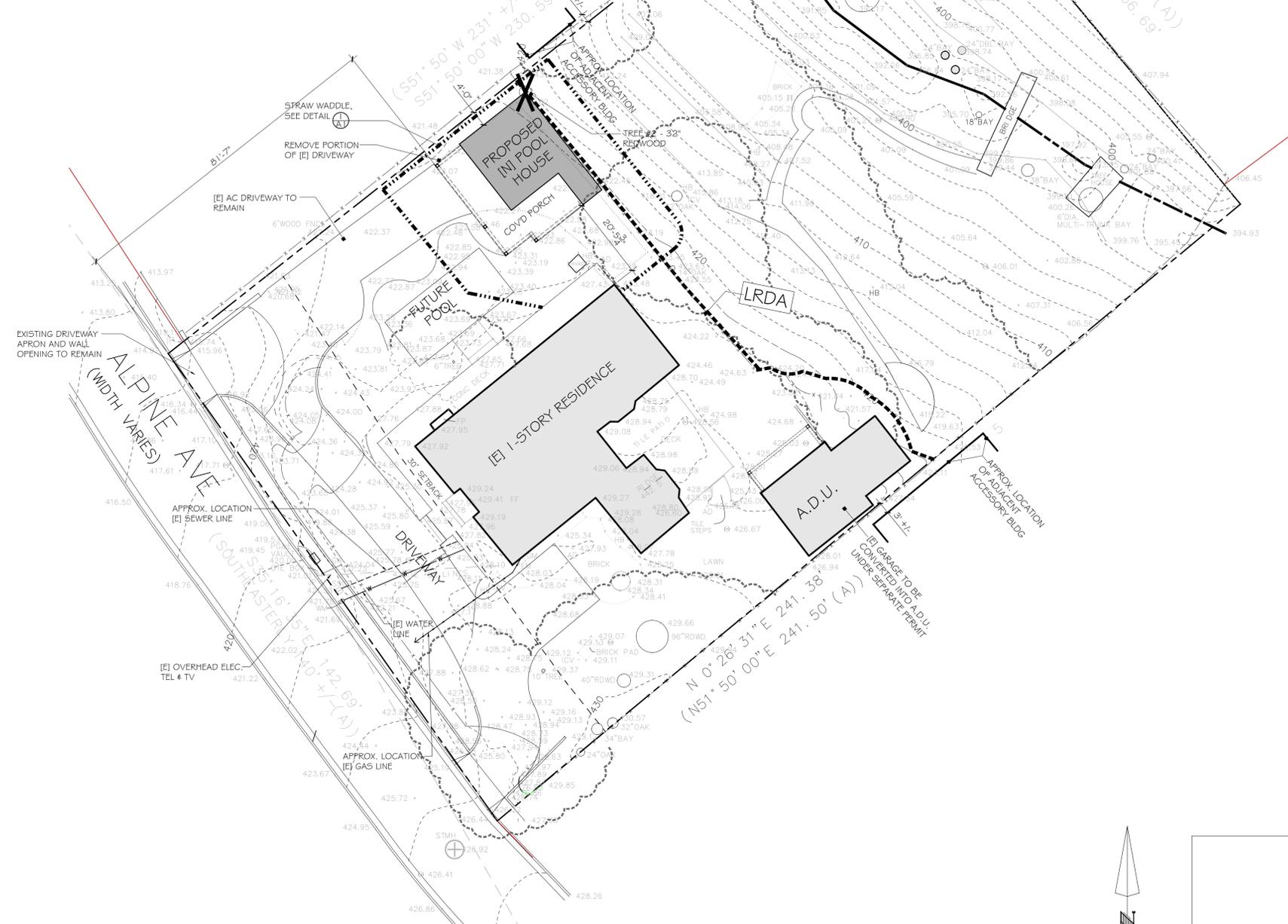
**FLOOR AREA:**  
MAIN RESIDENCE 2,420  
[N] PROPOSED POOL HOUSE 501  
TOTAL LIVING AREA 2,921

**ADU AREA 709  
ADU PORCH 114**

**[E] RESIDENCE COVID PORCH 35  
[N] POOL HOUSE COVID PORCH 378  
TOTAL COVERED PORCHES 413**

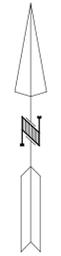
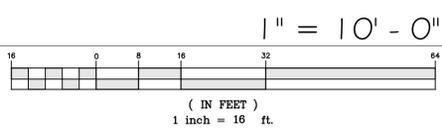
**MAX. ALLOWED LOT COVERAGE:** 40% x 16,529 = 6,611.6 SQ.FT.

**TOTAL PROPOSED STRUCTURAL COVERAGE:** 2,921 + 413 = 4,157 ≈ 12.6%



**SITE PLAN**

PLOTTED ON SURVEY BY ROBERT J. CRAIG, JOB # C-18080, DATED 8-25-2018, BOB CRAIG PHONE # (408) 884-3791



DRAWINGS PREPARED BY  
**CHRIS SPAULDING**  
ARCHITECT

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BERKELEY CALIFORNIA 94710  
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LICENSED ARCHITECT  
No. C-25247  
1-21  
STATE OF CALIFORNIA

**REVISIONS**

NO.	DESCRIPTION	DATE	BY

**PRELIMINARY SET**

**DESIGN REVIEW SET**

**PLAN CHECK SET**

**PERMIT SET**

**CONSTRUCTION SET**

PROPOSED NEW POOL HOUSE  
**ROTHROCK RESIDENCE**  
47 ALPINE AVE  
LOS GATOS CALIFORNIA

DATE: 6-11-20  
SCALE: AS NOTED  
DRAWN: CS/DB  
JOB: ROTHROCK POOL HOUSE  
SHEET

**A1**  
OF 11 SHEET

CAL GREEN NOTES

**STORM WATER DRAINAGE AND RETENTION DURING CONSTRUCTION**

- Refer to Construction-Phase Stormwater Management notes on Sheet A1

**GRADING AND PAVING - DRAINAGE CONTROL**

- Refer to Grading and Drainage Notes on Sheet A1

**ELECTRIC VEHICLE (EV) CHARGING FOR NEW CONSTRUCTION**

- Install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, accessible or concealed areas and spans. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE".

**WATER EFFICIENCY AND CONSERVATION**

**Indoor Water Use**  
 - Max fixture flow rates:  
 - Toilets: 1.28 gallons per flush  
 - Single shower head: 1.8 gpm at 80 psi (note: when a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gpm at 80 psi, or the shower shall be designed to only allow one shower outlet to be in operation at a time).  
 - Lavatory faucets: 1.2 gpm at 60 psi  
 - Kitchen faucets: 1.8 gpm at 60 psi  
 - All plumbing fixtures and fittings shall meet the standards referenced in Table 1701.1 of the 2016 California Plumbing Code.

**Outdoor Water Use**  
 - Irrigation system controllers for landscaping provided by the builder and installed at the time of final inspection shall comply with the following:  
 A. Local water efficient landscape ordinance or the current CA Dept. of Water Resources Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent, OR  
 B. Projects with aggregate landscape area less than 2,500 square feet may comply with the MWELO's Appendix D Prescriptive Compliance Option. CGSBC Section 4.304

**MATERIAL CONSERVATION AND RESOURCE EFFICIENCY**

Enhanced Durability and Reduced Maintenance  
 - Annual spaces around pipes, electric cables, conduits or other openings in slope/bottom plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or a similar method acceptable to the enforcing agency.

**Construction Waste Reduction, Disposal and Recycling**  
 - Contractor to provide a Construction Waste Management Plan (CWMP) to the enforcing agency for approval prior to permit issuance. 65 % minimum of the on-hazardous construction and demolition waste shall be recycled or salvaged (or meet more stringent local requirements). The plan shall include the following:  
 1. Identify the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project or salvage for future use or sale.  
 2. Specify if construction and demolition waste materials will be sorted on-site (source-separated) or bulk-mixed (single stream).  
 3. Identify diversion facilities where the waste material will be taken.  
 4. Identify construction methods employed to reduce the amount of construction and demolition waste generated.  
 5. Specify that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both. Documentation shall be provided, prior to the first inspection, confirming compliance to the waste management plan provided to the enforcing agency.

**Life Cycle Assessment**  
 At final inspection, a manual, compact disc, web-based reference, or other acceptable media including items 1-10 shall be placed in the building.  
 1. Directions to the owner or occupant that the manual shall remain in the building throughout the life cycle of the structure.  
 2. Operation and maintenance instructions for the following:  
 I. Equipment and appliances, including HVAC systems water-saving devices and water heaters.  
 II. Roof and yard drainage, including gutters and downspouts.  
 III. Space conditioning systems, including condensers and air filters  
 IV. Landscape irrigation systems  
 V. Water reuse systems  
 3. Information from local utility, water and waste recovery providers on methods to further reduce resource consumption, including recycle programs and locations.  
 4. Educational material on the positive impacts of an interior relative humidity between 30-60 percent and what methods an occupant may use to maintain the relative humidity in that range.  
 5. Information about water-conserving landscape and irrigation design and controllers which conserve water.  
 6. Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5' away from the foundations  
 7. Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around the building, etc.  
 8. Information about state solar energy and incentive programs available.  
 9. A copy of all special inspection verifications required by the enforcing agency or this code.

**ENVIRONMENTAL QUALITY**

**Pollution Control**  
 - At the Time of rough installation, during storage on the construction site and until final startup of the heating, cooling and ventilation equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the enforcing agency.  
**Fireplaces**  
 - Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA Phase II emission limits where applicable. Woodstoves, pellet stoves and fireplaces shall also comply with applicable local ordinances. Section 4.503.  
**Finish Material Pollution Control**  
 - Adhesives, sealants, caulks, paints, coatings and aerosol paints shall meet the VOC limits specified in the tables at left, unless more stringent local or regional air pollution or air quality or management district rules apply.  
 - All adhesives, sealants, caulks, paints, coatings and aerosol paint containers must remain on the site for field verification by the building inspector.  
 - Prior to final inspection, a letter signed by the general contractor or the owner/builder (for any owner/builder projects) must be provided to the enforcing agency certifying that all adhesives, sealants, caulks, paints, coatings, aerosol paints, carpet systems (including carpeting, cushion and adhesives), resilient flooring systems and composite wood products installed on this project are within the emission limits specified in CGSBC Section 4.504.

**Carpet Systems**  
 - Carpet system installed in the building interior will meet the testing and product requirements found in the 2016 California Green Building Code  
**Resilient Flooring Systems**  
 - Where resilient flooring is installed, at least 90% of the floor area receiving resilient flooring will comply with the California Green Building Code requirements.

**Composite Wood Products**  
 - Hardwood plywood, particleboard, and medium density fiberboard composite wood products used on the interior and exterior of the building will comply with the low formaldehyde emission standards

**Interior Moisture Control**  
 - Concrete slab foundations to have vapor barrier over 4" minimum clean aggregate base.  
 - Prior to encasing the wall & floor framing, confirmation must be provided to the building inspector showing that the framing members do not exceed 19% moisture content.  
**Indoor Air Quality & Exhaust**  
 - Bathroom exhaust fans must be Energy Star compliant, must be ducted to terminate outside the building, and must be controlled by a humidistat which shall be readily accessible.

**Environmental Comfort**  
 - Heating & Air conditioning systems shall be designed in accordance with the requirements of CGSBC section 4.507.2  
**Installer Special Inspector Qualification**  
 - HVAC system installer will be trained and certified in the proper installation of HVAC systems and equipment by a recognized training/certified program

**Verification**  
 - Upon request, verification of compliance with this code may include construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the Building Division that will show substantial conformance with the 2016 Code requirements.

**TABLE 4.504.1**

**ADHESIVE VOC LIMITS<sup>1</sup>**  
**Less Water and Less Exempt Compounds in Grams per Liter**

ARCHITECTURAL APPLICATIONS	VOC LIMIT
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Drywall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single-ply roof membrane adhesives	250
Other adhesives not specifically listed	50

**SPECIALTY APPLICATIONS**

PVC welding	510
CPVC welding	490
ABS welding	325
Plastic cement welding	250
Adhesive primer for plastic	550
Contact adhesive	80
Special purpose contact adhesive	250
Structural wood member adhesive	140
Top and trim adhesive	250

**SUBSTRATE SPECIFIC APPLICATIONS**

Metal to metal	30
Plastic foams	50
Porous material (except wood)	50
Wood	30
Fiberglass	80

1. If an adhesive is used to bond dissimilar substrates together, the adhesive with the highest VOC content shall be allowed.  
 2. For additional information regarding methods to measure the VOC content specified in this table, see South Coast Air Quality Management District Rule 1168.

**TABLE 4.504.3**

**VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS<sup>1</sup>**  
**Grams of VOC per Liter of Coating, Less Water and Less Exempt Compounds**

COATING CATEGORY	VOC LIMIT
Flat coatings	50
Nonflat coatings	100
Nonflat-high gloss coatings	150

**SPECIALTY COATINGS**

Aluminum roof coatings	400
Basement specialty coatings	400
Bituminous roof coatings	50
Bituminous roof primers	350
Board breakers	350
Concrete curing compounds	350
Concrete/masonry sealers	100
Driveway sealers	50
Dry fog coatings	150
Flank finishing coatings	350
Fire resistive coatings	350
Floor coatings	100
Form-release compounds	250
Graphic arts coatings (sign paints)	500
High temperature coatings	420
Industrial maintenance coatings	250
Low solids coatings <sup>2</sup>	120
Magnesite cement coatings	450
Mastic texture coatings	100
Metallic pigmented coatings	500
Multicolor coatings	250
Pretreatment wash primers	420
Primers, sealers, and undercoaters	100
Reactive penetrating sealers	350
Recycled coatings	250
Roof coatings	50
Rust preventative coatings	250
Shellacs	730
Clear	550
Opaque	550
Specialty primers, sealers and undercoaters	100
Stains	250
Stone consolidants	450
Swimming pool coatings	340
Traffic marking coatings	100
Tube and tile finish coatings	420
Waterproofing membranes	250
Wood coatings	275
Wood preservatives	350
Zinc-rich primers	340

1. Grams of VOC per liter of coating, including water and including exempt compounds.  
 2. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.  
 3. Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008. More information is available from the Air Resources Board.

**TABLE 4.504.2**

**SEALANT VOC LIMIT**  
**Less Water and Less Exempt Compounds in Grams per Liter**

SEALANTS	VOC LIMIT
Architectural	250
Marine deck	760
Nonmembrane roof	300
Roadway	250
Single-ply roof membrane	450
Other	420

**SEALANT PRIMERS**

Architectural	100
Nonporous	250
Porous	775
Modified bituminous	500
Marine deck	760
Other	750

**TABLE 4.504.5**

**FORMALDEHYDE LIMITS<sup>1</sup>**  
**Maximum Formaldehyde Emissions in Parts per Million**

PRODUCT	CURRENT LIMIT
Hardwood plywood veneer core	0.05
Hardwood plywood composite core	0.05
Particleboard	0.09
Medium density fiberboard	0.11
Thin medium density fiberboard <sup>2</sup>	0.13

1. Values in this table are derived from those specified by the California Air Resources Board, "Air Toxics Control Measure for Composite Wood as tested in accordance with ASTM E1333. For additional information, see California Code of Regulations, Title 17, Sections 93120 through 93120.12.  
 2. Thin medium density fiberboard has a maximum thickness of 3/16 inch (8 mm).

**ELECTRICAL / MECHANICAL LEGEND**

⊖	FAN
□	RECESSED FIXTURE
⊕	WALL MOUNTED FIXTURE
⊞	SWITCH
⊞	SWITCH W/ VACANCY SENSOR*
⊞	SWITCH W/ DIMMER
○	OUTLET
⊕	220V OUTLET
→	GAS CONNECTION
→	CABLE TV JACK
→	HOSE BIB
⊕	ETHERNET PORT
⊕	SMOKE DETECTOR
⊕	CARBON MONOXIDE ALARM
→	SHOWER HEAD
WP	WATER PROTECTION
GF	GROUND FAULT INTERRUPTER
PC	PHOTOCELL
MS	MOTION SENSOR
⊕	CEILING FAN

\* NOTE: ALL LIGHT FIXTURES SHALL BE HIGH EFFICACY LED

\* MANUAL-ON VACANCY SENSOR THAT TURNS FIXTURE OFF AUTOMATICALLY WHEN NO OCCUPANTS ARE PRESENT & WHICH DOES NOT HAVE AN OVERRIDE ALLOWING THE FIXTURE TO BE ALWAYS ON

**ENERGY EFFICIENCY NOTES**

- Envelope:
  - Roof: R-38 spray foam insulation
  - Wall: 2x6 = R-21
  - Floor: N/A
  - Slab: unheated slab-on-grade
  - Windows/Glass Doors: NFRC rated 0.30 U-Factor & 0.23 SHGC
  - Door: wood
- Heating & Cooling:
  - 1.5-ton Ductless mini split w/ 8.2 HSPFF, 1.4 SEER min., 1.2.2 EER. R-8 ducts insulation in unconditioned space or R-6 in conditioned space.
- Water Heating:
  - 50 Gallon electric heat pump unit
- Kitchen Hood:
  - Shall be HVI certified w/ one speed rated at 100 CFM min, 3 sones max.
- PV requirements:
  - 1.28 kW

HERS testing to be completed during construction

- Wall mounted thermostats in zones greater than 0150 sq.ft., Ductless indoor units located entirely in conditioned space.
- Ventfed EER.
- Airflow in habitable rooms.
- Ventfed heat pump heating capacity.

**MECHANICAL VENTILATION NOTES**

501 SQ.FT./100 + [7% x (0 + 1)] = 13 MIN. CFM REQUIRED.

VENTILATION SHALL BE PROVIDED BY EXHAUST FAN IN BATH ROOM AND SHALL RUN CONTINUOUSLY (1 SONE MAX).

FAN SHALL BE SIZED TO PROVIDE WHOLE BUILDING VENTILATION. VENTILATION AIR SHALL COME DIRECTLY FROM THE OUTDOORS.

PROVIDE A LABEL AT A READILY ACCESSIBLE CONTROL SWITCH FOR THE INDOOR AIR QUALITY WHOLE HOUSE FAN WHICH READS "FAN TO BE LEFT ON FOR INDOOR AIR QUALITY".

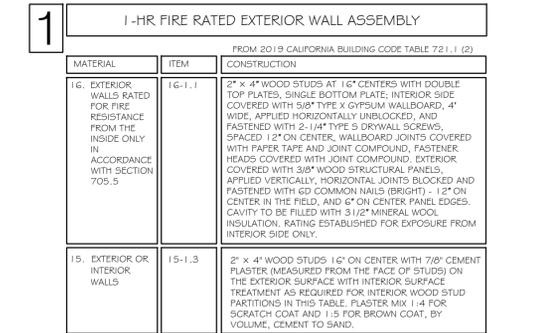
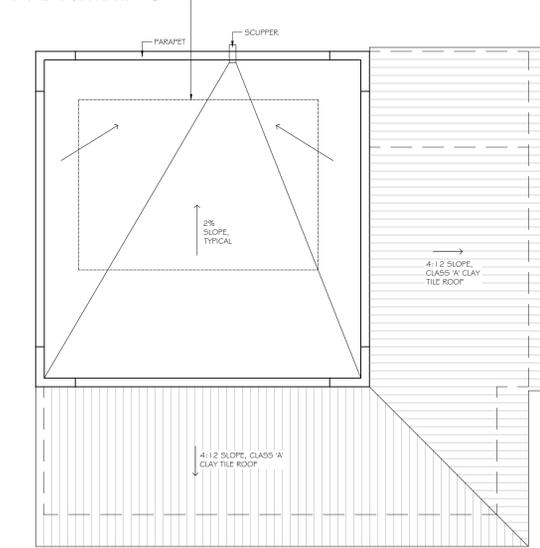


PHOTO VOLTIC SOLAR ARRAY - PROVIDE SOLAR SYSTEM PLANS TO TOWN FOR APPROVAL PRIOR TO INSTALLATION (DEFERRED SUBMITTAL)



ROOF PLAN 3/16" = 1'-0"

**PLAN NOTES**

**GENERAL NOTES**

- All showers to have a minimum clear door opening width of 22".
- All showers to have tile wall protection to a minimum of 64" above the floor-mount tile on full mortar bed or 1/2" cement backer board.
- Wooden backing (2x6 min) shall be provided in all bathroom walls at toilet, shower, and bathtub-located at 34" from the floor to the center of the backing, suitable for the addition of grab bars.

**WATER HEATER NOTES**

- A 120V electrical receptacle shall be within 3' of the water heater and accessible to the water heater with no obstructions.
- A condensate drain shall be installed that is no more than 2" higher than the base of the installed water heater, and allows natural draining without pump assistance.

**PLUMBING CLEANOUT NOTES**

- Each horizontal drainage pipe shall be provided with a cleanout at its upper terminal (except horizontal drain lines less than 5' not serving sinks or urinal). An additional cleanout shall be added for each aggregate change in direction exceeding 135 degrees.
- Cleanouts shall be within 20' of crawl access or extended to exterior.

**SHOWER VALVES**

- Showers, tubs, whirlpool tubs, and tub-shower combinations shall be provided with individual pressure balancing or thermostatic mixing control valves.
- The maximum mixed water setting shall be 120° Fahrenheit.
- Water heater thermostat shall not be considered as suitable for meeting this requirement.

**ELECTRICAL NOTES**

- Light fixtures in tub and shower enclosures shall be listed (and labeled) as "suitable for damp locations".
- All branch circuits that supply outlets installed in dwelling unit kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, or similar rooms or areas shall be protected by an arc-fault circuit interrupter.
- A dedicated 20-amp circuit is required to serve bathroom outlets. This circuit cannot supply any other receptacles, lights, fans, etc. (exception: where the circuit supplies a single bathroom, outlets for other equipment within the same bathroom shall be permitted to be supplied).
- All 125-volt, 15- and 20- ampere receptacle outlets shall be listed as Tamper-resistant receptacles.
- Provide the following separate circuits:
  - 20 amps for the bathroom
- Provide GFCI protection at the following locations:
  - within 6' of the edge of a shower or tub
  - bathrooms

**MECHANICAL AND PLUMBING NOTES**

- Installation instructions for all listed equipment shall be provided to the field inspector at time of inspection.
- All exterior hose bibs shall have non-removable backflow prevention devices.
- Water heater shall have a pressure-relief valve with drain to exterior.
- All building water supply systems in which quick-acting valves are installed shall be provided with devices to absorb high pressures resulting from the quick closing of these valves (e.g., clothes washers and dishwashers).
- Termination of all environmental air ducts shall be a minimum of 3 feet from any openings into the building (i.e., dryers, bath and utility fans, etc., must be 3 feet away from doors, windows, opening skylights or attic vents).
- All mechanical, plumbing, electrical, and similar penetrations of the floor or top-plates shall be caulked with a rated fire caulk with an ASTM E136 rating.
- Minimum recovery capacity of water heater equivalent to not less than the first hour rating of 80 gallons.
- Ventilation heating and air conditioning systems shall have MERV G filters or better.
- Local exhaust systems shall vented to the outdoors for bathrooms.
- Provide minimum 50 cfm intermittent airflow for Bathroom exhaust fans, OR provide minimum 20 cfm for continuously operating Bathroom exhaust fans.
- Water piping and cooling system line insulation thickness and conductivity Piping shall be insulated to the thickness as follows:
  - All domestic hot water system piping conditions listed below, whether buried or unburied, must be insulated and the insulation thickness shall be selected based on the conductivity range in Table 120.3-A and the insulation level shall be selected from the fluid Temperature range based on the thickness required in Table 120.3-A
  - The first 5' of hot and cold-water pipes from the storage tank.
  - All water piping of nominal 3/4" diameter or larger.
  - All piping associated with a domestic hot water recirculation system regardless of diameter
  - Piping from the heating source to a storage tank or between tanks
  - Piping buried below grade
- All exhaust fans shall be ENERGY STAR compliant and provided with humidity controls adjusting from 50% - 80%. All exhaust fans to have backdraft dampers.

**LIGHTING NOTES**

- All lighting shall be high efficacy per Table 150.0-A (pin-based CFL, pulse-start HPI, HPS; hardwired high frequency generator & induction lamp; outdoor LED; inseparable SSL; or JAB-compliant luminaires) controlled by dimmers or vacancy sensors, except in closets less than 70 sq. ft. and luminaires in hallway.
- In bathrooms, garages, laundry rooms, and utility rooms, at least one luminaire must be controlled by a vacancy sensor.
- Undercabinet lighting and exhaust fans must be switched separately from other lighting systems.
- Luminaires providing outdoor lighting and permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy luminaires per Table 150.0-A (not including lighting around swimming pools/water features or other Article 680 locations) and controlled by a manual ON and OFF switch that provides the automatic actions of:
  - Photocell and either a motion sensor or an automatic time switch control; or
  - Astronomical Time Clock control.
 Controls that override to ON shall not be allowed unless the override shall automatically returns to automatic control to its normal operation within 6 hours. An energy management control system that provides the specified lighting control functionality and complies with all the requirements applicable to the specified controls may be used to meet these requirements.

**NOTE: ALL OUTDOOR LIGHTING SHALL BE DOWNWARD DIRECTED & SHIELDED**

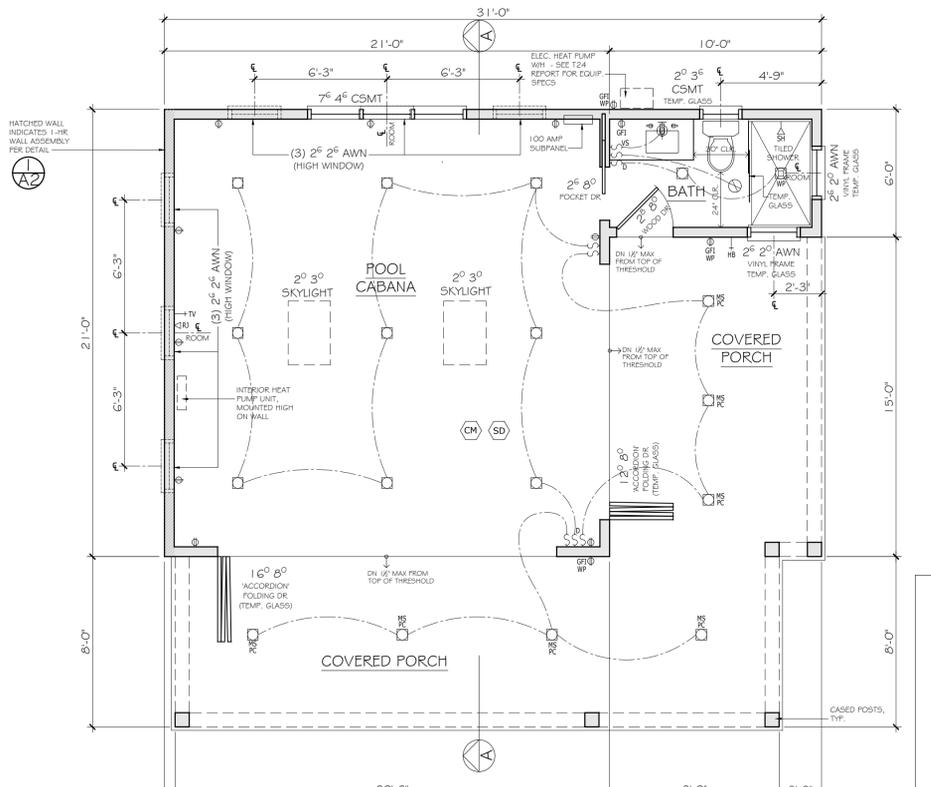
NOTE: ALL OUTDOOR LIGHTING SHALL BE DOWNWARD DIRECTED & SHIELDED

**SMOKE AND CARBON MONOXIDE ALARMS**

- A smoke detectors and carbon monoxide alarms shall be hard-wired with battery back-up and interconnected such that when one alarm sounds, all will sound.

**ATTIC ACCESS PANEL NOTES**

- Attic access panels shall have permanently attached insulation using adhesive or mechanical fasteners. The access shall be gasketed to prevent air leakage, typical.



FLOOR PLAN 1/4" = 1'-0"

DRAWINGS PREPARED BY

**CHRIS SPAULDING**  
 ARCHITECT

801 CAMELIA STREET SUITE E  
 BERKELEY CALIFORNIA 94710  
 (510) 527-5997 FAX (510) 527-5999



Handwritten signature of Chris Spaulding.

REVISIONS	BY

PRELIMINARY SET	
DESIGN REVIEW SET	
PLAN CHECK SET	
PERMIT SET	
CONSTRUCTION SET	

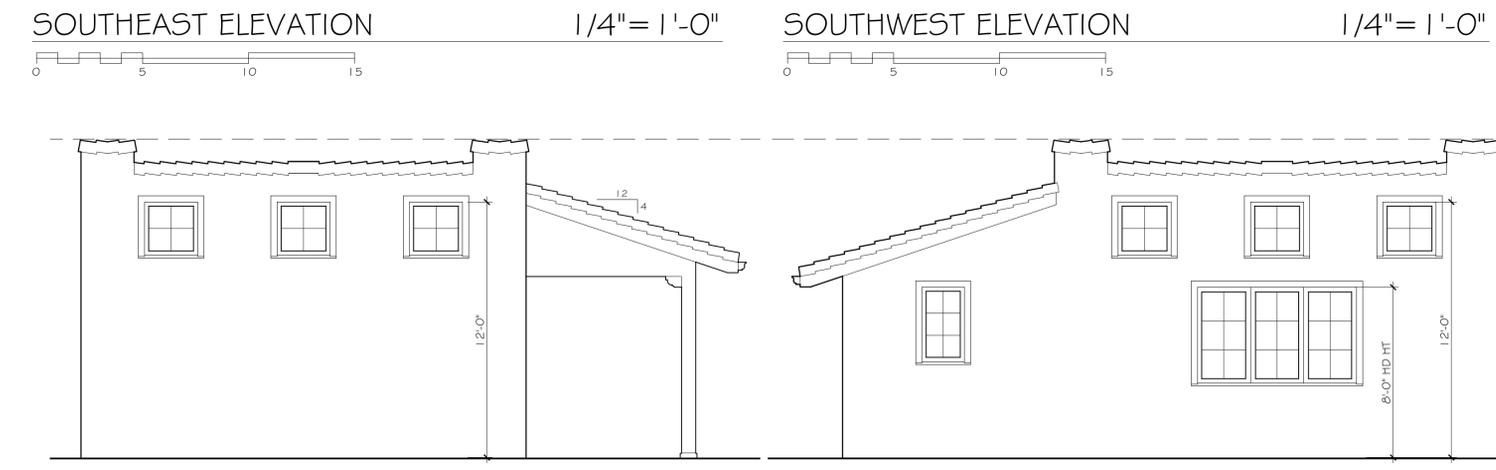
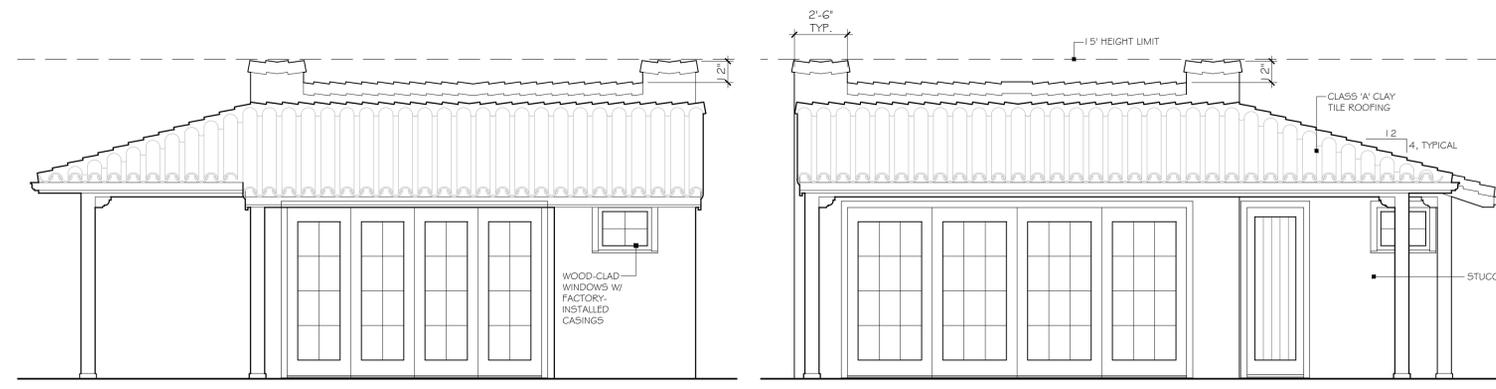
PROPOSED NEW POOL HOUSE  
**ROTHROCK RESIDENCE**  
 47 ALPINE AVE  
 LOS GATOS CALIFORNIA

DATE:	6-11-20
SCALE:	A5 NOTED
DRAWN:	CS/DB
JOB:	ROTHROCK POOL HOUSE
SHEET	

**A2**  
 OF 11 SHEET

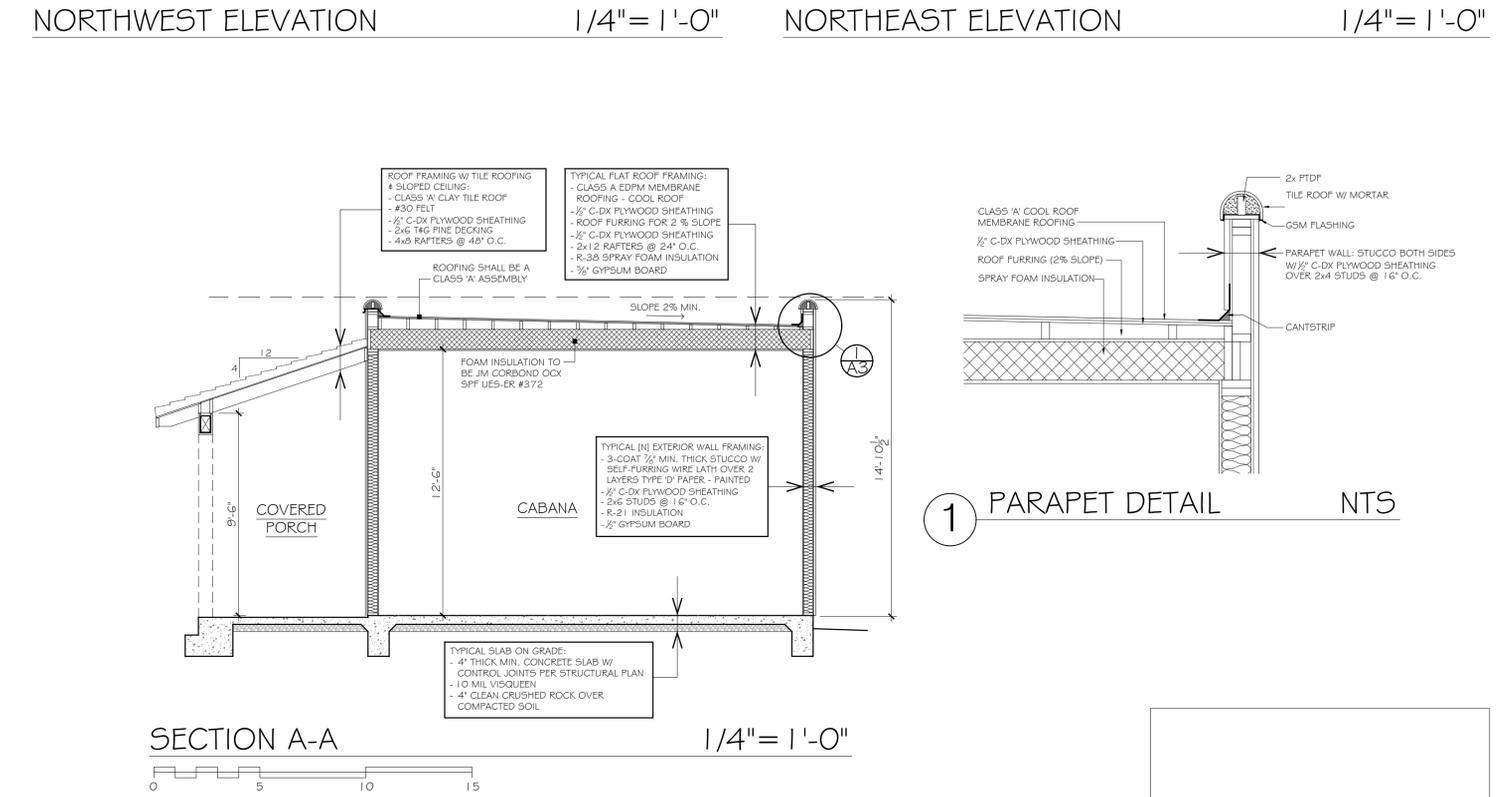
2019 Low-Rise Residential Mandatory Measures Summary	
<p><b>2019</b> Low-rise residential buildings subject to the Energy Standards must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. *Exemptions may apply.</p> <p><b>Program (2019)13</b></p>	
<p><b>Building Envelope Measures:</b></p>	
§ 110.0a(1)	<b>Air Leakage.</b> Manufactured fenestration, exterior doors, and exterior pool doors must limit air leakage to 0.3 cfm per square foot or less when tested per NFRC-69, ASTM E913, or ASTM E2878-19a.
§ 110.0a(2)	<b>Labeling.</b> Fenestration products and exterior doors must have a label meeting the requirements of Section 110.11(a).
§ 110.0a(3)	<b>Field Fabricated Exterior Doors and Fenestration Products.</b> Field fabricated exterior doors and fenestration products must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.5A, 110.5B, or 110.5C for exterior doors. They must be labeled for weather stripping.
§ 110.7	<b>Air Leakage.</b> All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, sealed, or weather stripped.
§ 110.0a(4)	<b>Insulation Certification by Manufacturers.</b> Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHSGS).
§ 110.0a(5)	<b>Insulation Requirements for Heated Slab Floors.</b> Heated slab floors must be insulated per the requirements of Section 110.0(b).
§ 110.0a(6)	<b>Roofing Products Solar Reflectance and Thermal Emittance.</b> The thermal emittance and solar reflectance values of the roofing materials must meet the requirements of § 110.0a(1) and be labeled per § 110.11(a) when the installation of a roof is specified on the CTR.
§ 110.0a(7)	<b>Radiant Barrier.</b> When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
§ 110.0a(8)	<b>Ceiling and Rafter Insulation.</b> Minimum R-22 insulation in wood-frame ceilings, or the weighted average U-factor must not exceed 0.043. Minimum R-19 weighted average U-factor of 0.041 or less in a rafter roof elevation. Also access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to steps to insulation either above or below the roof deck or on top of a draftstopping.
§ 150.0a(1)	<b>Loose Fill Insulation.</b> Loose fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0a(2)	<b>Wall Insulation.</b> Minimum R-13 insulation in 2x4 inch wood framing with a U-factor of 0.102 or less, or R-20 in 2x6 inch wood framing or have a U-factor of 0.077 or less, (R-19 in 2x6 U-factor of 0.078 or less). Open joist framed assemblies must have an overall assembly U-factor not exceeding 0.102, equivalent to an installed value of R-13 in a wood framed assembly. Masonry walls must meet Table 150.1A or B.*
§ 150.0a(3)	<b>Raised Floor Insulation.</b> Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.*
§ 150.0a(4)	<b>Slab Edge Insulation.</b> Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facing to greater than 0.2%, have a water vapor permeance to greater than 20 perm per inch, be protected from physical damage and UV light degradation, and, when installed as part of a heated slab floor, meet the requirements of § 110.0a(8).
§ 150.0a(5)	<b>Vapor Retarder.</b> In climate zones 1 through 16, the earth floor (unvented/crawl space) must be covered with Class I or Class II vapor retarder. The retarder must also comply with certified ventilation credit space for building compliance with the exception to § 150.0a(4).
§ 150.0a(6)	<b>Vapor Retarder.</b> In climate zones 14 and 15, Class I or Class II vapor retarder must be installed in the conditioned space side of all insulation in all exterior walls, vertical walls, and unvented attics and crawl spaces with permeable insulation.
§ 150.0a(7)	<b>Fenestration Products.</b> Fenestration, including skylights, opening conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.35, or the weighted average U-factor of all fenestration must not exceed 0.34.*
<p><b>Fireplaces, Decorative Gas Appliances, and Gas Log Measures:</b></p>	
§ 110.0a(8)	<b>Pilot Light.</b> Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.
§ 150.0a(1)	<b>Closable Doors.</b> Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0a(2)	<b>Combustion Intake.</b> Masonry or factory-built fireplaces must have a combustion intake air intake, which is not less than square inches in area and is equipped with a readily accessible, operable, and locking damper or combustion air control device.*
§ 150.0a(3)	<b>Flue Damper.</b> Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.*
<p><b>Space Conditioning, Water Heating and Plumbing System Measures:</b></p>	
§ 110.0a(9) § 110.3	<b>Certification.</b> Heating, ventilation and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified to the California Energy Commission.
§ 110.0a(10)	<b>HVAC Efficiency.</b> Equipment must meet the applicable efficiency requirements in Table 110.2A through Table 110.2C.*
§ 110.0a(11)	<b>Controls for Heat Pumps with Supplementary Electric Resistance Heaters.</b> Heat pumps with supplementary electric resistance heaters must have controls that prevent operation of the heat pump and electric resistance heater when the outdoor temperature is below the setpoint or on-temperature for compression heating is higher than the setpoint temperature for supplementary heating, and the setpoint temperature for compression heating is higher than the setpoint temperature for supplementary heating.*
§ 110.0a(12)	<b>Thermostat.</b> All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.*
§ 110.0a(13)	<b>Water Heating Recirculation Loops Serving Multiple Dwelling Units.</b> Water heating recirculation loops serving multiple dwelling units must meet the release valve, backflow prevention, pump setting, pump control valve, and recirculation loop control requirements of § 110.3a(4).
§ 110.0a(14)	<b>Isolation Valves.</b> Instantaneous water heaters with an input rating greater than 6.9 BTU/h per hour (2.0 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing and closed.
§ 110.0a(15)	<b>Pilot Lights.</b> Continuously burning pilot lights are prohibited for natural gas, propane central furnaces, household cooking appliances (space heaters without an electrical supply voltage combination with pilot lights that consumes less than 150 Btu/hr are exempt), and pool and spa heaters.
§ 150.0a(1)	<b>Building Cooling and Heating Loads.</b> Heating and cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume, the SMACNA Residential Comfort System Installation Standards Manual, or the ACCA Manual J using design conditions specified in § 150.0a(2).

2019 Low-Rise Residential Mandatory Measures Summary	
§ 150.0a(13A)	<b>Cleanlines.</b> An air conditioner and heat pump outdoor condensing units must have a clearance of at least 6 feet from the outlet of any dryer vent.
§ 150.0a(13B)	<b>Liquid Line Driv.</b> Air conditioners and heat pump systems must be equipped with liquid filter driers as required as specified by the manufacturer's instructions.
§ 150.0a(14)	<b>Water Piping, Solar Water Heating System Piping, and Space Conditioning System Line Insulation.</b> All domestic hot water piping must be insulated as specified in Section 602.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of 1 inch or a minimum insulation R-value of 7.7: the hot water piping of cold water pipes from the storage tank, all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than 1 inch, all hot water piping with a nominal diameter less than 3/4 inch that is associated with a domestic hot water recirculation system from the heating source to storage tank or between tanks, labeled below grade, and from the heating source to kitchen fixtures.
§ 150.0a(15)	<b>Insulation Protection.</b> Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 150.3(6). Insulation exposed to weather must be water resistant and protected from UV light (the adhesive tapes), insulation covering chilled water piping and refrigerant suction piping must be protected from UV light (the adhesive tapes), or a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-caulking casing or sleeve.
§ 150.0a(16)	<b>Gas or Propane Water Heaters.</b> Systems using gas or propane water heaters to serve multiple dwelling units must include one of the following: a leak-detecting device, or any electrical receptacle that is connected to the electric panel with a 1000-volt Ground-Fault Circuit Interrupter (GFCI), or a 3-wire branch circuit, which is 3 feet from the water heater without obstruction. Both ends of the ungrounded conductors must be labeled with the word "ground" and electrically isolated. A non-grounded single electrical breaker space into the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Line", a Category III (V) vent, or a 3/8 inch vent with straight pipe between the outside termination and the space where the water heater is installed, a condensate drain that is no more than 2 inches higher than the base of the water heater, and allow natural draining without pump assistance, and a gas supply line with a capacity of at least 200,000 Btu per hour.
§ 150.0a(17)	<b>Recirculating Loops.</b> Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3a(5).
§ 150.0a(18)	<b>Solar Water Heating Systems.</b> Solar water heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO RHT), or by a listing agency that is approved by the Executive Director.
<p><b>Ducts and Fans Measures:</b></p>	
§ 110.0a(19)	<b>Ducts.</b> Insulation installed on an existing space-conditioning duct must comply with California Mechanical Code (CMC) Section 904.0. If a contractor installs the insulation, the contractor must certify to the customer in writing that the insulation meets this requirement.
§ 150.0a(20)	<b>CMC Compliance.</b> All air-distribution system ducts and plenums must meet the requirements of the CMC Section 902.0, 902.0.1, 904.0, 904.0.1, 904.0.2, 904.0.3, 904.0.4, 904.0.5, 904.0.6, 904.0.7, 904.0.8, 904.0.9, 904.0.10, 904.0.11, 904.0.12, 904.0.13, 904.0.14, 904.0.15, 904.0.16, 904.0.17, 904.0.18, 904.0.19, 904.0.20, 904.0.21, 904.0.22, 904.0.23, 904.0.24, 904.0.25, 904.0.26, 904.0.27, 904.0.28, 904.0.29, 904.0.30, 904.0.31, 904.0.32, 904.0.33, 904.0.34, 904.0.35, 904.0.36, 904.0.37, 904.0.38, 904.0.39, 904.0.40, 904.0.41, 904.0.42, 904.0.43, 904.0.44, 904.0.45, 904.0.46, 904.0.47, 904.0.48, 904.0.49, 904.0.50, 904.0.51, 904.0.52, 904.0.53, 904.0.54, 904.0.55, 904.0.56, 904.0.57, 904.0.58, 904.0.59, 904.0.60, 904.0.61, 904.0.62, 904.0.63, 904.0.64, 904.0.65, 904.0.66, 904.0.67, 904.0.68, 904.0.69, 904.0.70, 904.0.71, 904.0.72, 904.0.73, 904.0.74, 904.0.75, 904.0.76, 904.0.77, 904.0.78, 904.0.79, 904.0.80, 904.0.81, 904.0.82, 904.0.83, 904.0.84, 904.0.85, 904.0.86, 904.0.87, 904.0.88, 904.0.89, 904.0.90, 904.0.91, 904.0.92, 904.0.93, 904.0.94, 904.0.95, 904.0.96, 904.0.97, 904.0.98, 904.0.99, 904.0.100.
§ 150.0a(21)	<b>Field Fabricated Duct Systems.</b> Field fabricated duct systems must comply with applicable requirements for pressure-sensitive tapes, mastic, sealants, and other requirements specified for duct construction.
§ 150.0a(22)	<b>Backdraft Damper.</b> Fan systems that interchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
§ 150.0a(23)	<b>Gravity Ventilation Dampers.</b> Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings, and elevator shaft vents.
§ 150.0a(24)	<b>Protection of Insulation.</b> Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for the service. For example, protection by aluminum sheet metal, painted metal, or galvanized steel. Cellular foam insulation must be protected as above or painted with a coating that is water resistant and provides shielding from solar radiation.
§ 150.0a(25)	<b>Prose Inner Core Fire Duct.</b> Prose inner core fire ducts must have a non-prose layer between the inner core and outer vapor barrier.
§ 150.0a(26)	<b>Duct System Sealing and Leakage Tests.</b> When space conditioning systems use duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and leakage tested, as confirmed through field verification and diagnostic testing in accordance with § 150.0a(11) and Reference Residential Appendix RA3.
§ 150.0a(27)	<b>Air Filtration.</b> Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a 4-inch depth or can be 1 inch depth per Equation 500.9A. Pressure drops and labeling must meet the requirements in § 150.0a(12). Filters must be accessible for regular service.*
§ 150.0a(28)	<b>Space Conditioning System Airflow Rate and Fan Efficiency.</b> Space conditioning systems that use ducts to supply cooling must have a total gross placement of a static pressure sensor, or a permanently installed static pressure sensor in the supply plenum. Airflow must be 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficiency <= 0.45 watts per CFM for gas motor handies and <= 0.58 watts per CFM for all others. Small duct high-velocity systems must provide an airflow >= 200 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficiency <= 0.52 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.*



2019 Low-Rise Residential Mandatory Measures Summary	
<p><b>Requirements for Ventilation and Indoor Air Quality:</b></p>	
§ 150.0a(1)	<b>Requirements for Ventilation and Indoor Air Quality.</b> All dwelling units must meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0a(1).
§ 150.0a(1C)	<b>Single Family Detached Dwelling Units.</b> Single family detached dwelling units, and attached dwelling units not sharing ceilings or floors with other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation provided at rates determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2, and as specified in § 150.0a(1C).
§ 150.0a(1E)	<b>Multifamily Attached Dwelling Units.</b> Multifamily attached dwelling units must have mechanical ventilation provided at rates in accordance with Equation 150.0a(1) must be either a balanced system with supply or continuous exhaust system. If a balanced system is used, all units in the building must use the same system type and the difference in the leakage must be <= 0.3 CFM 50 Pa (0.2 mbar water) per square foot of envelope surface area and vented in accordance with Reference Residential Appendix RA3B.
§ 150.0a(1F)	<b>Multifamily Building Central Ventilation Systems.</b> Central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow for each dwelling unit at a rate equal to or greater than the rate specified in Equation 150.0a(1). All unit airflow must be within 20% of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate needed for cooling.
§ 150.0a(1G)	<b>Kitchen Range Hoods.</b> Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2.
§ 150.0a(2)	<b>Field Fabricated Ductwork.</b> Field fabricated ductwork must be verified in accordance with Reference Residential Appendix RA3.7. Kitchen range hoods must be verified in accordance with Reference Residential Appendix RA3.7.4.3 and 4.3.1 which is rated by HVIL to comply with the airflow rates and sound requirements as specified in Sections 7.2 of ASHRAE 62.2.
<p><b>Pool and Spa Systems and Equipment Measures:</b></p>	
§ 110.4(4)	<b>Certification by Manufacturers.</b> Any pool or spa heating system or equipment must be certified to have all of the following: a thermal efficiency that complies with the Appliance Efficiency Regulations, an on/off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting, a permanent weatherproof plate or cover with operating instructions, and must not use electric resistance heating.*
§ 110.4(4)(1)	<b>Piping.</b> Any pool or spa heating system or equipment must be installed with at least 3/8 inches of pipe between the filter and the heater, or circulation and return lines, or built-in built-up connections to allow for future size change.
§ 110.4(4)(2)	<b>Covers.</b> Outdoor pools or spas that have a heat pump or gas heater must have an a cover.
§ 110.4(4)(3)	<b>Directional Inlets and Time Switches for Pools.</b> Pools must 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.
§ 110.5	<b>Pilot Light.</b> Natural gas pool and spa heaters must not have a continuously burning pilot light.
§ 150.0a(1)	<b>Pool Systems and Equipment Installation.</b> Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rates, pump filters, and valves.*
<p><b>Lighting Measures:</b></p>	
§ 110.9	<b>Lighting Controls and Components.</b> All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.
§ 150.0a(1A)	<b>Luminaire Efficiency.</b> All installed luminaires must meet the requirements in Table 150.0A.
§ 150.0a(1B)	<b>Blank Electrical Boxes.</b> The number of electrical boxes that are more than 5 feet above the finished floor and do not contain a luminaire or other device must not be greater than the number of fixtures. These electrical boxes must be sealed by a dimmer, vacancy sensor control, or fan speed control.
§ 150.0a(1C)	<b>Recessed Downlight Luminaires in Ceilings.</b> Luminaires recessed into ceilings must meet all of the requirements for insulation contact (IC) labeling, air leakage, coating, maintenance, and socket light source as described in § 150.0a(1C).
§ 150.0a(1D)	<b>Electronic Ballasts for Fluorescent Lamps.</b> Ballasts for fluorescent lamps rated 15 watts or greater must be electronic and must have an output frequency no less than 20 kHz.
§ 150.0a(1E)	<b>Night Lights, Sleep Lights, and Path Lights.</b> Night lights, sleep lights, and path lights are not required to comply with Table 150.0A or be controlled by vacancy sensors provided the area is rated to consume no more than 5 watts of power and not more than 150 lumens.
§ 150.0a(1F)	<b>Lighting Integral to Exhaust Fans.</b> Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0a(1).
§ 150.0a(1G)	<b>Screen based Luminaires.</b> Screen based luminaires must comply with the requirements in Reference Residential Appendix RA3.
§ 150.0a(1H)	<b>Light Sources in Enclosed or Recessed Luminaires.</b> Lamps and other separately light source that are not installed with the JAB elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.
§ 150.0a(1I)	<b>Light Sources in Drawers, Cabinets, and Linen Closets.</b> Light sources internal to drawers, cabinets or linen closets are not required to comply with Table 150.0A or be controlled by vacancy sensors provided that they are rated to consume no more than 5 watts of power, emit no more than 150 lumens, and are equipped with controls that automatically turn the lighting off when the drawer, cabinet or linen closet is closed.
§ 150.0a(2A)	<b>Interior Switches and Controls.</b> All forward phase dimmers used with LED light sources must comply with NEMA SSL 7A.
§ 150.0a(2B)	<b>Interior Switches and Controls.</b> Exhaust fans must be controlled separately from lighting systems.*
§ 150.0a(2C)	<b>Interior Switches and Controls.</b> Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off.*
§ 150.0a(2D)	<b>Interior Switches and Controls.</b> Controls and equipment must be installed in accordance with manufacturer's instructions.
§ 150.0a(2E)	<b>Interior Switches and Controls.</b> Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed to comply with § 150.0a(1).
§ 150.0a(2F)	<b>Interior Switches and Controls.</b> Lighting controls must comply with the applicable requirements of § 110.9.

2019 Low-Rise Residential Mandatory Measures Summary	
§ 150.0a(2G)	<b>Interior Switches and Controls.</b> An energy management control system (EMCS) may be used to comply with control requirements if it provides functionality of the specified control according to § 110.9, meets the Installation Certificate requirements of § 130.4, meets the ULCS requirements of § 130.0a, and meets all other requirements of § 150.0a(2G).
§ 150.0a(2H)	<b>Interior Switches and Controls.</b> A multi-use program or controller must be used to comply with dimmer requirements in § 150.0a(2G) if it provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.0a(2G).
§ 150.0a(2I)	<b>Interior Switches and Controls.</b> In all common areas, including laundry rooms, utility rooms, and at least one common area of each of these spaces must be controlled by an occupant sensor or a vacancy sensor providing automatic off functionality. If an occupant sensor is installed, it must be initially configured to remain on operation using the manual control required under Section 150.0a(2C).
§ 150.0a(2J)	<b>Interior Switches and Controls.</b> Under cabinet lighting must be controlled separately from ceiling installed lighting systems.
§ 150.0a(3A)	<b>Residential Outdoor Lighting.</b> For single-family residential buildings, outdoor lighting permanently mounted to a residential building, on or other structure in the area of the building, must meet the requirements of § 150.0a(3A) and (F) and the requirements of § 150.0a(3A). Pressure drops and labeling must meet the requirements in § 150.0a(12). Filters must be accessible for regular service.*
§ 150.0a(3B)	<b>Residential Outdoor Lighting.</b> For low-rise residential buildings with four or more dwelling units, outdoor lighting for private patios, entrances, balconies, and porches, and residential parking lots and garages with less than eight vehicles per site, must comply with either Section 150.0a(3A) or with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.
§ 150.0a(3C)	<b>Residential Outdoor Lighting.</b> For low-rise residential buildings with four or more dwelling units, any outdoor lighting for residential parking lots or garages with a total of eight or more vehicles per site and any outdoor lighting not regulated by Section 150.0a(3B) or Section 150.0a(3D) must comply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.
§ 150.0a(4)	<b>Externally Illuminated Address Signs.</b> Externally illuminated address signs must comply with § 140.8, or must consume no more than 5 watts of power as determined according to § 130.0a(1).
§ 150.0a(5)	<b>Residential Garages for Eight or More Vehicles.</b> Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for commercial garages in Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.
§ 150.0a(6A)	<b>Interior Common Areas of Low-rise Multifamily Residential Buildings.</b> In a low-rise multifamily residential building where the total interior common areas in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in that building must be controlled by an occupant sensor.
§ 150.0a(6B)	<b>Interior Common Areas of Low-rise Multifamily Residential Buildings.</b> In a low-rise multifamily residential building where the total interior common areas in a single building equals more than 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must: 1. Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0, and 2. A lighting installed in common areas must be controlled by an occupant sensor that initiates the lighting to go in each space by at least 50 percent. The occupant sensors must be capable of turning the light fully on and off from all designed paths of ingress and egress.
<p><b>Solar Ready Buildings:</b></p>	
§ 110.10(a)(1)	<b>Single Family Residences.</b> Single family residences located in subdivisions with ten or more single family residences and where the application for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed, must comply with the requirements of § 110.10(b) through § 110.10(d).
§ 110.10(a)(2)	<b>Low-rise Multifamily Buildings.</b> Low-rise multifamily buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.10(b) through § 110.10(d).
§ 110.10(b)(1)	<b>Minimum Solar Zone Area.</b> The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other Parts of Title 24 or in any requirements adopted by a local jurisdiction. The solar zone total area must be composed of areas that have no dimension less than 5 feet and are not less than 90 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet. For single family residences, the solar zone must be located on the roof or overhang of the building and have a total area no less than 250 square feet. For low-rise multifamily buildings the solar zone must be located on the roof or overhang of the building, or on the roof or overhang of another structure located within 250 feet of the building, or on covered parking installed with the building project, and have a total area no less than 15 percent of the total roof area of the building excluding any skylight area. The solar zone requirement is not applicable to the entire building including any attached occupancy.
§ 110.10(b)(2)	<b>Azimuth.</b> All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 300 degrees of true north.
§ 110.10(b)(3A)	<b>Shading.</b> The solar zone must not contain any obstructions, including but not limited to vents, chimneys, architectural features, and roof-mounted equipment.*
§ 110.10(b)(3B)	<b>Shading.</b> Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the highest point of the solar zone, measured in the vertical plane.*
§ 110.10(b)(3C)	<b>Structural Design Loads on Construction Documents.</b> For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents.
§ 110.10(c)	<b>Interconnection Pathways.</b> Construction documents must indicate a location reserved for inverters and interconnecting equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service, and for single family residences and central water heating systems, a pathway reserved for routing plumbing from the solar zone to the water heating system.
§ 110.10(d)	<b>Documentation.</b> A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(c) must be provided to the occupant.
§ 110.10(e)(1)	<b>Main Electrical Service Panel.</b> The main electrical service panel must have a minimum busbar rating of 200 amps.
§ 110.10(e)(2)	<b>Main Electrical Service Panel.</b> The main electrical service panel must have a resettable space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The resettable space must be permanently marked as "For Future Solar Electric".



DRAWINGS PREPARED BY

**CHRIS SPAULDING**  
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LICENSED ARCHITECT  
No. C-25247  
1-21  
STATE OF CALIFORNIA

REVISIONS	BY

PRELIMINARY SET

DESIGN REVIEW SET

PLAN CHECK SET

PERMIT SET

CONSTRUCTION SET

PROPOSED NEW POOL HOUSE

**ROTHROCK RESIDENCE**

47 ALPINE AVE  
LOS GATOS CALIFORNIA

DATE:	6-11-20
SCALE:	A5 NOTED
DRAWN:	CS/DB
JOB:	ROTHROCK POOL HOUSE
SHEET	

**A3**  
OF 11 SHEET

TITLE 24 CERTIFICATE

**CERTIFICATE OF COMPLIANCE**  
 Project Name: Rothrock Cabana  
 Calculation Date/Time: 2020-06-02T11:29:34-07:00  
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GENERAL INFORMATION	
01	Project Name: Rothrock Cabana
02	Run Title: Title 24 Analysis
03	Project Location: 47 Alpine Ave
04	City: Los Gatos
05	Standards Version: 2019
06	Zip code: 95030
07	Software Version: EnergyPro 8.1
08	Climate Zone: 4
09	Front Orientation (deg/ Cardinal): 232
10	Building Type: Single family
11	Number of Dwelling Units: 1
12	Project Scope: New Construction
13	Number of Bedrooms: 0
14	Addition Cond. Floor Area (ft²): 0
15	Number of Stories: 1
16	Existing Cond. Floor Area (ft²): n/a
17	Penetration Average U-Factor: 0.31
18	Total Cond. Floor Area (ft²): 501
19	Glazing Percentage (%): 68.37%
20	ADU Bedroom Count: 0
21	ADU Conditioned Floor Area: 0
22	Is Natural Gas Available? Yes

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS Rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

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 Registration Date/Time: 2020-06-02 12:21:51  
 CA Building Energy Efficiency Standards - 2019 Residential Compliance  
 Report Version: 2019.1.1.08  
 Schema Version: rev 20200101

HERS Provider: CalCERTS, Inc.  
 Report Generated: 2020-06-02 11:30:16

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ENERGY DESIGN RATING	
Energy Design Ratings	
Efficiency (EDR)	Total <sup>1</sup> (EDR)
Standard Design: 51.3	28.2
Proposed Design: 51.2	28
Compliance Margins	
Efficiency (EDR)	Total <sup>1</sup> (EDR)
0.1	0.2
RESULT: <b>3 COMPLIES</b>	
1: Efficiency EDR includes improvements to the building envelope and more efficient equipment 2: Total EDR includes efficiency and demand response measures such as photovoltaic (PV) systems and batteries 3: Building complies when efficiency and total compliance margins are greater than or equal to zero • Standard Design PV Capacity: 1.28 kWdc • PV System resized to 1.28 kWdc (a factor of 1.277) to achieve Standard Design PV PV scaling	

ENERGY USE SUMMARY				
Energy Use (kWh/yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	45.32	38.01	6.91	15
Space Cooling	12.41	18.16	-5.75	-46.3
IAQ Ventilation	11.16	11.16	0	0
Water Heating	38.69	39.26	-0.57	-1.5
Self Utilization Credit	n/a	0	0	n/a
Compliance Energy Total	108.18	107.59	0.59	0.5

REQUIRED PV SYSTEMS - SIMPLIFIED											
01	02	03	04	05	06	07	08	09	10	11	12
DC System Size (kWdc)	Exception	Module Type	Array Type	Power Electronics	CFI	Azimuth (deg)	Tilt Input	Array Angle (deg)	Tilt: (x in 12)	Inverter Eff. (%)	Annual Solar Access (%)
1.28	NA	Standard	Fixed (roof mount)	none	true	150-270	n/a	n/a	<=7:12	96	100

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REQUIRED SPECIAL FEATURES	
The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.	
<ul style="list-style-type: none"> <li>Indoor air quality, balanced fan</li> <li>Window overhangs and/or fins</li> <li>Variable capacity heat pump compliance option (verification details from VCHP Staff report, Appendix B, and RAS)</li> <li>Northwest Energy Efficiency Alliance (NEEA) rated heat pump water heater; specific brand/model, or equivalent, must be installed</li> </ul>	
HERS FEATURE SUMMARY	
The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building tables below. Registered CF1Rs and CF3Rs are required to be completed in the HERS Registry.	
Building Level Verifications: • Quality insulation installation (QI) • Indoor air quality ventilation • Kitchen range hood Cooling System Verifications: • Verified EER • Airflow in habitable rooms (SC3.1.4.1.7) Heating System Verifications: • Verified heat pump rated heating capacity • Wall-mounted thermostat in zones greater than 150 ft² (SC3.4.9) • Ductless indoor units located entirely in conditioned space (SC3.1.4.2.8) HVAC Distribution System Verifications: • None Domestic Hot Water System Verifications: • None	

BUILDING - FEATURES INFORMATION						
01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft²)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Rothrock Cabana	501	1	0	1	0	1

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ZONE INFORMATION						
01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft²)	Avg. Ceiling Height	Water Heating System 1	Water Heating System 2
(N) Cabana	Conditioned	(N) HVAC1	501	12.5	DHW Sys 1	N/A

OPAQUE SURFACES							
01	02	03	04	05	06	07	08
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft²)	Window and Door Area (ft²)	Tilt (deg)
(N) Front Wall	(N) Cabana	R-21 Wall	232	Front	388	154.298	90
(N) Left Wall	(N) Cabana	R-21 Wall	322	Left	263	18.75	90
(N) Rear Wall	(N) Cabana	R-21 Wall	52	Back	388	59.5	90
(N) Right Wall	(N) Cabana	R-21 Wall	142	Right	263	101	90

OPAQUE SURFACES - CATHEDRAL CEILINGS										
01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Area (ft²)	Skylight Area (ft²)	Roof Rise (x in 12)	Roof Reference	Roof Entrance	Cool Roof
(N) Rafter Roof	(N) Cabana	R-38 Roof Cathedral	135	n/a	501	12	0	0.1	0.85	No

PENETRATION / GLAZING													
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft²)	U-factor	U-factor Source	SHGC	SHGC Source #	Exterior Shading
New Window	Window	(N) Front Wall	Front	232	2.5	2	1	5	0.3	NFRC	0.23	NFRC	Bug Screen
New Glass Door	Window	(N) Front Wall	Front	222	16	8	1	128	0.3	NFRC	0.23	NFRC	Bug Screen
New Glass Door 2	Window	(N) Front Wall	Front	222	2.7	8	0	21.3	0.3	NFRC	0.23	NFRC	Bug Screen
New Window 2	Window	(N) Left Wall	Left	322	2	1	0.25	0.3	NFRC	0.23	NFRC	Bug Screen	

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PENETRATION / GLAZING													
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft²)	U-factor	U-factor Source	SHGC	SHGC Source #	Exterior Shading
New Window 3	Window	(N) Left Wall	Left	322	1	6.25	0.3	NFRC	0.23	NFRC	0.23	NFRC	Bug Screen
New Window 4	Window	(N) Left Wall	Left	322	1	6.25	0.3	NFRC	0.23	NFRC	0.23	NFRC	Bug Screen
New Window 5	Window	(N) Rear Wall	Back	52	1	6.25	0.3	NFRC	0.23	NFRC	0.23	NFRC	Bug Screen
New Window 6	Window	(N) Rear Wall	Back	52	1	6.25	0.3	NFRC	0.23	NFRC	0.23	NFRC	Bug Screen
New Window 7	Window	(N) Rear Wall	Back	52	1	6.25	0.3	NFRC	0.23	NFRC	0.23	NFRC	Bug Screen
New Window 8	Window	(N) Rear Wall	Back	52	1	7	0.3	NFRC	0.23	NFRC	0.23	NFRC	Bug Screen
New Window 9	Window	(N) Rear Wall	Back	52	1	33.75	0.3	NFRC	0.23	NFRC	0.23	NFRC	Bug Screen
New Window 10	Window	(N) Right Wall	Right	142	1	5	0.3	NFRC	0.23	NFRC	0.23	NFRC	Bug Screen
New Glass Door 3	Window	(N) Right Wall	Right	142	12	8	1	96	0.3	NFRC	0.23	NFRC	Bug Screen
New Skylight	Skylight	(N) Rafter Roof	None	135	1	6	0.48	NFRC	0.33	NFRC	None	None	
New Skylight 2	Skylight	(N) Rafter Roof	None	135	1	6	0.48	NFRC	0.33	NFRC	None	None	

OVERHANGS AND FINS													
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Window	Overhang			Left Fin			Right Fin						
	Depth	Dist Up	Left Extent	Right Extent	Flap Ht.	Depth	Top Up	Dist L	Bot Up	Depth	Top Up	Dist R	Bot Up
New Window	10.22	0.7	6.5	3	0	15	0	6.6	0	0	0	0	0
New Glass Door	10	0.7	2.25	12.5	0	0	0	0	0	0	0	0	0
New Glass Door 2	10.22	0.7	0.33	7	0	15	0	0.33	0	0	0	0	0
New Glass Door 3	10.5	0.7	9.8	1.25	0	0	0	0	0	10	0	1.25	0

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SLAB FLOORS						
01	02	03	04	05	06	07
Name	Zone	Area (ft²)	Perimeter (ft)	Edge Insul. R-value and Depth	Carpeted Fraction	Heated
(N) Slab-on-Grade	(N) Cabana	501	104	None	80%	No

OPAQUE SURFACE CONSTRUCTIONS							
01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-21 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R-21	None / None	0.069	Inside Finish: Gypsum Board Cavity / Frame: R-21 / 2x6 Exterior Finish: 3 Coat Stucco
R-38 Roof Cathedral	Cathedral Ceilings	Wood Framed Ceiling	2x12 @ 16 in. O.C.	R-38	None / None	0.03	Roofing: Light Roof (Asphalt Shingle) Roof Ecks: Wood Siding/Sheathing/Decking Cavity / Frame: R-38 / 2x12 Inside Finish: Gypsum Board

BUILDING ENVELOPE - HERS VERIFICATION			
01	02	03	04
Quality Insulation Installation (QI)	Quality Installation of Spray Foam Insulation	Building Envelope Air Leakage	CFM50
Required	Not Required	Not Required	n/a

WATER HEATING SYSTEMS						
01	02	03	04	05	06	07
Name	System Type	Distribution Type	Water Heater Name (#)	Solar Heating System	Compact Distribution	HERS Verification
DHW Sys 1	Domestic Hot Water (DHW)	Standard Distribution System	DHW Heater: 1 (1)	n/a	None	n/a

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WATER HEATERS											
01	02	03	04	05	06	07	08	09	10	11	12
Name	Heating Element Type	Tank Type	# Units	Tank Vol (gal)	Energy Factor or Efficiency	Input Rating or Pilot	Tank Insulation R-value (Int/Ext)	Standby Loss or Recovery Eff.	1st Hr. Rating or Flow Rate	NEEA Heat Pump Brand or Model	Tank Location or Ambient Condition
DHW Heater 1	Heat Pump	n/a	1	50	NEEA	n/a	n/a	n/a	80 gal	Rheem/RheemPRO PWS98WS50DC	Outside

WATER HEATING - HERS VERIFICATION						
01	02	03	04	05	06	07
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Compact Distribution Type	Recirculation Control	Central DHW Distribution
DHW Sys 1 - 1/2	Not Required	Not Required	Not Required	None	Not Required	Not Required

SPACE CONDITIONING SYSTEMS										
01	02	03	04	05	06	07	08	09	10	11
Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name	Required Thermostat Type	Status	Verif. Existing Condition	Heating Equipment Count	Cooling Equipment Count
(N) HVAC1	Heat pump heating/cooling	Heat Pump System 1	Heat Pump System 1			Setback	New	NA	1	1

HVAC - HEAT PUMPS										
01	02	03	04	05	06	07	08	09	10	11
Name	System Type	Number of Units	Heating	Cooling	Compressor Type	Zonally Controlled	Compressor Type	HERS Verification		
Heat Pump System 1	VCHP	1	HSPF/COP	Cap 47	Cap 17	SEER	EER	Heat Pump System 1-Hers-Hpump		

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