BUILDING AND GRADING GOOD HOUSEKEEPING NOTES:

1. ERODED SEDIMENTS AND OTHER POLLUTANTS MUST BE RETAINED ON SITE AND MAY NOT BE TRANSPORTED FROM THE SITE VIA SHEETFLOW, SWALES, AREA DRAINS, NATURAL DRAINGAGE COURSES OR WIND
2. STOCK PILES OF EARTH AND OTHER CONSTRUCTION RELATED MATERIALS MUST BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY THE FORCES OF WIND OR WATER.
3. FUELS, OILS, SOLVENTS AND OTHER TOXIC MATERIALS MUST BE STORED IN ACCORDANCE WITH THEIR LISTING AND ARE NOT TO CONTAMINATE THE SOIL AND SURFACE WATERS. ALL APPROVED STORAGE CONTAINERS ARE TO BE PROTECTED FROM WEATHER. SPILLS MUST BE CLEANED UP IMMEDIATELY AND DIPOSED OF IN A PROPER MANNER. SPILLS MAY NOT BE WASHED INTO THE DRAINAGE SYSTEM.
4. NON-STORM WATER RUN-OFF FROM EQUIPMENT AND VEHICLE WASHING AND ANY OTHER ACTIVITY SHALL BE CONTAINED AT THE PROJECT SITE
5. EXCESS OR WASTE CONCRETE MAY NOT BE WASHED INTO THE PUBLIC RIGHT WAY OR ANY OTHER DRAINAGE SYSTEM. PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON SITE UNTIL THEY CAN DISPOSED AS SOLID WASTE.
6. TRASH AND CONSTRUCTION RELATED SOLID WASTES MUST BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATION OF RAINWATER AND DIPSERAL BY WIND.
7. SEDIMENTS AND OTHER MATERIALS MAY NOT BE TRACKED FROM THE SITE BY VEHICLE TRAFFIC. THE CONSTRUCTION ENTRACE ROADWAYS MUST BE STABILIZED SO AS TO INHIBIT SEDIEMENTS FROM BEING DEPOSITED IN PUBLIC WAY. ACCIDENTAL DEPOSITIONS MUST BE SWEPT UP IMMEDIATELY AND MAY NOT BE WASHED DOWN BY RAIN OR OTHER MEANS.
8. ANY SLOPES WITH DISTURBED SOILS OR DENUDED OF VEGETATION MUST BE STABILIZED SO AS TO INHIBIT EROSION BY WIND AND WATER.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL N.P.D.E.S. REQUIREMENTS.
10. THERE WILL BE NO CHANGE IN EXISTING GRADES/ GROUND ELEVATIONS.
11. NO STOCKPILES, MATERIAL STORAGE ON THE PUBLIC RIGHT OF WAY ANYTIME DURING CONSTRUCTION UNLESS ALLOWED UNDER A TEMPORARY ENCROACHMENT PERMIT OPBTAINED THROUGH PUBLIC WORKS.
12. IF ANY EQUIPMENT/TRUCK/VEHICLE IS PARKED ON THE STREET OCCUPYING HALF OR MORE WIDTH OF THE LAND AND/OR DISRUPTING THE NORMAL TRAFFIC FLOW, THE CONTRACTOR WILL SUBMIT A TRAFFIC CONTRL PLAN AND GET IT APPROVED PRIOR TO START OF WORK.

SITE NOTES:

A-"THE DISCHARGE OF POLLUTANTS TO ANY STORM SYSTEM IS PROHIBITED. NO SOLID WASTE, PETROLEUM BYPRODUCTS, SOIL PARTICULATE, CONSTRUCTION WASTE MATERIALS, OR WASTEWATER GENERATED ON CONSTRUCTION SITES OR BY CONSTRUCTION ACTIVITIES SHALL BE PLACED, CONVEYED OR DISCHARGED INTO THE STREET, GUTTER OR STORM DRAIN SYSTEM.

B. RAIN/ STORM WATER SHALL NOT BE DIVERTED TO NEIGHBORING PROPERTIES.

C. 5% DRAINAGE AROUND/ AWAY FROM BUILDING FOR A MINIMUM DISTANCE OF 10', 2% SLOPE THEREAFTER SHEET FLOW TO STREET.

GENERAL COMMENTS:

A. PLAN CHECK APPLICANTS FOR WHICH NO PERMIT IS ISSUED WHTIN 180 DAYS FOLLOWING THE DATE OF APPLICATION SHALL AUTOMATICALLY EXPIRE. (R105.3.2 CRC)
B. PERMIT ISSUED SHALL BECOME INVALID UNLESS WORK AUTHORIZED IS COMMENCED WITHIN 180 DAYS OR IF THE WORK AUTHORIZED IS SUSPENDED OR ABANDONED FOR A PERIOD OF 180 DAYS. A SUCCESSFUL INSPECTION MUST BE OBTAINED WITHIN 180 DAYS. A PERMIT MAY BE EXTENDED IF A WRITTEN REQUEST STATING JUSTIFICATION FOR EXTENSION AND AN EXTENSION FEE IS RECEIVED PRIOR TO THE EXPERIFATION OF THE PERMIT AND GRANTED BY THE BUILDING OFFICIAL.
NO MORE THAN (1) EXTENSION MAY BE GRANTED. PERMITS WHICH HAVE BECOME INVALID SHALL PAY A REACTIVATION FEE OF APPROXIMATELY 50% OF THE ORIGINAL PERMIT FEE AMOUNT WHEN THE PERMIT HAS BEEN EXPIRED FOR UP TO SIX (6) MONTHS.
C. WHEN A PERMIT HAS BEEN EXPIRED FOR A PERIOD IN EXCESS OF ONE (1) YEAR, THE REACTIVATION FEE SHALL BE APPROXIMATELY 100% OF THE ORIGINAL PERMIT FEE. (R105.5 CRC).
D. STRUCTURAL DESIGN AND DETAILS FULLY CONFORM TO ALL APPROPRIATE REQUIREMENTS OF THE CALIFORNIA RESIDENTIAL CODE. SHOULD A PORTION OR ALL OF THE STRUCTURAL DESIGN CONFORM TO THE REQUIREMENTS OF CALIFORNIA BUILDING CODE, AS ALLOWED IN THE CRC, THE FULL STRUCTURAL DESIGN IN CONFORMANCE WITH THE STRUCTURAL REQUIREMENTS OF TEH CALIFORNIA BUILDING CODE.

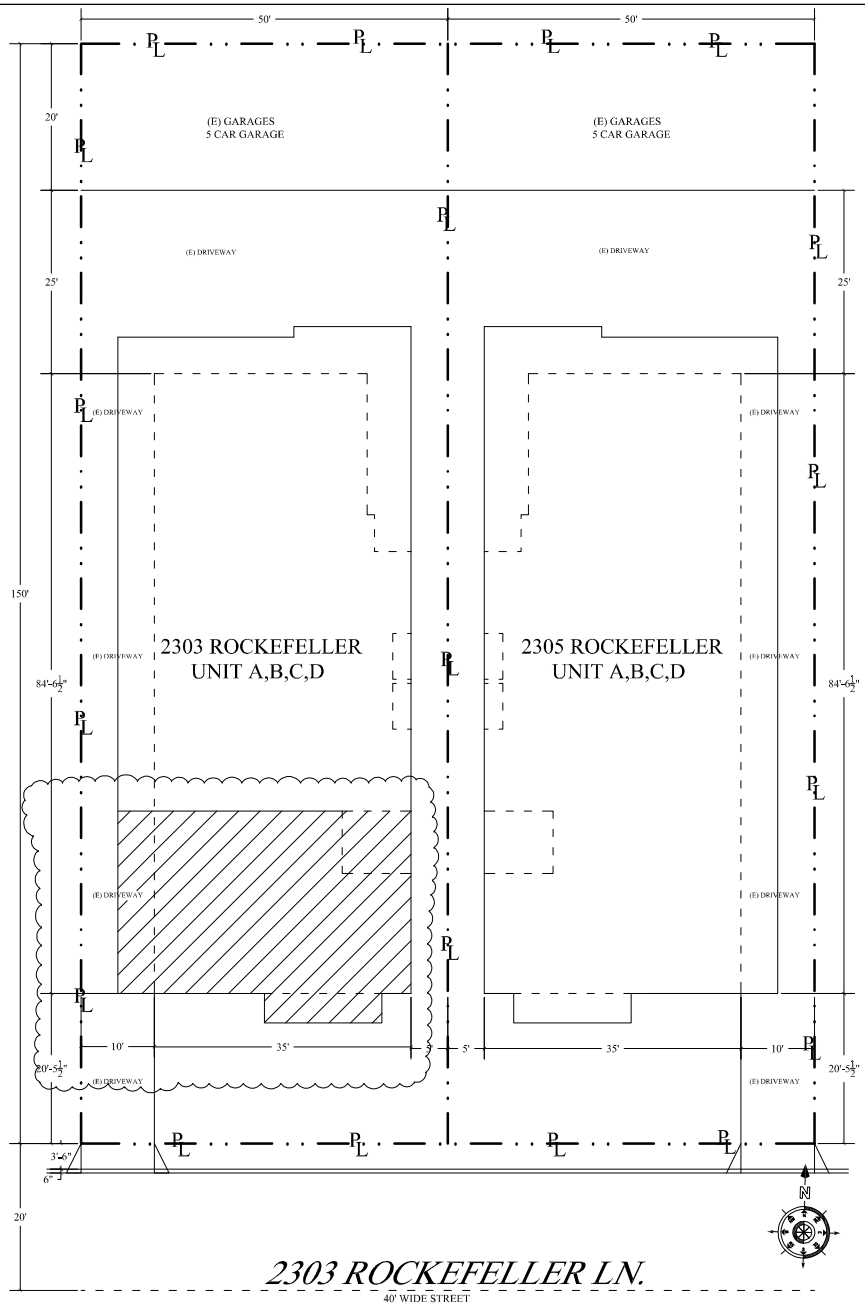
PROJECT CONSULTANTS:

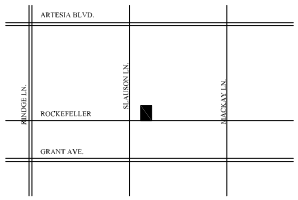
TITLE 24	STRUCTURAL ENGINEER
PERFECT DESIGN & INVESTMENTS	MANUEL A. ESPINO
RAYMOND ZHONG	CIVIL ENGINEER RCE
LICENSE NUMBER - M-27635	LICENSE NUMBER - C055526
EXPIRES 6-30-23	EXPIRES 12-31-22
2436 W VALLEY BLVD.	12209 WOODRUFF AVE.,
ALHAMBRA, CA 91803	DOWNEY, CA 90241
626-289-8808	323-379-0216

HOA CONTACT:

Sunshine Home Owner's Association
2303 ROCKEFELLER LANE
REDONDO BEACH, CA 90278
310-567-9861

PROJECT WAS APPROVED BY HOA ON MARCH 20, 2023 BY LINDA HELTON, OWNER OF UNIT B, AND SUNSHINE HOA BOARD MEMBER





VICINITY MAP

SCALE: N.T.S.

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A-1	SITE PLAN
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CG1	CAL GREEN NOTES 1 OF 2
CG2	CAL GREEN NOTES 2 OF 2

PROPERTY ANALYSIS

LOT SIZES	15,000 SQ.FT.
CONDO A UNIT SIZE =	1,678 SQ.FT.
(E) PATIO TO BE ENCLOSED	80 SQ.FT.

YEAR BUILT = 1975/ 1975
BUIDLING HEIGHT = 21'
NO. OF STORIES: 2
CONSTRUCTION TYPE V-B
FIRE SPRINKLER: NO, (E) NOT PROTECTED
PARCEL NUMBER: 4147-011-045
LEGAL DESCRIPTION
PM-57-94 LOT 1 COND O UNIT 1
ZONE R-1
HISTORICAL DISTRICT: BUNGALOW HEAVEN
OCCUPANCY= CONDO = R-3
OCCUPANCY= GARAGE = U

REGISTERED PROFESSIONAL ENGINEER
MANUEL A. ESPINO
No. C055526
EXP. 12-31-22
CIVIL
STATE OF CALIFORNIA

SCOPE OF WORK

1. ENCLOSED (E) PATIO TO CREATE NEW STUDY
80 SQ.FT. HABITABLE AREA

GOVERNING CODES

2019 CALIFORNIA RESIDENTIAL CODE, TITLE 24 PART 2.5
2019 CALIFORNIA ELECTRICAL CODE, TITLE 24 PART 3
2019 CALIFORNIA MECHANICAL CODE, TITLE 24 PART 4
2019 CALIFORNIA PLUMBING CODE, TITLE 24 PART 5
2020 CALIFORNIA ENERGY CODE
2019 CALIFORNIA GREEN BUILDING STANDARDS CODE TITLE 24, PART 11
CITY OF REDONDO BEACH MUNICIPAL CODES

WRITTEN DIMENSIONS SHALL BE VERIFIED ON THE JOB SITE. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF ANY WORK

ENCL. (E) PATIO

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY AND COPYRIGHT OF CENTURY 21 DESIGN GROUP, AND SHALL NOT BE USED ON ANY OTHER WORK EXCEPT BY AGREEMENT WITH CENTURY 21 DESIGN GROUP WRITTEN CONSENT. DO NOT SCALE DRAWINGS. USE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED ON THE JOB SITE. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF CENTURY 21 DESIGN GROUP PRIOR TO THE COMMENCEMENT OF ANY WORK.

REVISIONS

#	DESCRIPTION	DATE

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SITE ADDRESS
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REDONDO BEACH, CA 90278

APN: 4147-011-045

Project 2021-35	Sheet A-1
Date 03/16/2021	
Scale 1/8" = 1'-0"	

NOTES:

1. ALL NEW SMOKE DETECTORS SHALL BE HARDWIRED, INTERCONNECTED, AND W/ BATTERY BACKUP
2. (E) SMOKE DETECTORS TO BE BATTERY OPERATED
3. ALL NEW LIGHTING SHALL BE FLUORESCENT
4. ARC FAULT RECEPTACLES REQUIRED THROUGHOUT ALL RECEPTACLES
5. ALL RECEPTACLES SHALL BE TAMPER RESISTANT
6. ALL BRANCH CIRCUITS THAT SUPPLY 125 VOLT, SINGLE PHASE, 15 & 20 AMPERE RECEPTACLE OUTLESTS INSTALLED BE PROTECTED BY AN ARC-FAULT CIRCUIT INTERRUPTER(S)
   - A MINIMUM OF (1) 20-AMP CIRCUIT FOR BATHROOM(S) OUTLET. SUCH CIRCUIT SHALL HAVE NO OTHER OUTLETS. THIS CIRCUIT MAY SERVE MORE THAN 1 BEDROOM. CEC 210-11(C) (3)
7. PROVIDE A MINIMUM OF 100 AMPERE ELECTRICAL SERVICE PANEL WITH 1/2" DIAMETER X 20' LONG REBAR UFER GROUND BONDED TO COLD WATER PIPE. PLEASE CONTACT EDISON FOR METER LOCATION AND UNDERGROUND SERIVICE IF REQUIRED.
8. UNDER CUT ALL INT. DOORS FOR NON-DUCTED WARM AIR CIRCULATION
9. GLAZED WARDROBE DOORS SHALL MEET THE IMPACT TEST REQUIREMENTS LAMINATED GLASS MUST ALSO MEET THE BOIL TEST
10. CLOSET LIGHTS TO BE LOCATED AT CEILING(8'). CLOSET SHELVES ARE AT A HEIGHT OF 6'. THEREFORE, THERE IS A DISTANCE FROM THE SHELVE TO THE LIGHT OF 24". LIGHTS REQUIRED TO HAVE COVER
11. PROVIDE A MINIMUM OF 3" DIAMETER SEWER/ DRAIN LINE WITH 2% MIN. SLOPE
12. SHOWER/ TUB SHOWER COMBINATIONS SHALL BE PROVIDED WITH INDIVIDUAL CONTROLS VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION PRESSURE BALANCE/ THERMOSTATIC MIXING VALVE TYPE THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. VALVES SHALL CONFORM TO ASSE 1016 OR ASME A112.18.1/CS B125.1. HANDLE POSITION STOPS SHALL BE PROVIDED ON SUCH VALVES AND SHALL BE ADJUSTED PER THE MANUFACTURER'S SPECIFICAITON TO DELIVER MAXIMUM MIXED WATER SETTING OF 120 DEGREES FARENHEIT. WATER HEATING THERMOSTATS SHALL NOT BE SUITABLE TO MEET THIS PROVISION.
13. MAXIMUM FLOW RATE STANDARDS SET BY CALIFORMINA ENERGY COMMISION

SHOWER HEADS	1.8 pgm @ 80 psi
LAVATORY FAUCETS, RESIDENTIAL	1.2 gpm @ 60 psi
KITCHEN FAUCETS	1.5 gpm @ 60 psi
GRAVITY WATER CLOSET	1.28 gallons/ flush
FLUSHOMETER TANK WATER CLOSET	1.28 gallons/ flush
FLUSOMETER VALVE WATER CLOSET	1.28 gallons/ flush
CLOTHES WASHER	energy- star certified
DISWASHERS	energy- star certified

14. ACCESS PANEL (12" X 12") REQUIRED FOR TUB TRAP JOINT SLIP-JOINT OR NON-SLIP (WELDED) JOINT
15. USE 2-#15 FELT BACKING WHEN STUCCO IS APPLIED OVER PLYWOOD,
16. ALL WORK SHALL COMPLY WITH THE FOLLOWING CODES INCLUDING AMENDMENTS:
    2019 CALIFORNIA BUILDING CODE
    2019 CALIFORNIA MECHANICAL CODE
    2019 CALIFORNIA PLUMBING CODE
    2019 CALIFORNIA ELECTRICAL CODE
17. BUILDINGS SHALL HAVE APPROVED ADDRESS IDENTIFICATION THAT IS LEGIBLE AND PLACE IN A POSITION THAT IS VISIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY ADDRESS IDENTIFICATION CHARACTERS SHALL CONTRAST WITH THEIR BACKGROUND. ADDRESS NUMBERS SHALL BE ARABIC NUMBERS OR ALPHABETICAL LETTERS. LETTERS SHALL NOT BE SPELLED OUT EACH CHARACTER SHALL NOT BE LESS THAN 4 INCHES IN HEIGHT WITH A STROKE WIDTH OF NOT LESS THAN 1/2 INCH. WHERE ACCESS IS BY MEANS OF A PRIVATE ROAD AND THE MEANS SHALL BE USED TO IDENTIFY THE STRUCTURE. ADDRESS IDENTIFICATION SHALL BE MAINTAINED.
18. SHOWER WALLS TO BE FINISHED TO A MINIMUM HEIGHT OF 72" ABOVE DRAIN INLET WITH MOISTURE- RESISITIVE TILE OR APPROVED EQUAL W/ SHATTER RESISTANT ENCLOSURE
    BUILT-IN TUBS WITH SHOWERS SHALL HAVE WATERPROOF JOINT BETWEEN THE TUB AND ADJACENT WALL. CBC 1210.4
19. LUMBER: USE DOUGLAS FIR, LARCH NO. 2 OR BETTER UNLESS OTHERWISE NOTED ON FRAMING PLANS.
20. RECEPTACLE OUTLETS SHALL BE SPACED @ 12" O.C MAXIMUM AND BE LOCATED WITHIN 6' OF DOOR OPENINGS. ALSO, 2' OR WIDER WALLLS. OUTLETS ALSO REQUIRED FOR COUNTERTOPS @ 4'- O.C. AND WITHIN 2' OF ENDS OR COUNTERS,
21. BATHROOM RECEPTACLES SHALL BE SERVED BY A DEDICATED 20 AMP CIRCUIT
22. USE 2X6 MINIMUM STUDS FOR PLUMBING WALLS
23. PROVIDE ONE-HOUR OCCUPANCY SEPARATION BETWEEN GARAGE AND DWELLING UNIT PROTECTION IS REQUIRED FOR GARAGE ONLY.
24. ATTIC ACCESS TO HAVE VERTICAL HEIGHT OF 30"
25. ANNULAR SPACES AROUND PIPES, ELECTRICAL CABLES, CONDUITS, OR OTHER OPNEINGS IN PLATES AT EXTERIOR WALLS SHALL BE PROTECTED AGAINST THE PASSAGE OF RODENTS BY CLOSING SUCH OPENINGS WITH CEMENT MORTAR, CONCRETE MASONRY, OR SIMILAR METHOD. PER CGS 4.406
26. AT THE TIME OF FINAL INSPECTION, AN OPERATION AND MAINTENANCE MANUAL, ACCEPTABLE TO THE ENFORCING AGENCY SHALL BE PROVIDED TO THE BUILDING OCCUPANT OR OWNER PER SECTION CGBS 4.410. A SAMPEL MANUAL IS AVAILABLE FOR REVIEW AT THE BUILDING STANDARDS COMMISION WEBSITE.
27. EXISTING HVAC DUCT OPENINGS AND OTHER RELATED AIR DISTRIBUTION COMPONENTS SHALL BE COVERED DURING CONSTRUCTION PER CGBS 4.504.1.
28. ADHESIVES, SEALANTS, AND CAULKDS SHALL BE COMPLIANT WITH VOC AND OTHER TOXIC COMPOUND LIMITS" PER CGBS 4.504.2
    A- PAINT, STAINS, AND OTHER COATINGS SHALL BE COMPLIANT WITH VOC LIMITS
    B- AEROSOL PAINTS AND COATINGS SHALL BE COMPLIANT WITH PRODUCT WEIGHTED MIR LIMITS FOR ROC AND OTHER TOIC COMPOUNDS.
    C- DOCUMENTATION SHALL BE PROIVDED TO VERIFY COMPLIANT VOC LIMIT FINISH MATERIALS HAVE BEEN USED.
    D- CARPET AND CARPET SYSTEMS SHALL BE COMPLIANT WITH VOC LIMITS.
    E- 50% OF THE FLOOR AREA RECEIVING RESILIENT FLOORINGS SHALL COMPLY WITH VOC EMISSION LIMITS DEFINED IN THE COLLABORATIVE FOR HIGH PERFORMANCE SCHOOLS (CHPS) LOW-EMITTING MATERIALS LIST OR BE CERTIFIED UNDER THE RESILIENT FLOORING COVERING INSTITUTE (RFCI) FLOOR SCORE PROGRAM.
    F-- PARTICLE BOARD, MEDIUM DENSITY FIBERBOARD (MDF) AND HARDWOOD PLYWOOD USED IN INTERIOR FINISH SHALL COMPLY WITH LOW FORMALDEHYDE EMISSION STANDARDS.
29. BATHROOM EXHAUST FANS WHICH EXHAUST DIRECTLY FROM BATHROOMS SHALL COMPLY WITH CBGS 4.506 AND SHALL INCLUDE THE FOLLOWING:
    A- BE ENERGY STAR COMPLIANT AND BE DUCTED TO THE OUTSIDE AIR.
    B- UNLESS FUNCTIONING AS A COMPONENT OF A HOLE HOUSE VENTILATION SYSTEM, FANS MUST BE CONTROLLED BY A HUMIDITY CONTROL.
    I. HUMIDISTAT CONTROLS BE CAPABLE OF ADJUSTMENT BETWEEN A RELATIVE HUMIDITY OF <50% TO A MAXIMUM OF 80%
    II. A HUMIDITY CONTROL MAY BE SEPARATE COMPONENT TO THE EXHAUST FAN AND IS NOT REQUIRED TO BE INTEGRAL (BUILT-IN) TO THE FAN.
    III. FOR THE PURPOSE OF THIS SECTION A BATHROOM IS A ROOM WHICH CONTAINS A BATHTUB, SHOWER, OR TUB/SHOWER COMBINATION (BATHING FACILITIES).
30. ALL HOSEBIBS SHALL BE EQUIPPED WITH A BACKFLOW PREVENTION DEVICE
31. WHEN REPLACING MAIN ELECTRICAL SERVICE, THE MAIN SERVICE PANEL SHALL NOT BE OF A TYPE WITH A CENTER-FED MAIN CIRCUIT BREAKER AND SHALL INCLUDE RESERVED SPACE ALLOWING FOR INSTALLATION OF DOUBLE-POLE CIRCUIT BREAKERS FOR A FUTURE SOLAR PHOTOVOLTAIC SYSTEM. SUCH RESERVED SPACED SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER OR MAIN CIRCUIT BREAKER LOCATION. THE RESERVED SPACE SHALL BE PERMANENTLY AND VISIBLY MARKED. "FOR FUTURE SOLAR PHOTOVOLTAIC"
    ACCOMODATION TO BE MADE FOR FUTURE SOLAR SYSTEM:
    1- APPORVED MINIMUM 4-INCH SQUARE ELECTRICAL JUNCTION BOX LOCATED WITHIN 72 INCHES HORIZONTALLY AND 12 INCHES VERTICALLY OF MAIN ELECTRICAL SERVICE PANEL.
    2- MINIMUM 1-INCH DIAMETER LISTED ELECTRICAL METALLIC RACEWAY ORIGINATING AT READILY ACCESSIBLE ATTIC LOCATION WITH PROXIMITY TO SOLAR ZONE AREA AND TERMINATING AT THE REQUIRED ELECTRICAL JUCTION BOX. MINIMUM 1-INCH DIAMETER LISTED ELECTRIC METALLIC RACEWAY ORIGINATING AT THE REQUIRED ELECTRICAL JUNCTION BOX AND TERMINATING AT TH EMAIN ELECTRICAL SERVICE PANEL.
    3- ELECTRICAL JUNCTION BOX AND SEGMENT OF METALLIC RACEWAY IN THE ATTIC SHALL BE PERMANENTLY AND VISIBLY MARKED AS "FOR FUTURE SOLAR PHOTOVOLTAIC". CA ENERGY EFFICACY EFFICIENCY STANDARDS. 110.10(E) AS ADOPTED BY CITY OF GARDENA.
32. DUCTS PENETRATING WALL OR CEILING SEPARATIONS BETWEEN A GARAGE AND A DWELLING UNIT SHALL BE CONSTRUCTED OF MINIMUM 26 GAGE SHEET METAL AND SHALL HAVE NO OPENINGS INTO THE GARAGE.
33. AUTOMATIC GARAGE DOOR OPENER SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL325 (R309.4 CRC).
34. FIBER- CEMENT, FIBER-MAT REINFORCED CEMENT, GLASS MAT GYPSUM OR FIBER- REINFORCED GYPBSUM BACKERS SHALL BE USED AS A BASE FOR WALL TILE IN TUB AND SHOWER AREAS AND CEILING PANELS IN SHOWER AREAS.
35. ATTIC ACCESS DOORS SHALL HAVE PERMANENTLY ATTACHED INSULATION USING ADHESIVE OR MECHANICAL FASTNERS. THE ATTIC ACCESS SHALL BE GASKETED TO PREVENT AIR LEAKAGE
    DEDUCTED FOR EACH ADDITIONAL 90 DEGREE ELBOW IN EXCESS OF TWO.
36. DOMESTIC CLOTHES DRYER DUCT SHALL BE OF METAL AND A MINIMUM OF 4" IN DIAMETER. THE EXHAUST DUCT SHALL NOT EXCEED A TOTAL COMBINED HORIZONTAL AND VERTICAL LENGTH OF 14 FEET INCLUDING TWO 90 DEGREE ELBOWS. A LENGTH OF 2 FEET SHALL BE
37. NOTES REGARDING HVAC SYSTEM IN ATTIC
    A) THE DISTANCE FROM THE PASSAGEWAY ACCESS TO THE FURNACE SHALL NOT EXCEED 20 FEET MEASURED (FOR HEAD HEIGHT LESS THAN 6 FEET LONG) ALONG THE CENTERLINE OF THE PASSAGEWAY.
    B) THE PASSAGEWAY SHALL BE UNOBSTRUCTED AND SHALL HAVE SOLID FLOORING NOT LESS THAN 24 INCHES WIDE FROM THE ENTRANCE OPENING TO THE APPLIANCE.
    C) A LEVEL WORKING PLATFORM NOT LESS THAN 30INCHES BY 30INCHES SHALL BE PROVIDED IN THE FRONT OF THE SERVICE SIDE OF THE APPLIANCE.
    D) A PERMANENT 120-VOLT RECEPTACLE OUTLET AND A LIGHTING FIXTURE SHALL BE INSTALLED NEAR THE APPLIANCE. THE SWITCH CONTROLLING THE LIGHT SHALL BE LOCATED NEAR THE ENTRANCE OF THE PASSAGEWAY.
38. INSTALL GROUNDING ELECTRODE CONDUCTOR (UFER GROUND) AT GARAGE
39. THE WORKING CLEARANCES REQUIRED BY CEC 110-26 MUST BE PERMANENTLY MAINTAINED IN FRONT OF ALL ELECTRICAL EQUIPMENT.
40. WATER PIPING MATERIAL SHALL BE COPPER TYPE L AND PEX
41. ALL SEWER LINES SHALL BE SLOPED MIN. 2%
42. HIGH EFFICACY LIGHT SOURCES INCLUDE:
    A. PIN BASED LINEAR OR COMPACT FLUORESCENT LAMPS (CFL) SOURCES USING ELECTRONIC BALLSTS.
    B. PULSE-START METAL HALID LAMPS.
    C. HIGH PRESSURE SODIUM LAMPS.
    D. GU-24 SOCKETS CONTAINING CFL OR LED LIGHT SOURCES
43. LUMINARIES RECESSED INTO CEILINGS SHALL MEET ALL OF THE FOLLOWING REQUIREMENTS:
    A. BE LISTED FOR ZERO CLEARANCE INSULATION CONTACT (IC).
    B. HAVE A LABEL THAT CERTIFIES THE LUMINAIRE IS AIRTIGHT WITH AIR LEAKAGE LESS THAN 2.0 CFM AT 75 PASCALS WHEN TESTED IN ACCORDANCE WITH ASTM E283.
    C. BE SEALED WITH A GASKET OR CAULK BETWEEN THE LUMINAIRE HOUSING AND CEILING AND HAVE AIR LEAK PATHS BETWEEN CONDITIONED AND UNCONDITIONED SPACES SEALED WITH GASKET OR CAULK.
    D. FOR LUMINARIES WITH HARDWIRED BALLASTS OR DRIVERS, ALLOW BALLAST OR DRIVER MAINTENANCE AND REPLACMENT TO BE READILY ACCESSIBLE TO BUILDING OCCUPANTS FROM BELOW CEILING WITHOUT REQUIRING CUTTING HOOLES IN THE CEILING.
    E. SHALL NOT CONTAIN SCREW BASE SOCKETS.
    F. SHALL CONTAIN LIGHT SORCES THAT ARE MARKED JBA-2016-E.
44. SCREW BASED LUMINARIES SHALL MEET ALL OF THE FOLLOWING REQUIREMENTS (150(K)1G CEC)
    A. THE LUMINARIES SHALL NOT BE RECESSED DOWNLIGHT LUMINARIES IN CEILINGS.
    B. THE LUMINARIES SHALL CONTAIN LAMPS THAT COMPLY WITH REFERENCE JOINT APPENDIX JA8
    C. THE INSTALED LAMPS SHALL BE MARKED WITH JA8-2016 OR JA8-2016-E
45. SAFETY GLAZING SHALL BE PROVIDED IN THE FOLLOWING LOCATIONS
    A. GLAZING IN ALL FIXED AND OPERABLE PANELS OF SWINGING, SLIDING, AND BIFOLD DOORS.
    B. GLAZING IN WALLS, ENCLOSURES, OR FENCES AND INDOOR OR OUTDOOR SWIMMING POOLS WHERE THE BOTTOM EXPOSED EDGE OF GLAZING IS LESS THAN 60" MEASURED VERTICALLY ABOVE AND STANDING OR WALKING SURFACE. THIS SHALL APPLY TO SINGLE GLAZING AND ALL PANES IN MULTIPLE GLAZING.
    C. GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL ADJACENT TO A DOOR WHERE THE NEAREST VERTICAL EDGE IS WITHIN 24" ARC OF THE DOOR IN A CLOSED POSITION AND THE BOTOM EDGE IS LESS THAN 60" ABOVE THE WALKINGS SURFACE.
46. GARAGE SHALL COMPLY AND PROVIDE ELECTRIC CHARGING AND COMPLY WITH ELECTRIC VEHICLE (EV) INFRASTRUCTURE REQUIREMENTS IN ACCORDANCE WITH CALIFORNIA GREEN BUIDLING STANDARDS CODE CHAPTER 4, DIVISION 4.1.
47. ATTIC AREAS HAVING A VERTICAL HEIGHT OF 30 INCHES OR GREATER OVER AN AREA OF NOT LESS THAN 30 SQURE FEET SHALL HAVE AN OPENING OF NOT LESS THAN 22 INCHES X 30 INCHES. THE ACCESS SHALL BE LOCATED IN A HALLWAY OR OTHER READILY ACCESSIBLE LOCATION.
48. CONDENSATE LINES FROM MECHANICAL EQUIPMENT SHALL DISHCARGE TO A PLUMBING FIXTURE OR STORM DRAIN BY MEANS OF AN INDIRECT WASTE PIPE. CONDESATE LINES SHALL NOT DRAIN OVER A PUBLIC WAY.
49. HVAC SYSTEM LOCATED IN ATTIC NOTES:
    A. THE DISTANCE FROM THE PASSAGEWAY ACCESS TO THE FURNACE SHALL NOT EXCEED 20 FEET MEASURED (FOR HEAD HEIGHT LESS THAN 6 FEET) ALONG THE CENTERLINE OF PASSAGEWAY.
    B. THE PASSAGEWAY SHALL BE UNOBSTRUCTED AND SHALL HAVE A SOLID FLOORING NOT LESS THAN 24 INCHES WIDE FROM THE ENTRANCE OEPNING TO THE APPLIANCE.
    C. A LEVEL WORKING PLATFORM NOT LESS THAN 30 INCHES BY 30 INCHES SHALL BE PROVIDED IN FRONT OF THE SERVICE SIDE OF THE APPLIANCE.
    D. A PERMANENT 120-VOLT RECEPTACLE OUTLET AND A LIGHTING FIXTURE SHALL BE INSTALLED NEAR THE APPLIANCE. THE SWITCH CONTROLLING THE LIGHT SHALL BE LOCATED NEAR THE ENTRANCE TO THE PASSAGEWAY.
50. A COMPRESSOR OR PORTION OF A CONDENSING UNIT SUPPORTED FROM THE GROUND SHALL NOT REST ON A CONCRETE OR OTHER APPROVED BASE EXTENDING NOT LESS THAN 3 INCHES ABOVE THE ADJOINING GROUND LEVEL.
51. PROVIDE A SEDIMENT TRAP AT THE LOCATION OF THE WATER HEATER AND THE FAU OR WHERE SEDIMENT TRAP IS NOT INCORPORATED AS PART OF THE APPLIANCE. A SEDIMENT TRAP MUST BE INSTALLED DOWNSTREAM OF THE APPLIANCE SHUTOFF VALVE AS CLOSE TO THE INLET OF THE APPLIANCE AS PRACTICAL, BUT BEFORE THE FLEX CONNECTOR, WHERE USED AT THE TIME OF APPLIANCE INSTALLATION. SEDIMENT TRAPS ARE NOT REQUIRED AT RANGES,CLOTHES DRYERS, DECORATIVE VENTED APPLIANCES, OR GAS FIREPLACES.
52. PLUMBING MATERIALS SHALL BE ABS FOR DRAINS/ VENTS
53. WATER PIPING MATERIALS WITHIN THE BUILDING SHALL BE IN ACCORDANCE WITH SEC 604.1 OF THE CALIFORNIA PLUMBING CODE. PEX, CPVC AND OTHER PLASTIC WATER SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SEC 604 OF THE CPC. INSTALLATION STANDARDS OF APPENDIX I OF THE CPC AND THE MANUFACTURERS RECOMMENDED INSTALLATION STANDARDS. CPVC WATER PIPING REQUIRES A CERTIFICATION COMPLIANCE AS SPECIFIED IN SEC 604.1.1(d) OF THE CPC PRIOR TO PERMIT ISSUANCE. PIPE MATERIAL TO BE PEX IN WALL, OUTSIDE WALLS COPPER
54. DOMESTIC DISHWASHERS REQUIRE AN APPROVED DISHWASHER AIR-GAP FITTING ON THE DISCHARGE SIDE OF THE DISHWASHER. LISTED AIR GAPS SHALL BE INSTALLED WITH FLOOD-LEVEL (FL) MARKING AT OR ABOVE THE FLOOD=LEVEL OF TEH SINK OR DRAINBOARD, WHICHEVER IS HIGHER. CPC 807.3
55. FAU TO BE ANCHORED AS PER MANUFACTURERS SPECIFICATIONS
56. ATTIC ACCESS DOORS SHALL HAVE PERMANENTLY ATTACHED INSULATION USING ADHESIVE OR MECHANICAL FASTNERS. THE ATTIC MUST BE GASKETED TO PREVENT AIR LEAKAGE.
57. INSTANTANEOUS WATER HEATERS WITH AN INPUT RATING GREATER THAN 6.8 kBTU/H SHALL HAVE ISOLATION VALVES ON BOTH THE COLD WATER SUPPLY AND HOT WATER PIPE LEAVING THE WATER HEATER, AND HOSE BIBS OR OTHER FITTINGS ON EACH VALVE FOR FLUSHING THE WATER HEATER WHEN THE VALVES ARE CLOSED. 110.3 (C) (7)) CALIFORNIA ENERGY CODE.)
58. SHOWER AND TUB-SHOWER COMBINATIONS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC, OR COMBINATION PRESSURE BALANCE/ THERMOSTATIC MIXING VALVE TYPE THAT PROVIDE SCALD AND THERMAL SHOCK PROTECTION. THESE VALVES SHALL CONFORM TO ASSE 1016 OR ASME A112.18.1/ CSA B125.1 HANDLE POSITION STOPS SHALL BE PROVIDED ON SUCH VALVES AND SHALL BE ADJUSTED PER THE MANUFACTURER'S INSTRUCTIONS TO DELIVER THE MAXIMUM MIXED WATER SETTING OF 120F. WATER HEATING THERMOSTATS SHALL NOT BE CONSIDERED A SUITABLE CONTROL FOR MEETING THE PROVISION. CPC 408.3

ELECTRICAL NOTES:
1. PROVIDE AT LEAST 2 20 AMP SMALL APPLIANCE CIRCUITS SERVING THE COUNTERS IN THE KITCHEN PER CEC 210.52 (B) (1), CEC 210.11(C) (1).
2. PROVIDE WALL OUTLETS IN ALL OF THE FOLLOWING AREAS PER CEC 210.52:
   A) IN BATHROOMS ADJACENT TO EACH BASIN LOCATION CEC 210.52(D).
   B) EXTERIOR WALL AT FRONT AND REAR OF DWELLINGS NOT MORE THAN 6'-6" ABOVE GRADE
3. ALL RECEPTACLES TO BE TAMPER RESISTANT CEC 406.12 AT ALL DWELLING UNIT RECEPTACLES
4. ALL INSTALLE D LUMINARIES SHALL BE HIGH EFFICACY
5. RECESSED DOWNLIGHTS SHALL BE ICAT, BALLAST/DRIVER ACCESSIBLE FROM BELOW, SHALL NOT CONTAIN SCREW BASE SOCKETS, AND SHALL CONTAIN LIGHT SOURCES THAT ARE MARKED JA8-2016-E.
6. SCREW BASE LUMINARIES CANNOT BE RECESSED, AND MUST BE MARKED JA8-2016 OR JA8-2016-E SHALL BE CONTROLLED BY A VACANCY SENSOR
8. DIMMERS OR VACANCY SENSORS SHALL CONTROL ALL LUMINAIRES REQUIRED TO HAVE LIGHT SOURCES COMPLIANT WITH REFERENCE JOINT APPENDIX JA8(EXCEPT CLOSETS LESS THAN 70 SQ.FT. AND HALLWAYS.
9) UNDER CABINET LIGHTING SHALL BE SWITCHED SEPARATELY FROM OTHER LIGHTING SYSTEMS.
10) OUTDOOR LIGHTING SHALL BE CONTROLLED BY A MANUAL ON/OFF SWITCH/PHOTOCELL AND MOTION SENSOR OR ASTRONOMICAL TIME CLOCK OR EMCS

ELECTRICAL COMMENTS:

1. ALL BRANCH CIRCUITS SUPPLYING OUTLETS OR DEVICES (SUCH AS LIGHTS & SWITCHES) INSTALLED IN DWELLING UNIT KITCHENS, FAMILY ROOMS, DINING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, LAUNDRY AREAS, OR SIMILAR ROOMS & AREAS SHALL BE PROVIDED WITH ARC-FAULT CIRCUIT INTERRUPTER (AFCI) PROTECTIONS. SEE CEC 210.12 (A).
2. ALL WALL SPACES, 2 FEET OR MORE IN WIDTH, SHALL HAVE RECEPTACLES INSTALLED SUCH THAT NOT POINT MEASURED HORIZONTALLY IS MORE THAN 6 FEET FROM A RECEPTACLE. (12 FEET MAXIMUM SPACING).
3. AT LEAST ONE RECEPTACLE AT GRADE LEVEL SHALL BE INSTALLED IN BOTH THE FRONT AND BACK OF EACH DWELLING UNIT.
4. IN ALL AREAS SPECIFIED IN 201.52. ALL NON-LOCKING TYPE 125 VOLT, 15 AND 20 AMPERE RECEPTACLES SHALL BE LISTED TAMPER -RESISTANT RECEPTACLES.
5. ALL INSTALLED LUMINARIES SHALL BE HIGH EFFICACY (150(K) 1A & TABLE 150.A-A HIGH EFFICACY LIGHT SOURCES INCLUDE THE FOLLOWING:
   A. PIN BASED LINEAR OR COMPACT FLUORESCENT LAMPS (CFL) SOURCES USING ELECTRONIC BALLASTS.
   B. PULSE-START METAL HALIDE LAMPS.
   C. HIGH PRESSURE SODIUM LAMPS.
   D. GU-24 SOCKETS CONTAINING CFL OR LED LIGHT SOURCES.
6. LUMINARIES RECESSED INTO CEILINGS SHALL MEET ALL OF THE FOLLOWING REQUIREMENTS.
   A. BE LISTED FOR ZERO CLEARANCE INSULATION CONTACT (IC).
   B. HAVE A LABEL CERTIFIES THE LUMINAIRE IS AIRTIGHT WITH AIR LEAKAGE LESS THAN 2.0 CFM AT 75 PASCALS WHEN TESTED IN ACCORDANCE WITH ASTM E283.
   C. BE SEALED WITH A GASKET OR CAULK BETWEEN THE LUMINAIRE HOUSING AND CEILING AND SHALL HAVE ALL AIRE LEAK PATHS BETWEEN CONDITIONED AND UNCONDITIONED SPACES SEALED WITH A GASKET OR CAULK.
   D. FOR LUMINARIES WITH HARDWIRED BALLASTS OR DRIVERS, ALLOW BALLAST OR DRIVER MAINTENANCE AND REPLACEMENT TO BE READILY ACCESSIBLE TO BUILDING OCCUPANTS FROM BELOW THE CEILING WITHOUT REQUIRING THE CUTTING HOLES IN CEILING.
   E. SHALL NOT CONTAIN SCREW BASE SOCKETS.
   F. SHALL CONTAIN LIGHT SOURCES THAT ARE MARKED J8A02016-E.
7. SCREW BASED LUMINARIES SHALL NOT MEET ALL OF THE FOLLOWING REQUIREMENTS.
   A. THE LUMINARIES SHALL NOT BE RECESSED DOWNLIGHT LUMINARIES IN CEILINGS.
   B. THE LUMINARIES SHALL CONTAIN LAMPS THAT COMPLY WITH REFERENCE JOINT JA8.
   C. THE INSTALLED LAMPS SHALL BE MARKED WITH JA8-2016 OR JA8-2016-E.
8. EXHAUST FANS SHALL BE SWITCHED SEPARATELY FROM LIGHTING SYSTEM. LIGHTING INTEGRAL TO AN EXHAUST FAN MAY BE ON THE SAME SWITCH AS THE FAN PROVDED THE LIGHTING CAN BE SWITCHED OFF WHILE ALLOWING THE FAN TO CONTINUE TO OPERATE FOR AN EXTENDED PERIOD OF TIME. (!50(K)2B CEC.
9. IN BATHROOMS, GARAGES, LAUNDRY ROOMS, AND UTILITY ROOMS, AT LEAST ONE LUMINAIRE IN EACH OF THESE SPACES SHALL BE CONTROLLED BY A VACANCY SENSOR.
10. ALL JA8 COMPLAINT LIGHT SOURCES, EXCEPT THOSE IN CLOSETS LESS THAN 70 SQUARE FEET AND THOSE IN HALLWAYS, SHALL BE CONTROLLED BY DIMMERS OR VACANCY SENSORS JA8 COMPLIANT LIGHT SOURCES INCLUDE LIGHT SOURCES IN CEILING RECESSED DOWNLIGHT LUMINAIRES AND GU-24 SOCKETS CONTAINING LED LIGHT SOURCES.
11. ALL RESIDENTIAL OUTDOOR LIGHTING PERMANENTLY MOUNTED TO THE RESIDENCE OR OTHER BUILDINGS ON THE SAME LOT BE HIGH EFFICACY AND BE:
   A. LIGHT SHALL COMPLY WITH ONE OF THE TWO OPTIONS:
   i. CONTROLLED BY A PHOTOCELL AND MOTION SENSOR. CONTROLS THAT OVERIDE TO ON SHALL NOT BE ALLOWED UNLESS THE OVERRIDE AUTOMATICALLY REACTIVATES THE MOTION SENSOR WITHIN 6 HOURS.
   ii. CONTROLLED BY (1) PHOTOCONTROL AND AUTOMATIC TIME SWITCH CONTROL OR (2) ASTRONOMICAL TIME CLOCK OR (3) ENERGY MANAGEMENT CONTROL SYSTEM MEETING OF 150(K)3A.
   B. LIGHTS SHALL BE CONTROLLED BY A MANUAL ON AND OFF SWITCH THAT DOES NOT OVERRIDE TO ON THE AUTOMATIC ACTIONS OF ITEM I OR ITEM II CHOSEN ABOVE.

ELECTRICAL NOTES: (ADDITIONAL)

1. PROVIDE AT LEAST 2 20 AMP SMALL APPLIANCE CIRCUITS SERVING THE COUNTERS IN THE KITCHEN PER CEC 210.52 (B) (1), CEC 210.11(C) (1).
2. PROVIDE WALL OUTLETS IN ALL OF THE FOLLOWING AREAS PER CEC 210.52:
   A) IN BATHROOMS ADJACENT TO EACH BASIN LOCATION CEC 210.52(D) .
   B) EXTERIOR WALL AT FRONT AND REAR OF DWELLINGS NOT MORE THAN 6'-6" ABOVE GRADE
3. ALL RECEPTACLES TO BE TAMPER RESISTANT CEC 406.12 AT ALL DWELLING UNIT RECEPTACLES
4. ALL INSTALLE D LUMINARIES SHALL BE HIGH EFFICACY
5. RECESSED DOWNLIGHTS SHALL BE ICAT, BALLAST/DRIVER ACCESSIBLE FROM BELOW, SHALL NOT CONTAIN SCREW BASE SOCKETS, AND SHALL CONTAIN LIGHT SOURCES THAT ARE MARKED JA8-2016-E.
6. SCREW BASE LUMINARIES CANNOT BE RECESSED, AND MUST BE MARKED JA8-2016 OR JA8-2016-E
7. IN BATHROOMS, GARAGES, LAUNDRY ROOMS, AND UTILITY ROOMS, AT LEAST ONE LUMINAIRE IN EACH OF THESE SPACES SHALL BE CONTROLLED BY A VACANCY SENSOR
8. DIMMERS OR VACANCY SENSORS SHALL CONTROL ALL LUMINAIRES REQUIRED TO HAVE LIGHT SOURCES COMPLIANT WITH REFERENCE JOINT APPENDIX JA8(EXCEPT CLOSETS LESS THAN 70 SQ.FT. AND HALLWAYS.
9) UNDER CABINET LIGHTING SHALL BE SWITCHED SEPARATELY FROM OTHER LIGHTING SYSTEMS.
10) OUTDOOR LIGHTING SHALL BE CONTROLLED BY A MANUAL ON/OFF SWITCH/PHOTOCELL AND MOTION SENSOR OR ASTRONOMICAL TIME CLOCK OR EMCS

ENVIRONMENTAL QUALITY NOTES:

1. AT THE TIME OF ROUGH INSTALLATION, OR DURING STORAGE ON THE CONSTRUCTION SITE AND UNITL FINAL STARTUP OF THE HEATING, COOLING, AND VENTILIATION EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEETMETAL, OR OTHER ACCEPTABLE METHODS TO REDUCE THE AMOUNT OF WATER, DUST AND DEBRIS WHICH MAY ENTER THE SYSTEM.
2. BUIDLING MATERIALS WITH VISIBLE SIGNS OF WATER DAMAGE SHALL NOT BE INSTALLED. WALL AND FLOOR FRAMING SHALL NOT BE ENCLOSED WHEN THE FRAMING MEMBERS EXCEED 19% MOISTURE CONTENT. INSULATION PRODUCTS WHICH ARE VISIBLY WENT OR HAVE HIGH MOISTURE CONTENT SHALL BE REPLACED OR ALLOWED TO DRY PRIOR TO ENCLOSURE IN WALL OR FLOOR CAVITIES.
3. ALL MECHANICAL EXHAUST FANS IN ROOMS WITH A BATHTUB OR SHOWER SHALL COMPLY WITH THE FOLLWOING:
   I. FANS SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO TERMINATE OUTSIDE OF THE BUILDING.
   II. FANS MUST BE CONTROLLED BY A HUMIDITY CONTROL CAPABLE OF ADJUSMENT BETWEEN A RELATIVE HUMIDITY RANGE <50% TO A MAXIMUM OF 80% UNLESS FUNCTIONING AS A COMPONENT OF A WHOLE HOUSE VENTILATION SYSTEM.
4. FINISH MATERIAL POLLUTANT CONTROL:
   A. ADHESIVES, SEALANTS, AND CAULKS SHALL MEET OR EXCEED THE STANDARDS OUTLINED IN SECTION 4.504.2.1 AND COMPLY WITH VOC LIMITS IN TABLES 4.504.1 AND 4.504.2 AS APPLICABLE.
   B. PAINTS AND COATINGS SHALL MEET OR EXCEED THE STANDARDS OUTLINED IN SECTION 4.504.2.2 AND COMPLY WITH THE VOC LIMITS IN TABLES 4.504.3
   C. AERSOL PAINTS AND COATINGS SHALL MEET OR EXCEED THE STANDARDS OUTLINED IN SECTION 4.504.2.3
   D. ALL CARPET INSTALLED IN THE BUILDING INTERIOR SHALL MEET THE TESTING AND PRODUCT REQUIREMENTS OF ONE OF THE FOLLWOING:
      I. CARPET AND RUG INSTITUTE'S GREEN LABEL PLUS PROGRAM OR.
      II. CALIFORNIA DEPARTMENT OF PUBLIC HEALTH STANDARD METHOD OR THE TESTING VOC EMISSIONS OR
      III NSF/ANSI 140 AT THE GOLD LEVEL OR
      IV. SCIENTIFIC CERTIFICATIONS SYSTEMS INDOOR ADVANTAGE GOLD.
   E. ALL CARPET CUSHION INSTALLED IN THE BUILDING INTERIOR SHALL MEET THE REQUIREMENTS OF THE CARPET RUGS INSTITUTE GREEN LABEL PROGRAM. CAREPT ADHESIVES SHALL NOT EXCEED A VOC LIMIT OF 50 g/L.
   F. A MINIMUM OF 80% OF FLOOR AREA RECEIVING RESILIENT FLOORING SHALL COMPLY WITH ONE OR MORE OF THE FOLLWING
      I. PRODUCTS CERTIFIED AS LOW-EMITTING MATERIAL IN CHPS HIGH PERFORMANCE PRODUCTS DATABASE OR
      II. PRODUCTS CERTIFIED UNDER UL GREEN GUARD GOLD
      III. CERTIFICATION UNDER THE RFCI FLOOR SCORE PROGRAM OR
      IV. MEET THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH STANDARD METHOD FOR TESTING OF VOC EMISSIONS.
   G. COMPOSITE WOOD PRODUCTS (HARDWOOD PLYWOOD, PARTICLE BOARD, AND MDF) INSTALLED ON THE INTERIOR OR EXTERIOR OF THE BUILDING SHALL MEET OR EXCEED THE STANDARDS OUTLINED IN TABLE 4.504.5. VERIFICATION OF COMPLIANCE WITH THESE SECTIONS MUST BE PROVIDED AT THE TIME OF FINAL INSPECTION.

GENERAL REQUIREMENTS NOTES:

1. THE CONSTRUCTION SHALL NOT RESTRICT A FIVE FOOT CLEAR AND UNOBSTRUCTED ACCESS TO ANY WATER OR POWER DISTRIBUTION FACILITIES (POWER POLES, PULL BOXES, TRANSFORMERS, VAULTS, PUMPS, VALVES, METERS, APPURTENANCES, ETC.) OR TO THE LOCATION OF THE HOOK-UP. THE CONSTRUCTION SHALL NOT BE WITHIN TEN FEET OF ANY POWER LINES- WHETHER OR NOT THE LINES ARE LOCATED ON THE PROPERTY. FAILURE TO COMPLY MAY CAUSE CONSTRUCTION DELAYS AND/OR ADDITIONAL EXPENSES.
2. AN APPROVED SEISMIC GAS SHUTOFF VALVE WILL BE INSTALLED ON THE FUEL GAS LINE ON THE DOWN STREAM SIDE OF THE UTILITY METER AND BE RIDGIDLY CONNECTED TO THE EXTERIOR OF THE BUILDING OR STRUCTURE CONTAINING THE FUEL GAS PIPING.
3. PLUMBING FIXTURES ARE REQUIRED TO BE CONNECTED TO A SANITARY SEWER OR AN APPROVED SEWAGGE DISPOSAL SYSTEM
4. KITCHEN SINKS, LAVATORIES, BATHTUBS, SHOWERS, BIDETS, LAUNDRY TUBS AND WASHING MACHINE OUTLETS SHALL BE PROVIDED WITH HOT AND COLD WATER AND CONNECT TO AN APPROVED WATER SUPPLY.
5. BATHTUB AND SHOWER FLOORS, WALLS ABOVE BATHTUBS WITH A SHOWERHEAD, AND SHOWER COMPARTMENTS SHALL BE FINISHED WITH A NON-ABSORBENT SURFACE. SUCH WALL SURFACES SHALL EXTEND TO A EHGIHT OF NOT LESS THAN 6' FOOT ABOVE THE FLOOR.
6. PROVIDE ULTRA-= FLUSH WATER CLOSETS FOR ALL NEW CONSTRUCTION. EXISTING SHOWER HEADS AND TOILETS MUST BE ADAPTED FOR LOW WATER CONSUMPTION.
7. SMOKE DETECTORS SHALL BE PROVIDED FOR DWELLING UNITS INTENDED FOR HUMAN OCCUPANCY, UPON THE OWNERS APPLICATION FOR A PERMIT FOR ALTERATIONS, REPAIRS, OR ADDITIONS, EXCEEDING ONE THOUSAND DOLLARS ($1,000.00)
8. WHERE A PERMIT IS REQUIRED FOR ATLERATIONS, REPAIRS OR ADDITIONS EXCEEDING ONE THOUSAND DOLLARS ($1,000.00), EXISTING DWELLINGS OR SLEEPING UNITS THAT HAVE ATTACHED GARAGES OR FUEL-BURNING APPLIANCES SHALL BE PROVIDED WITH A CARBON MONOXIDE ALARM IN ACCORDANCE WITH SECTION R315.2. CARBON MONOXIDE ALARMS SHALL ONLY BE REQUIRED IN THE SPECIFIC DWELLING UNIT OR SLEEPIING UNIT FOR WHICH THE PERMIT WAS OBTAINED.
9. EVERY SPACE INTENDED FOR HUMAN OCCUPANCY SHALL BE PROVIDED WITH NATURAL LIGHT BY MEANS OF EXTERIOR GLAZED OPENINGS IN ACCORDANCE WITH SECTION R303.1 OR SHALL BE PROVIDED WITH ARTIFICIAL LIGHT THAT IS ADEQUATE TO PROVIDE AN AVERAGE OF 6 FOOT- CANDLES OVER THE AREA OF THE ROOM AT A HEIGHT OF 30 INCHES ABOVE THE FLOOR LEVEL.
10. DOORS BETWEEN GARAGE AND DWELLING UNIT SHALL HAVE A MINIMUM FIRE PROTECTION RATING OF 20 MINUTES AND SELF-CLOSING AND SELF-LATCHING DEVICES, OR A SOLID WOOD OR HONEY-COMB STEEL NOT LESS THAN 1-3/8" THICK.
11. THE GARAGE SHALL BE SEPARATED FROM THE DWELLING AND ITS ATTIC AREA IN ACCORDANCE WITH THE TABLE R302.6
12. PROVIDE ULTRA-FLUSH WATER CLOSETS FOR ALL NEW CONSTRUCTION. EXISTING SHOWER HEADS AND TOILETS MUST BE ADAPTED FOR LOW WATER CONSUMPTION

REGISTERED PROFESSIONAL ENGINEER
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THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY AND COPYRIGHT OF CENTURY 21 DESIGN GROUP, AND SHALL NOT BE USED ON ANY OTHER WORK EXCEPT BY AGREEMENT WITH CENTURY 21 DESIGN GROUP. WRITTEN DIMENSIONS SHALL TAKE REFERENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED ON THE JOB SITE. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF CENTURY 21 DESIGN GROUP PRIOR TO THE COMMENCEMENT OF ANY WORK.

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#	DESCRIPTION	DATE

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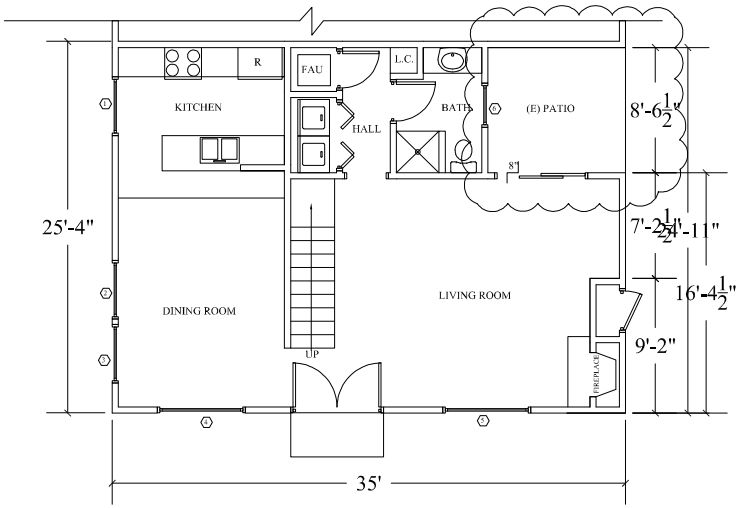
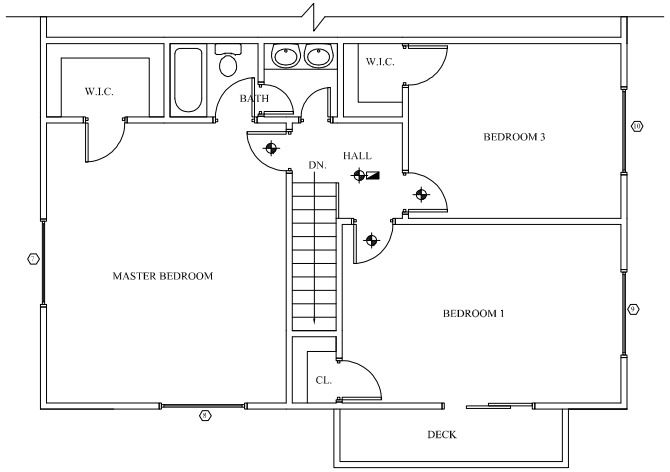
APN: 4147-011-045

Project	2021-35	Sheet
Date	03/16/2021	A-2
Scale	1/4" = 1'-0"	



(E) FIRST FLOOR

SCALE: 1/4"=1'-0"



NO PROPOSED CHANGES

(E) SECOND FLOOR

SCALE: 1/4"=1'-0"

WALL LEGEND

	EXISTING WALLS
	WALLS TO BE REMOVED
	NEW WALLS

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APN: 4147-011-045

Project 2021-35	Sheet A-3
Date 03/16/2021	
Scale 1/4" = 1'-0"	

WINDOW SCHEDULE

VINYL FRAME LOW "E"

U-FACTOR 0.30
SHGC = 0.21

MARK	SIZE	TYPE	MATERIAL	REMARKS	(E) / (N)
1	4'-0" X 4'-0"	SLIDER	VINYL		(E)
2	4'-0" X 4'-0"	SLIDER	VINYL		(E)
3	4'-0" X 4'-0"	SLIDER	VINYL		(E)
4	6'-0" X 4'-0"	SLIDER	VINYL		(E)
5	6'-0" X 4'-0"	SLIDER	VINYL		(E)
6	3'-0" X 2'-0"	SLIDER	VINYL		(E)
7	6'-0" X 4'-0"	SLIDER	VINYL		(E)
8	6'-0" X 4'-0"	SLIDER	VINYL		(E)
9	6'-0" X 3'-0"	SLIDER	VINYL		(E)
10	6'-0" X 4'-0"	SLIDER	VINYL		(E)
11	4'-0" X 4'-0"	SLIDER	VINYL		(N)

1– LOAD RESISTANCE OF GLASS UNDER UNIFORM LOAD SHALL BE DETERMINED IN ACCORDANCE WITH ASTM E1300

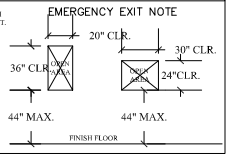
2–WINDOWS USED FOR EGRESS SHALL COMPLY WITH THE PROVISIONS OF CRC R310 THE REQUIRED MINIMUM NET CLEAR OPENABLE HEIGHT SHALL BE 24" AND NET CLEAR OPENABLE SHALL BE 20" WIDTH A MINIMUM CLEAR OPENING OF 5.7 SQ.FT. (5.0 SF ON GROUND FLOOR). THE BOTTOM OF THE CLEAR OPENING SHALL NOT BE GREATER THAN 44 INCHES MEASURED FROM THE FLOOR.

3–FIRE–RESISTIVE ASSEMBLIES FOR THE PROTECTION OF OPENINGS, WHEN REQUIRED BY THE BUILDING CODE SHALL COMPLY WITH TABLE 715.4 AND TABLE 715.5. BUILDING CODE SECTION 705.8.2

4– THE NFRC TEMPORARY LABEL DISPLAYED ON WINDOWS MUST REMAIN ON THE UNIT UNTIL FINAL INSPECTION HAS BEEN COMPLETED

1. 20" MIN. CLEAR WIDTH
2. 24" MIN. CLEAR HEIGHT.
3. 5.0 SQ.FT. MIN. OPENABLE AREA

EMERGENCY EXIT NOTE



DOOR SCHEDULE

MARK	SIZE	TYPE	REMARKS
1	3'-6" X 6'-0"	SOLID CORE 1-3/8" THICK	

WALL LEGEND

- EXISTING WALLS
- WALLS TO BE REMOVED
- NEW WALLS

BATHROOM VENTILATION: 50 CFM MIN.

1 FAN SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO TERMINATE OUTSIDE OF THE BUILDING.
2. FANS, NONT FUNCTIONING AS COMPONENT OF A WHOLE HOUSE VENTILATION SYSTEM, MUST BE CONTROLLED BY A HUMIDITY CONTROL.
3. HUMIDITY CONTROL SHALL BE CAPABLE OF ADJUSTMENT BETWEEN A RELATIVE HUMIDITY RANGE OF LESS THAN OR EQUAL TO 50% TO A MAXIMUM OF 80%. R303.3.1 CRC.

CARBON MONOXIDE ALARM REQUIREMENTS:
1. CO ALARMS SHALL BE HARD WIRED AND SHALL BE EQUIPPED WITH BATTERY BACK UP
2. CO ALARMS SHALL BE LISTED IN ACCORDANCE WITH UL 2034
3. CO DETECTOR SHALL BE LISTED IN ACCORDANCE WITH UL2075
4. CO ALARMS SHALL BE INTERCONNECTED SUCH THAT THE ACTIVATION OF ONE ALARM WILL ACTIVATE ALL ALARMS IN THE INDIVIDUAL DWELLING UNIT. CRC R315.3
5. IN EXISTING DWELLING UNIT A CO ALARM IS PERMITTED TO BE BATTERY OPERATED WIRE REPAIR OR ALTERATION DO NOT RESULT IN THE REMOVAL OF WALL OR CEILING FINISHES. CRC R315.5 EXCEPTION 4.2

SMOKE ALARM REQUIREMENTS:
1. AN APPROVED SMOKE ALARM SHALL BE INSTLLED FOR NEW CONSTRUCTION AND ALTERATION, REPAIR OR ADDITIONS REQUIRING PERMIT EXCEEDING $7,000.00
2. BATTERY OPERATED SMOKE ALARMS PERMITTED IN EXISTING BUILDINGS WHERE NO CONSTRUCTION IS TAKING PLACE OR IN BUILDING UNDERGOING ALTERATION OR REPAIR THAT DO NOT RESULT IN THE REMOVAL OF THE INTERIOR WALLS OR CEILING FINISHES, UNLESS THERE IS AN ATTIC, CRAWL SPACE OR BASEMENT WHICH COULD PROVIDE ACCESS FOR WIRING CRC R314.6
3. SMOKE ALARMS SHALL BE INTERCONNECTED SUCH THAT ACTIVATION OF ONE ALARM WILL ACTIVATE ALL ALARMS IN THE INDIVIDUAL DWELLING UNIT.
4. SMOKE DETECTORS SHALL BE HARDWIRED AND SHALL BE EQUIPPED WITH BATTERY BACK-UP CRC R314.6.

ELECTRICAL SCHEDULE

ALL LIGHTING HIGH EFFICACY

- SWITCH
- SWITCH W/ DIMMER
- SWITCH VACANCY SENSOR
- AFCI OUTLET
- GFCI OUTLET
- DIMMER SWITCH
- 3- WAY SWITCH
- LIGHT HIGH EFFICAY
- SMOKE DETECTOR (HARDWIRED @ NEW)
- EXHAUST FAN 50 CFM MIN. W/ HUMIDITY SENSOR
- RECESSED LED LIGHT
- PHONE LINE
- COAXIAL CABLE T.V.
- FAN
- FL FLUORESCENT LIGHT (HIGH EFFICACY)
- CARBON MONOXIDE ALARM
- INDOOR AIR QUALITY FAN
- PC PHOTO CELL
- MS MOTION SENSOR

WALL LEGEND

- (E) WALLS
- (N) WALL 2X4 STUDS @ 16" O.C.

INSULATION

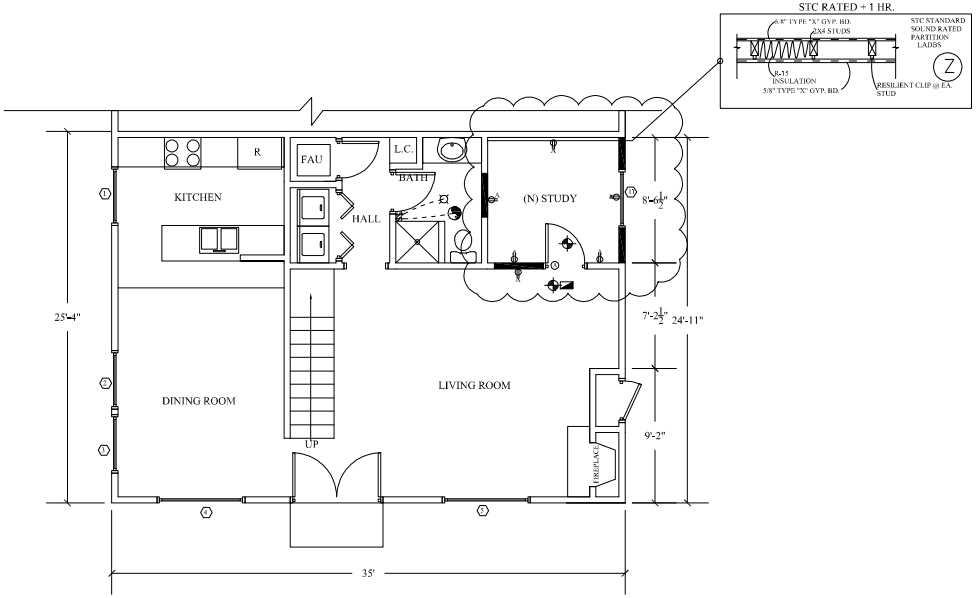
R-15 INSULATION AT WALLS

FINISH SCHEDULE

WALLS CEILINGS

GYP. BOARD THICKNESS 1/2"
SHALL BE INSTALLED PERPENDICULAR TO WOOD MEMBERS
MAX. SPACING OF WOOD MEMBERS 24", 16" PROPOSED
MAX. SPACING OF NAILS 6", MAX SPACING SCREWS 6"
FASTNER=1-7/8" 6d DRYWALL SCREWS

2 COATS OF PLASTER NOT TO EXCEED 3/16 OVER GYP. BD.



(N) FIRST FLOOR

SCALE: 1/4"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
SAMUEL A. ESPINO
No. C055526
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ENCL. (E) PATIO

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REVISIONS

#	DESCRIPTION	DATE

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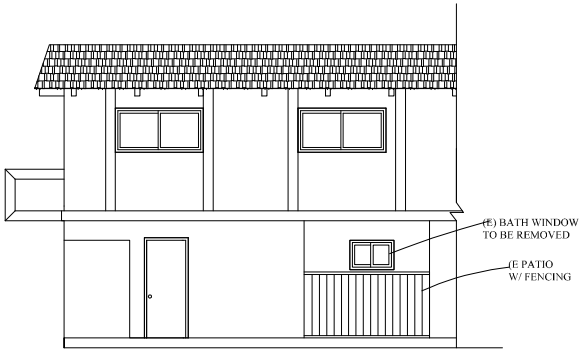
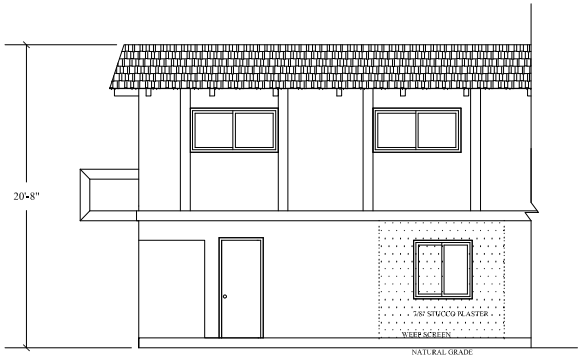
APN: 4147-011-045

Project 2023-35	Sheet A-4
Date 03/16/2023	
Scale 1/4" = 1'-0"	



(E) EAST ELEVATION

SCALE: 1/4"=1'-0"



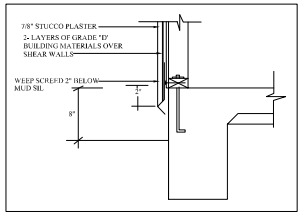
ALL MATERIALS TO MATCH
(E) IN COLOR AND TEXTURE

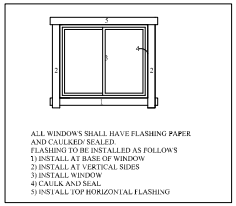
(N) EAST ELEVATION

SCALE: 1/4"=1'-0"

EXTERIOR NOTES

- EXTERIOR WALLS SHALL PROVIDE THE BUILDING WITH WEATHER RESISTANT EXTERIOR WALL ENVELOPE. THE EXTERIOR WALL ENVELOPE SHALL INCLUDE FLASHINGS, AS DESCRIBED IN SECTION 1405.3. THE EXTERIOR WALL ENVELOPE SHALL BE DESIGNED AND CONSTRUCTED IN SUCH A MANNER AS TO PREVENT THE ACCUMULATION OF WATER WITHIN THE WALL ASSEMBLY BY PROVIDING A WATER-- RESISTIVE BARRIER BEHIND THE EXTERIOR VENEER, AS DESCRIBED IN SECTION 1404.2, AND A MEANS FOR DRAINING WATER THAT ENTERS THE ASSEMBLY TO THE EXTERIOR. PROTECTION AGAINST CONDENSATION IN THE EXTERIOR WALL ASSEMBLY SHALL BE PROVIDED IN ACCORDANCE WITH THE CALIFORNIA ENERGY CODE, SECTION 150 OF TITLE 24, AND PART 6, 1403.2.
- FLASHING SHALL BE INSTALLED IN SUCH A MANNER SO AS TO PREVENT MOISTURE FROM ENTERING THE WALL OR TO REDIRECT IT TO THE EXTERIOR. FLASHING SHALL BE INSTALLED AT THE PERIMETERS OF EXTERIOR DOOR AND WINDOW ASSEMBLIES, PENETRATIONS AND TERMINATIONS OF EXTERIOR WALL ASSEMBLIES, EXTERIOR WALL INTERSECTIONS WITH ROOFS, CHIMNEYS, PORCHES, DECKS, BALCONIES AND SIMILAR PROJECTIONS AND AT BUILT-IN GUTTERS AND SIMILAR LOCATIONS WHERE MOISTURE COULD ENTER THE WALL. FLASHING WITH PROJECTING FLANGES SHALL BE INSTALLED ON BOTH SIDES AND ENDS OF THE COPINGS, UNDER SILLS AND CONTINUOUSLY ABOVE PROJECTING TRIM. 1405.3
- FLASHING SHALL BE INSTALLED IN SUCH A MANNER SO AS TO PREVENT MOISTURE ENTERING THE WALL AND ROOF THROUGH JOINTS IN COPINGS, THROUGH MOISTURE-PERMEABLE MATERIALS AND AT INTERSECTIONS WITH PARAPET WALLS AND OTHER PENETRATIONS TROUGH ROOF PLANE. 1503.2
- FLASHING SHALL BE INSTALLED AT WALL AND ROOF INTERSECTIONS, AT GUTTERS, WHEREVER THERE IS A CHANGE IN ROOF SLOPE OR DIRECTION AND AROUND ROOF OPENINGS. WHERE FLASHING IS OF METAL, THE METAL SHALL BE CORROSION RESISTANT WITH A THICKNESS OF NOT LESS THAN 0.019 INCH (0.483MM) (No. 26 GALVANIZED SHEET) 1503.2.1





ALL WINDOWS SHALL HAVE FLASHING PAPER
AND CAULKED/ SEALED
FLASHING TO BE INSTALLED AS FOLLOWS
1) INSTALL AT BASE OF WINDOW
2) INSTALL AT VERTICAL SIDES
3) INSTALL WINDOW
4) CAULK AND SEAL
5) INSTALL TOP HORIZONTAL FLASHING

ESR-3594
STUCCO SPECIFICATIONS:
2 LAYERS OF GRADE D BUILDING PAPER
LATHING WIRE- 1-1/2" 16 GAUGE STUCCO NETTING
APPLY SCRATCH COAT TO A NOMINAL THICKNESS OF 3/8"
APPLY BROWN COAT TO A NOMINCAL THICKNESS OF 3/8"
APPLY STUCCO COLOR TOP COAT THICKNESS 1/8"
TOTAL THICKNESS = 7/8"

BASE COATS IN ACCORDANCE WITH ASTM C 926

EXTERIOR WALL WATER RESISTIVE BARRIER:
1) ONE LAYER OF NO. 15 ASPHALT FELT, COMPLYING WITH ASTM D 226; FOR TYPE I FELT, OR OTHER APPROVED WATER RESISTIVE BARRIER, IS REQUIRED FOR EXTERIOR. SUCH MATERIAL SHALL BE APPLIED HORIZONTALLY, WITH THE UPPER LAYER LAPPED OVER THE LOWER LAYER NOT LESS THAN 2" AND WHERE JOINTS OCCUR, THE MATERIAL SHALL BE LAPPED NOT LESS THAN 6 INCHES. WHERE APPLIED OVER WOOD BASE SHEATHING, A PERFORMANCE AT LEAST EQUIVALANT TO TWO LAYERS OF GRADE D PAPER IS REQUIRED.

NOTE:
- THE ROOF SHAPES AND ROOFING MATERIALS FOR ALL BUILDINGS AND ADDITIONS SHALL BE CONSISTENT THROUGHOUT THE PROPERTY
- STUCCO FINISH AND COLOR TO MATCH EXISTING

1. OPENINGS SHALL HAVE CORROSION-RESISTANT WIRE MESH OR OTHER APPROVED MATERIAL WITH 1/16-IN. MIMIMUM AND 1/4-IN. MAXIMUM OPENING.
2. A MINIMUM OF 1-IN. AIRSPACE SHALL BE PROVIDED BETWEEN INSULATION AND ROOF SHEATHING.

WEEP SCREED NOTE:
MINIMUM 0.019" (NO. 26 GALVANIZED SHEET GAGE) CORROSION RESISTANT OR PLASTIC WEEP SCREED LOCATED BELOW FOUNDATION PLATE LINE AND 4 INCHES ABOVE GRADE ON ALL EXTERIOR STUD WALLS OR 2-INCHES ABOVE PAVED AREAS (25.12.1.2)

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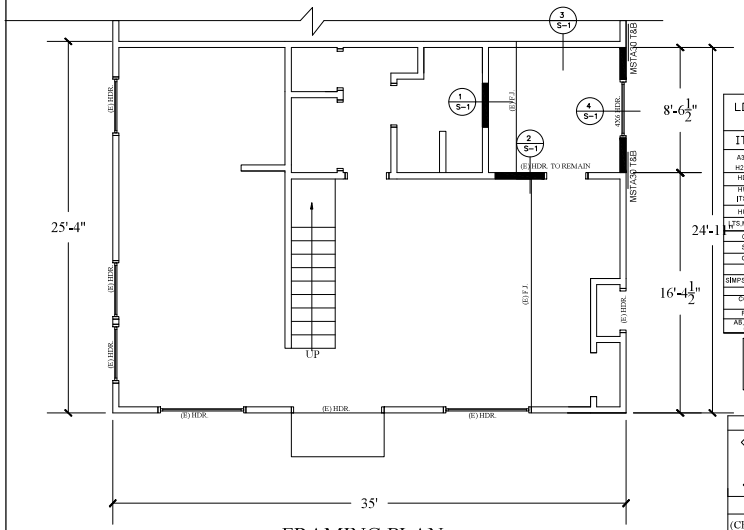
Project 2023-35	Sheet A-5
Date 03/16/2023	
Scale 1/4" = 1'-0"	

New Loads due to Patio enclosure << 5% of Existing Loads : NO LATERAL ANALYSIS REQ'D
Existing Bearing Walls,Beams and Floor Joists : NO ADDITIONAL VERTICAL LOADS FROM 2nd Floor



FRAMING PLAN

SCALE: 1/4"=1'-0"

LOS ANGELES RESEARCH REPORT NUMBERS	
ITEM	LA RR#
A34,A35,LTP4	25814
H2.5,H3,H4,H5	25718
HDU4,HDS8,HDT8,HD9,HD12	25828
HW,HWU,LEG,WEG,EG ITS,ITT,MIT,HIT(Ω Hangers)	25803
HU,HUC,U,HUS,LUS	25807
MTS,MTS,FTA,CS,MST (STRAPS)	25713
GL (Hanger)	25807
STQ (Hanger)	25803
GH (Girder Conn.)	25726
PARALLAM	25202
SIMPSON 0.157"Ø Gas-Actuated	25837
GLUELAM	25838
CC,BCC,CCQ 5052,5 (Post Cap)	25714
FIRE BARRIER (INTERTEK)	25729
AB,ABE,ABU,PBV,CPTZ (Post Base)	25712

CONCRETE PORTLAND CEMENT SHALL CONFORM TO ASTM (-150 TYPE II F'C: 2,500 PSI (28 DAYS) WATER CEMENT RATIO NOT TO EXCEED 0.45. NO SPECIAL INSPECTION REQ'D

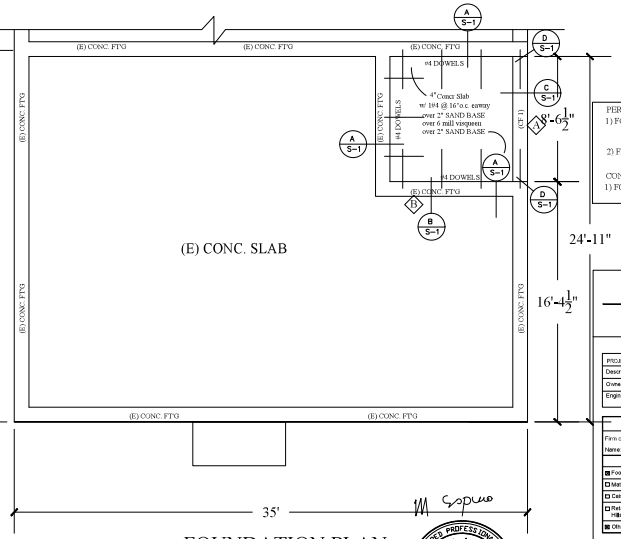
ANCHORS

A: 5/8" Ø X 12" A.B. @ 4' O.C. & 12" FROM ENDS. *USE 0.299 X 3" X 3" STEEL PLATE WASHERS

B: 5/8" Ø X 10" A.B. @ 4' O.C. w/SET-XP

CONC. FOOT'G

(CF 1): 15" WIDE X 24" DEEP CONC. FT'G W/ 2#4 T&B



FOUNDATION PLAN

SCALE: 1/4"=1'-0"

PERIODICAL SPECIAL INSPECTION FOR :
1) FOUNDATION:
a)Cont. Ftng
b)Anchor Bolts
2) FRAMING:
a)New Stud Walls & Wall Enclosure
CONTINUOUS SPECIAL INSPECTION FOR :
1) FOUNDATION:
a)EPOXY TIE APPLICATIONS :AB & STEELREBARS

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS BUILDING & SAFETY DIVISION
LOS ANGELES REGIONAL UNIFORM CODE PROGRAM

STRUCTURAL OBSERVATION PROGRAM AND DESIGNATION OF THE STRUCTURAL OBSERVER

PERMIT APPL. NO.: _____

PROJECT ADDRESS:
Description of Work :
Owner: Architect:
Engineer of record:

STRUCTURAL OBSERVATION (only checked items are required)

Firm or individual to be responsible for the Structural Observation:
Name: Phone: ( ) Cell#, Registration :

FOUNDATION	WALL	FRAME	DIAPHRAGM
☒ Footing, Stem Walls, Piers	☐ Concrete	☐ Steel Moment Frame	☒ Concrete Slab On Grade
☐ Mat Foundation	☐ Masonry	☒ Steel braced Frame	☐ Steel Deck
☐ Caisson, Piles, Grade Beams	☒ Wood	☐ Concrete Moment Frame	☐ Wood
☐ Retaining Foundation, Hillside Special Anchors	☐ Others:	☐ Masonry Wall Frame	☐ Others:
☒ Others: AB & STEEL REBAR EPOXY		☐ Others:	

DECLARATION BY OWNER
I, the Owner of this project, declare that the above listed firm or individual is hired by me to be the Structural Observer.

Signature Date

DECLARATION BY ARCHITECT OR ENGINEER OF RECORD (required if the Structural Observer is different from the Architect or Engineer of Record)
I, the Architect or Engineer of record for this project, declare that the above listed firm or individual is designated by me to be responsible for the Structural Observation.

Signature License No. Date

REGISTERED PROFESSIONAL ENGINEER MANUEL A. EXPINOSA No. C035526 EXP. 12-31-22 CIVIL STATE OF CALIFORNIA

FRAMING NOTES
- ROOF DIAPHRAGM NAILING TO BE INSPECTED BEFORE COVERING
- SOLID BLOCKING SHALL BE PROVIDED AT ALL HORIZONTAL JOINTS OCCURRING IN BRACED WALL PANELS.
- THE FOLLOWING APPLIES TO ALL SHEAR WALLS WITH A SHEAR VALUE GREATER THAN 350 PLF. THESE WALLS SHALL BE CLEARLY INDENTIFIED ON THE PLANS, PROVIDE THE FOLLOWING:

a) 3x FOUNDATION SILL PLATES.
b) 3 x STUDS AND BLOCKS BETWEEN ADJACENT PANELS.
c) 1/2" EDGE DISTANCE FOR PLYWOOD BOUNDARY NAILING.
d) ALL PANEL JOINT AND SILL PLATE NAILING SHALLBE STAGGERED
e) SQUARE PLATE WASHERS SHALL BE USED WITH ALL ANCHOR BOLTS. 2304.9.5 5/8" BOLT-3x3x0.229"
- ALL DIAPHRAGM AND SHEAR WALL NAILING SHALL UTILIZE COMMON NAILS OR GALVANIZED BOX.
- FASTENERS FOR WOOD STRUCTURAL PANEL SHEATHING ON SHEAR WALLS AND DIAPHRAGMS SHALL BE COMMON NAILS WITH FULL HEADS UNLESS OTHERWISE APPROVED.
- FASTENERS FOR PRESERVATIVE TREATED & FIRE TREATED WOOD SHALL BE HOT DIPPED ZINC COATED GALVANIZED STEEL,SILICON BRONCE OR COPPER,THE COATING WEIGHTS FOR ZINC COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM A153
- BOLT HOLES SHALL BE DRILLED 1/32" to 1/16" OVERSIZED
- PROVIDE LEAD HOLE 40%-70% OF THREADED SHANK DIA. AND FULL DIA. FOR SMOOTH SHANK PORTION.
- PLYWOOD ROOF PANELS SHALL BE BONDED WITH INTERMEDIATE OR EXTERIOR GLUE WHERE EXPOSED TO THE WEATHER
- GLUE LAM BEAMS MUST BE FABRICATED IN A LADBS LICENCED SHOP

STUCCO LATH AND DRYWALL SHALL BE NAILED TO ALL STUDS AND T&B PLATES
- DO NOT CUT OFF OR PAINT OVER GRADE STAMP OF BEAMS

FOUNDATION NOTES
- SOIL TYPE OF SOIL AND BEARING VALUE PER TABLE 1806.2
- HOLDOWNS CONNECTOR BOLTS INTO WOOD FRAMING REQUIRE APPROVED PLATE WASHERS, AND HOLD-DOWNS SHALL BE FINGER TIGHT & 1/2 WRENCH TURN JUST PRIOR TO COVERING THE WALL FRAMING.
- HOLDOWN HARDWARE MUST BE SECURED IN PLACE PRIOR TO FOUNDATION INSPECTION
- HOLD-DOWN SHALL BE TIGHTENED TO FINGER TIGHT PLUS 1/2 WRENCH TURN JUST PRIOR TO COVERING THE WALL FRAMING.
- ANCHOR BOLTS SHALL BE EMBEDDED AT LEAST 7" INTO CONCRETE OR MASONRY= SPACED MAXIMUM OF 4' APART.
- ANCHOR BOLTS REQUIRED AT MAXIMUM OF 12" FROM CORNERS, OPENINGS AND SPLICES (1806.6)
- PLATE WASHERS ARE REQUIRED FOR ALL HOLD DOWNS.
- A CORROSION-RESISTANT 26-GAGE MIN. WEEP SCREED SHOULD BE PROVIDED AT OR BELOW THE FOUNDATION PLATE LINE ON ALL EXTERIOR STUD WALLS AND SHOULD BE PLACED AT MINIMUM OF 6" ABOVE THE EARTH OR 2" ABOVE PAVED AREAS 2512.1.2
- PROVIDE SPECIAL INSPECTION FOR
- IF ADVERSE SOIL CONDITIONS ARE ENCOUNTERED,A SOILS INVESTIGATION REPORT MAY BE REQUIRED
- FOUNDATION SILLS SHALL BE NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD
- FIELD CUTS ENDS,NOTCHES AND DRILLED HOLES SHALL BE FIELD TREATED PER AWPA-M4
- ANCHOR BOLTS IN CONTACT WITH PRESSURE TREATED SILL PLATES SHALL BE HOT DIPPED ZINC COATED GALVANIZED STEEL,STAINLESS STEEL,SILICON BRONCE OR COPPER per CBC 2304.9.5.1
- ALL STUMPS AND ROOTS SHALL BE RMEOVED FROM THE SOIL TO A DEPTH AT LEAST 24" BELOW THE SURFACE OF THE GROUND IN THE AREA TO BE OCCUPIED BY THE BUILDING
- REBAR SPLICE SHALL BE NO LESS THAN 40X DIAMETER
- USE 3"x3"x.229" STEEL PLATE WASHERS

DESIGN CRITERIA

TIMBER: DOC 2.0 DOUGLAS FIR LARCH (PER GRADING RULES 16)
2" X 4" AND 4" X 4" STANDARD GRADE (VERTICAL MEMBERS) No 2 GRADE (HORIZONTAL MEMBERS)
2" X 6" AND LARGER .....No. 2 GRADE (HORIZONTAL AND REPETIVE USES) VERTICAL MEMBERS)
4" X 6" AND LARGER .....No 1 GRADE (VERTICAL AND (BEAMS AND STRINGERS) HORIZONTAL MEMBERS)
2.0E PARALLAM PSI, Headers & Beams :ESR-1387

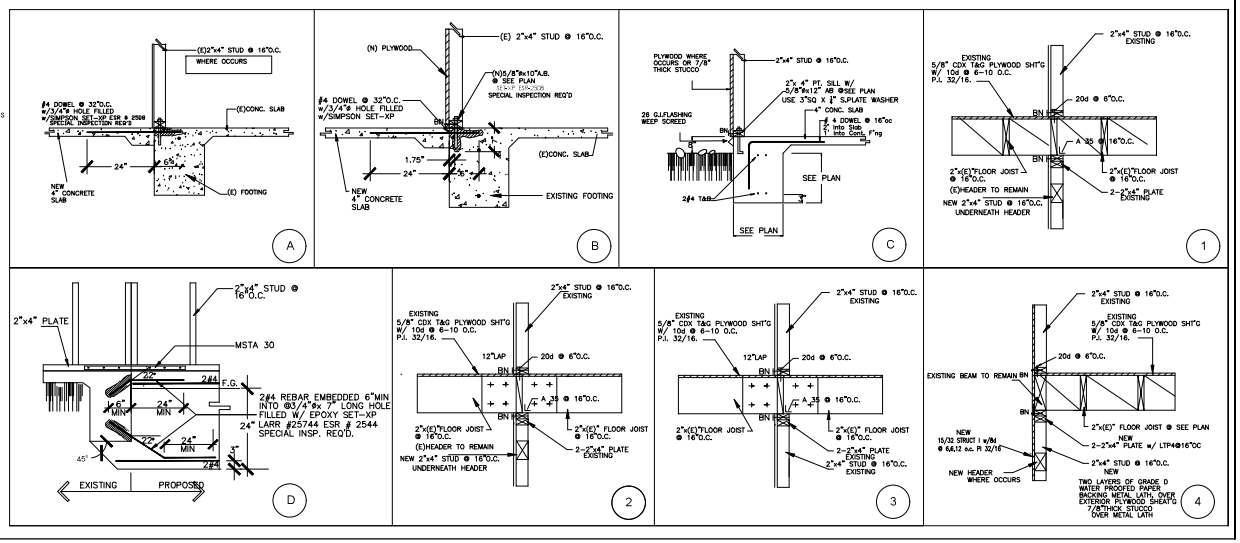
TIMBER: MAXIMUN MOISTURE CONTENT 19%

PLYWOOD: Doc PS-for PS2 PER APA STANDARD, PL 32/16
GLUE LAMINATED: 24A/4 DF/DF, PER AITC STANDARDS.
Fb = 2400 PSI, Fv = 165 psi, W = 1,800,000
STRUCTURAL STEEL: ASTM A-36 STEEL Per AISC STANDARDS
PIPE AND TUBING GRADE B TYPE E OR TYPE S, ASTM A501
WELDING: AWS-E70XX Per AMERICAN WELDING SOCIETY STANDARDS

CONCRETE: (STRENGTH @ 28 DAYS) PER ACI 318 SPECIFICATIONS.
FOUNDATIONS f'c = 2,500 psi

REINFORCING STEEL: ASTM A - 615 PER CRSI STANDARDS
4 AND SMALLER GRADE 40
5 AND LARGER GRADE 60

SOIL: ALLOWABLE SOIL BEARING VALUE (Fbrg)= 1,500 PSF
PER SOILS REPORT BY 2019 CBC TABLE 1806.2



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APN: 4147-011-045

Project 2021-35	Sheet S-1
Date 03/16/2021	
Scale 1/4" = 1'-0"	

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 <u>shall appear as notes on the plans</u>.

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 with the 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 2019 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) 6

06 - 16 - 2020

CERTIFICATE OF COMPLIANCE CF1R-PRF-01E
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Calculation Description: Title 24 Analysis
Calculation Date/Time: 2021-03-25T11:33:04-07:00
Input File Name: G21-5759.ribd19x

GENERAL INFORMATION

01	Project Name	UNIT A ADDITION			
02	Run Title	Title 24 Analysis			
03	Project Location	2303 ROCKERFELLER LANE, UNIT A			
04	City	REDONDO BEACH	05	Standards Version	2019
06	Zip code	90278	07	Software Version	EnergyPro 8.2
08	Climate Zone	6	09	Front Orientation (deg/ Cardinal)	180
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	AdditionAlteration	13	Number of Bedrooms	3
14	Addition Cond. Floor Area (ft²)	80	15	Number of Stories	2
16	Existing Cond. Floor Area (ft²)	1678	17	Fenestration Average U-factor	0.3
18	Total Cond. Floor Area (ft²)	1758	19	Glazing Percentage (%)	13.77%
20	ADU Bedroom Count	n/a	21	ADU Conditioned Floor Area	n/a
22	Is Natural Gas Available?	Yes			

COMPLIANCE RESULTS

01	Building Complies with Computer Performance
02	Building does not require field testing or HERS verification
03	This building incorporates one or more Special Features shown below

ENERGY USE SUMMARY

Energy Use (kTDV/ft²-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	44.56	43.26	1.3	2.9
Space Cooling	68.66	66.42	2.24	3.3
IAQ Ventilation	0	0	0	
Water Heating	21.39	21.39	0	0
Self Utilization/Flexibility Credit	n/a	0	0	n/a
Compliance Energy Total	**134.61**	**131.07**	**3.54**	**2.6**

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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.

- New ductwork added is less than 40 ft. in length

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 CF2Rs and CF3Rs are required to be completed in the HERS Registry

Building-level Verifications:
- -- None --

Cooling System Verifications:
- -- None --

Heating System Verifications:
- -- None --

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
UNIT A ADDITION	1758	1	3	3	0	1

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
PATIO TO BE ENCLOSED	Conditioned	UNIT A1	80	8	DHW Sys 1	N/A
EXISTING 1ST FLOOR	Conditioned	UNIT A1	746	8	DHW Sys 1	N/A
EXISTING 2ND FLOOR	Conditioned	UNIT A1	932	8	DHW Sys 1	N/A

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REVISIONS	BY

PERFECT DESIGN & INVESTMENT, INC.
•Design & Consulting
•Air-Conditioning, Plumbing, Fire Sprinkler System,
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UNIT "A" ADDITION
2303 ROCKERFELLER LANE, UNIT A
REDONDO BEACH, CA 90278

Date 3/25/2021
Scale
Drawn
Job # G21-5759
Sheet 1
RESIDENTIAL T24 SHEET
Of 4 Sheets

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OPAQUE SURFACES

01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft²)	Window and Door Area (ft2)	Tilt (deg)	Wall Exceptions	Status	Verified Existing Condition
EAST WALL	PATIO TO BE ENCLOSED	R-15 Wall	90	Right	70.4	16	90	none	New	n/a
NORTH WALL	PATIO TO BE ENCLOSED	R-15 Wall	0	Back	74.4	0	90	none	New	n/a
WEST WALL	EXISTING 1ST FLOOR	Default Wall1	270	Left	202.4	48	90	none	Existing	No
EAST WALL 2	EXISTING 1ST FLOOR	Default Wall1	90	Right	132	0	90	none	Existing	No
NORTH WALL 2	EXISTING 1ST FLOOR	Default Wall1	0	Back	205.6	0	90	none	Existing	No
SOUTH WALL	EXISTING 1ST FLOOR	Default Wall1	180	Front	280	48	90	none	Existing	No
WEST WALL 2	EXISTING 2ND FLOOR	Default Wall1	270	Left	202.4	24	90	none	Existing	No
EAST WALL 3	EXISTING 2ND FLOOR	Default Wall1	90	Right	202.4	42	90	none	Existing	No
NORTH WALL 3	EXISTING 2ND FLOOR	Default Wall1	0	Back	320	0	90	none	Existing	No
SOUTH WALL 2	EXISTING 2ND FLOOR	Default Wall1	180	Front	320	64	90	none	Existing	No
Wall to Addition	PATIO TO BE ENCLOSED>>EXISTING 1ST FLOOR	Default Wall	n/a	n/a	144.8	0	n/a		New	n/a
Wall to Addition 2	EXISTING 1ST FLOOR>>PATIO TO BE ENCLOSED	Default Wall	n/a	n/a	144.8	0	n/a		New	n/a
EXISTING ROOF	EXISTING 1ST FLOOR	Default Roof	n/a	n/a	746	n/a	n/a		Existing	No

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OPAQUE SURFACES

01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Cross Area (ft²)	Window and Door Area (ft2)	Tilt (deg)	Wall Exceptions	Status	Verified Existing Condition
EXISTING ROOF 2	EXISTING 2ND FLOOR	Default Roof	n/a	n/a	932	n/a	n/a		Existing	No
RAISED FLOOR	EXISTING 2ND FLOOR	Default Floor No Crawlspa	n/a	n/a	106	n/a	n/a		Existing	No
Interior Floor	EXISTING 2ND FLOOR	Default Floor No Crwlspce	n/a	n/a	80	n/a	n/a		Existing	No
Interior Floor 2	EXISTING 2ND FLOOR	Default Floor No Crwlspce	n/a	n/a	746	n/a	n/a		Existing	No

ATTIC

01	02	03	04	05	06	07	08	09	10
Name	Construction	Type	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof	Status	Verified Existing Condition
Attic EXISTING 1ST FLOOR	Attic RoofEXISTING 1ST FLOOR	Ventilated	4	0.1	0.85	No	No	Existing	No
Attic EXISTING 2ND FLOOR	Attic RoofEXISTING 2ND FLOOR	Ventilated	4	0.1	0.85	No	No	Existing	No

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft²)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
WINDOWS	Window	EAST WALL	Right	90			1	16	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
WINDOWS 2	Window	WEST WALL	Left	270			1	48	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
WINDOWS 3	Window	SOUTH WALL	Front	180			1	48	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
WINDOWS 4	Window	WEST WALL 2	Left	270			1	24	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No

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FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft²)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
WINDOWS 5	Window	EAST WALL 3	Right	90			1	42	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
WINDOWS 6	Window	SOUTH WALL 2	Front	180			1	64	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No

SLAB FLOORS

01	02	03	04	05	06	07	08	09	10
Name	Zone	Area (ft²)	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated	Status	Verified Existing Condition
Covered Slab	PATIO TO BE ENCLOSED	80	18.1	none	0	80%	No	New	n/a
Covered Slab 2	EXISTING 1ST FLOOR	746	102.5	none	0	80%	No	Existing	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-15 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.095	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Exterior Finish: 3 Coat Stucco
Default Wall1	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.361	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Exterior Finish: 3 Coat Stucco

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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
Default Wall	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.277	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Other Side Finish: Gypsum Board
Attic RoofEXISTING 1ST FLOOR	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.4	Roofing: 10 PSF (RoofTileAirGap) Tile Gap: present Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
Attic RoofEXISTING 2ND FLOOR	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.4	Roofing: 10 PSF (RoofTileAirGap) Tile Gap: present Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
Default Roof	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 16 in. O. C.	R-0	None / None	0.472	Cavity / Frame: no insul. / 2x4 Inside Finish: Gypsum Board
Default Floor No Crawlspa	Exterior Floors	Wood Framed Floor	2x12 @ 16 in. O. C.	R-0	None / None	0.24	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x12
Default Floor No Crwlspce	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O. C.	R-0	None / None	0.196	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x12 Ceiling Below Finish: Gypsum Board

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BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	High R-value Spray Foam Insulation	Building Envelope Air Leakage	CFM50
Not Required	Not Required	Not Required	n/a

WATER HEATING SYSTEMS

01	02	03	04	05	06	07	08	09	10
Name	System Type	Distribution Type	Water Heater Name (#)	Solar Heating System	Compact Distribution	HERS Verification	Status	Verified Existing Condition	Existing Water Heating System
DHW Sys 1	Domestic Hot Water (DHW)	Standard Distribution System	DHW Heater 1 (1)	n/a	None	n/a	Existing	No	

WATER HEATERS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Heating Element Type	Tank Type	# of 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	Status	Verified Existing Condition
DHW Heater 1	Gas	Small Storage	1	50	0.53-EF	<= 75 kBtu/hr	0	76	n/a	n/a	n/a	Existing	No

WATER HEATING - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Compact Distribution Type	Recirculation Control	Central DHW Distribution	Shower Drain Water Heat Recovery
DHW Sys 1 - 1/1	Not Required	Not Required	Not Required	None	Not Required	Not Required	Not Required

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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	Verified Existing Condition	Heating Equipment Count	Cooling Equipment Count
UNIT A1	Heating and cooling system other	Heating Component 1	Cooling Component 1	HVAC Fan 1	Air Distribution System 1	n/a	Existing	No	1	1

HVAC - HEATING UNIT TYPES

01	02	03	04
Name	System Type	Number of Units	Heating Efficiency
Heating Component 1	Central gas furnace	1	AFUE-80

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07	08
Name	System Type	Number of Units	Efficiency EER/CEER	Efficiency SEER	Zonally Controlled	Mulit-speed Compressor	HERS Verification
Cooling Component 1	Central split AC	1	9.2	10	Not Zonal	Single Speed	Cooling Component 1-hers-cool

HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
			Duct Ins. R-value		Duct Location		Surface Area								
Name	Type	Design Type	Supply	Return	Supply	Return	Supply	Return	Bypass Duct	Duct Leakage	HERS Verification	Status	Verified Existing Condition	Existing Distribution system	New Ducts 40 ft
Air Distribution System 1	Unconditioned attic	Non-Verified	R-6	R-6	Attic	Attic	n/a	n/a	No Bypass Duct	Existing (not specified)	Air Distribution System	Existing + New	No	n/a	n/a

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REGISTERED PROFESSIONAL ENGINEER
RAYMOND MENG ZHONG
No. M-27635
Exp. 06-30-21
MECHANICAL
STATE OF CALIFORNIA

REVISIONS	BY

PERFECT DESIGN & INVESTMENT, INC.
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UNIT "A" ADDITION
2303 ROCKERFELLER LANE, UNIT A
REDONDO BEACH, CA 90278

Date 3/25/2021
Scale
Drawn
Job #G21-5759
Sheet 2
RESIDENTIAL T24 SHEET
Of 4 Sheets

CERTIFICATE OF COMPLIANCE

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HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
			Duct Ins. R-value		Duct Location		Surface Area								
Name	Type	Design Type	Supply	Return	Supply	Return	Supply	Return	Bypass Duct	Duct Leakage	HERS Verification	Status	Verified Existing Condition	Existing Distribution system	New Ducts 40 ft
											1-hers-dist				

HVAC FAN SYSTEMS - HERS VERIFICATION

01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficacy (Watts/CFM)
HVAC Fan 1-hers-fan	Not Required	0

CHEERS

CERTIFICATE OF COMPLIANCE

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Raymond Zhong	Documentation Author Signature: *Raymond Zhong*
Company: Perfect Design	Signature Date: 03/25/2021
Address: 2416 W. Valley Boulevard	CEA/ HERS Certification Identification (If applicable):
City/State/Zip: Alhambra, CA 91803	Phone: 626-289-8808

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:
1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Responsible Designer Name: GABRIEL FLORES	Responsible Designer Signature: *Gabriel Flores*
Company: CAD 21 DESIGN GROUP	Date Signed: 03/31/2021
Address: 10253 CHANEY AVE	License:
City/State/Zip: DOWNEY, CA 90241	Phone: 562-715-4875

Digitally signed by ConSol Home Energy Efficiency Rating System Services, Inc. (CHEERS). This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

RESIDENTIAL MEASURES SUMMARY — RMS-1

Project Name: UNIT "A" ADDITION
Building Type: ☑ Single Family ☐ Multi Family ☐ Addition Alone ☑ Existing+ Addition/Alteration
Date: 3/25/2021
Project Address: 2303 ROCKERFELLER LANE, UNIT A R
California Energy Climate Zone: CA Climate Zone 06
Total Cond. Floor Area: 1,758
Addition: 80
\# of Units: 1

INSULATION

Construction	Type	Cavity	Area (ft²)	Special Features	Status
Wall	Wood Framed	R 15	129		New
Demising	Wood Framed	- no insulation	290		New
Slab	Unheated Slab-on-Grade	- no insulation	80	Perim = 18'	New
Roof	Wood Framed Attic	- no insulation	746		Existing
Wall	Wood Framed	- no insulation	154		Existing
Wall	Wood Framed	- no insulation	132		Existing
Wall	Wood Framed	- no insulation	206		Existing
Wall	Wood Framed	- no insulation	232		Existing

FENESTRATION — Total Area: 242 — Glazing Percentage: 13.8% — New/Altered Average U-Factor: 0.30

Orientation	Area(ft²)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status
Right (E)	16.0	0.300	0.23	none	none	N/A	New
Left (W)	72.0	1.190	0.83	none	none	N/A	Existing
Front (S)	112.0	1.190	0.83	none	none	N/A	Existing
Right (E)	42.0	1.190	0.83	none	none	N/A	Existing

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
1	Central Furnace	80% AFUE	Split Air Conditioner	10.0 SEER	Setback	Existing

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status
UNIT "A"	Ducted	Ducted	Attic	6.0	Altered

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

RESIDENTIAL MEASURES SUMMARY — RMS-1

Project Name: UNIT "A" ADDITION
Building Type: ☑ Single Family ☐ Multi Family ☐ Addition Alone ☑ Existing+ Addition/Alteration
Date: 3/25/2021
Project Address: 2303 ROCKERFELLER LANE, UNIT A R
California Energy Climate Zone: CA Climate Zone 06
Total Cond. Floor Area: 1,758
Addition: 80
\# of Units: 1

INSULATION

Construction	Type	Cavity	Area (ft²)	Special Features	Status
Slab	Unheated Slab-on-Grade	- no insulation	746	Perim = 103'	Existing
Roof	Wood Framed Attic	- no insulation	932		Existing
Wall	Wood Framed	- no insulation	178		Existing
Wall	Wood Framed	- no insulation	160		Existing
Wall	Wood Framed	- no insulation	320		Existing
Wall	Wood Framed	- no insulation	256		Existing
Floor	Wood Framed w/o Crawl Space	- no insulation	106		Existing
Demising	Wood Framed w/o Crawl Space	- no insulation	80		Existing

FENESTRATION — Total Area: 242 — Glazing Percentage: 13.8% — New/Altered Average U-Factor: 0.30

Orientation	Area(ft²)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status

HVAC SYSTEMS

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

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

RESIDENTIAL MEASURES SUMMARY — RMS-1

Project Name: UNIT "A" ADDITION
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INSULATION

Construction	Type	Cavity	Area (ft²)	Special Features	Status
Demising	Wood Framed w/o Crawl Space	- no insulation	746		Existing

FENESTRATION — Total Area: 242 — Glazing Percentage: 13.8% — New/Altered Average U-Factor: 0.30

Orientation	Area(ft²)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status

HVAC SYSTEMS

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

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

REVISIONS	BY

PERFECT DESIGN & INVESTMENT, INC.
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UNIT "A" ADDITION
2303 ROCKERFELLER LANE, UNIT A
REDONDO BEACH, CA 90278

Date	3/25/2021
Scale	
Drawn	
Job	#G21-5759
Sheet	3 RESIDENTIAL T24 SHEET
Of	4 Sheets

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2303 ROCKERFELLER LANE, UNIT A
REDONDO BEACH, CA 90278

Date	3/25/2021
Scale	
Drawn	
Job #	G21-5759
Sheet	4 RESIDENTIAL T24 SHEET
Of	4 Sheets

2019 Low-Rise Residential Mandatory Measures Summary

*NOTE: 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. *Exceptions may apply.*
(01/2020)

Building Envelope Measures:	
§ 110.6(a)1:	**Air Leakage.** Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 CFM per square foot or less when tested per NFRC-400, ASTM E283 or AAMA/WDMA/CSA 101/I.S.2/A440-2011.*
§ 110.6(a)5:	**Labeling.** Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a).
§ 110.6(b):	**Field fabricated exterior doors and fenestration** products must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather-stripped.*
§ 110.7:	**Air Leakage.** All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped.
§ 110.8(a):	**Insulation Certification by Manufacturers.** Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).
§ 110.8(g):	**Insulation Requirements for Heated Slab Floors.** Heated slab floors must be insulated per the requirements of § 110.8(g).
§ 110.8(i):	**Roofing Products Solar Reflectance and Thermal Emittance.** The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) and be labeled per §10-113 when the installation of a cool roof is specified on the CF1R.
§ 110.8(j):	**Radiant Barrier.** When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
§ 150.0(a):	**Ceiling and Rafter Roof Insulation.** Minimum R-22 insulation in wood-frame ceiling; or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. Attic 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 placing insulation either above or below the roof deck or on top of a drywall ceiling.*
§ 150.0(b):	**Loose-fill Insulation.** Loose fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0(c):	**Wall Insulation.** Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less, or R-20 in 2x6 inch wood framing or have a U-factor of 0.071 or less. Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102. Masonry walls must meet Tables 150.1-A or B.*
§ 150.0(d):	**Raised-floor Insulation.** Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.*
§ 150.0(f):	**Slab Edge Insulation.** Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3 percent; have a water vapor permeance no greater than 2.0 perm per inch; be protected from physical damage and UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g).
§ 150.0(g)1:	**Vapor Retarder.** In climate zones 1 through 16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d).
§ 150.0(g)2:	**Vapor Retarder.** In climate zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation.
§ 150.0(q):	**Fenestration Products.** Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.58; or the weighted average U-factor of all fenestration must not exceed 0.58.*
Fireplaces, Decorative Gas Appliances, and Gas Log Measures:	
§ 110.5(e)	**Pilot Light.** Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.
§ 150.0(e)1:	**Closable Doors.** Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)2:	**Combustion Intake.** Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device.*
§ 150.0(e)3:	**Flue Damper.** Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.*
Space Conditioning, Water Heating, and Plumbing System Measures:	
§ 110.0-§ 110.3:	**Certification.** Heating, ventilation and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified by the manufacturer to the California Energy Commission.*
§ 110.2(a):	**HVAC Efficiency.** Equipment must meet the applicable efficiency requirements in Table 110.2-A through Table 110.2-K.*
§ 110.2(b):	**Controls for Heat Pumps with Supplementary Electric Resistance Heaters.** Heat pumps with supplementary electric resistance heaters must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone; and in which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.*
§ 110.2(c):	**Thermostats.** All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.*
§ 110.3(c)4:	**Water Heating Recirculation Loops Serving Multiple Dwelling Units.** Water heating recirculation loops serving multiple dwelling units must meet the air release valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop connection requirements of § 110.3(c)4.
§ 110.3(c)6:	**Isolation Valves.** Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed.
§ 110.5:	**Pilot Lights.** Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces; household cooking appliances (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour); and pool and spa heaters.*
§ 150.0(h)1:	**Building Cooling and Heating Loads.** Heating and/or 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 § 150.0(h)2.

2019 Low-Rise Residential Mandatory Measures Summary

§ 150.0(h)3A:	**Clearances.** Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer.
§ 150.0(h)3B:	**Liquid Line Drier.** Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
§ 150.0(j)1:	**Storage Tank Insulation.** Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have a minimum of R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.
§ 150.0(j)2A:	**Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.** All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of one inch or a minimum insulation R-value of 7.7: the first five feet 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 one 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, buried below grade, and from the heating source to kitchen fixtures.*
§ 150.0(j)3:	**Insulation Protection.** Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(n)1:	**Gas or Propane Water Heating Systems.** Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: A dedicated 125 volt, 20 amp electrical receptacle connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within three feet of the water heater without obstruction. Both ends of the unused conductor must be labeled with the word "spare" and be electrically isolated. Have a reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Use"; a Category III or IV vent, or a Type B 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 two inches higher than the base of the water heater, and allows natural draining without pump assistance; and a gas supply line with a capacity of at least 200,000 Btu per hour.
§ 150.0(n)2:	**Recirculating Loops.** Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)5.
§ 150.0(n)3:	**Solar Water-heating Systems.** 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 R&T), or by a listing agency that is approved by the Executive Director.
Ducts and Fans Measures:	
§ 110.8(d)3:	**Ducts.** Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement.
§ 150.0(m)1:	**CMC Compliance.** All air-distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 or a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8). Portions of the duct system completely exposed and surrounded by directly conditioned space are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than ¼ inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area.*
§ 150.0(m)2:	**Factory-Fabricated Duct Systems.** Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
§ 150.0(m)3:	**Field-Fabricated Duct Systems.** Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.
§ 150.0(m)7:	**Backdraft Damper.** Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
§ 150.0(m)8:	**Gravity Ventilation Dampers.** 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.
§ 150.0(m)9:	**Protection of Insulation.** Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation.
§ 150.0(m)10:	**Porous Inner Core Flex Duct.** Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier.
§ 150.0(m)11:	**Duct System Sealing and Leakage Test.** When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing in accordance with § 150.0(m)11 and Reference Residential Appendix RA3.
§ 150.0(m)12:	**Air Filtration.** 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 two inch depth or can be one inch if sized per Equation 150.0-A. Pressure drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.*
§ 150.0(m)13:	**Space Conditioning System Airflow Rate and Fan Efficacy.** Space conditioning systems that use ducts to supply cooling must have a hole for the placement of a static pressure probe, or a permanently installed static pressure probe in the supply plenum. Airflow must be ≥ 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.45 watts per CFM for gas furnace air handlers and ≤ 0.58 watts per CFM for all others. Small duct high velocity systems must provide an airflow ≥ 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.*

2019 Low-Rise Residential Mandatory Measures Summary

Requirements for Ventilation and Indoor Air Quality:	
§ 150.0(o)1:	**Requirements for Ventilation and Indoor Air Quality.** 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 § 150.0(o)1.
§ 150.0(o)1C:	**Single Family Detached Dwelling Units.** 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 airflow provided at rates determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2 and as specified in § 150.0(o)1C.
§ 150.0(o)1E:	**Multifamily Attached Dwelling Units.** Multifamily attached dwelling units must have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B and must be either a balanced system or continuous supply or continuous exhaust system. If a balanced system is not used, all units in the building must use the same system type and the dwelling-unit envelope leakage must be ≤ 0.3 CFM at 50 Pa (0.2 inch water) per square foot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix RA3.8.
§ 150.0(o)1F:	**Multifamily Building Central Ventilation Systems.** Central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B. All unit airflows must be within 20 percent of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate needed for compliance.
§ 150.0(o)1G:	**Kitchen Range Hoods.** Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2.
§ 150.0(o)2:	**Field Verification and Diagnostic Testing.** Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix RA3.7. A kitchen range hood must be verified in accordance with Reference Residential Appendix RA3.7.4.3 to confirm it is rated by HVI to comply with the airflow rates and sound requirements as specified in Section 5 and 7.2 of ASHRAE 62.2.
Pool and Spa Systems and Equipment Measures:	
§ 110.4(a):	**Certification by Manufacturers.** 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 card with operating instructions; and must not use electric resistance heating.*
§ 110.4(b)1:	**Piping.** Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between the filter and the heater, or dedicated suction and return lines, or built-in or built-up connections to allow for future solar heating.
§ 110.4(b)2:	**Covers.** Outdoor pools or spas that have a heat pump or gas heater must have a cover.
§ 110.4(b)3:	**Directional Inlets and Time Switches for Pools.** 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:	**Pilot Light.** Natural gas pool and spa heaters must not have a continuously burning pilot light.
§ 150.0(p):	**Pool Systems and Equipment Installation.** Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves.*
Lighting Measures:	
§ 110.9:	**Lighting Controls and Components.** All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.*
§ 150.0(k)1A:	**Luminaire Efficacy.** All installed luminaires must meet the requirements in Table 150.0-A.
§ 150.0(k)1B:	**Blank Electrical Boxes.** The number of electrical boxes that are more than five feet above the finished floor and do not contain a luminaire or other device must be no greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor control, or fan speed control.
§ 150.0(k)1C:	**Recessed Downlight Luminaires in Ceilings.** Luminaires recessed into ceilings must meet all of the requirements for: insulation contact (IC) labeling; air leakage; sealing; maintenance; and socket and light source as described in § 150.0(k)1C.
§ 150.0(k)1D:	**Electronic Ballasts for Fluorescent Lamps.** Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 20 kHz.
§ 150.0(k)1E:	**Night Lights, Step Lights, and Path Lights.** Night lights, step lights and path lights are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided they are rated to consume no more than 5 watts of power and emit no more than 150 lumens.
§ 150.0(k)1F:	**Lighting Integral to Exhaust Fans.** Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(k).*
§ 150.0(k)1G:	**Screw based luminaires.** Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.*
§ 150.0(k)1H:	**Light Sources in Enclosed or Recessed Luminaires.** Lamps and other separable light sources that are not compliant with the JA8 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.
§ 150.0(k)1I:	**Light Sources in Drawers, Cabinets, and Linen Closets.** Light sources internal to drawers, cabinetry or linen closets are not required to comply with Table 150.0-A 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.
§ 150.0(k)2A:	**Interior Switches and Controls.** All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A.
§ 150.0(k)2B:	**Interior Switches and Controls.** Exhaust fans must be controlled separately from lighting systems.*
§ 150.0(k)2C:	**Interior Switches and Controls.** Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned ON and OFF.*
§ 150.0(k)2D:	**Interior Switches and Controls.** Controls and equipment must be installed in accordance with manufacturer's instructions.
§ 150.0(k)2E:	**Interior Switches and Controls.** Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed to comply with § 150.0(k).
§ 150.0(k)2F:	**Interior Switches and Controls.** Lighting controls must comply with the applicable requirements of § 110.9.

2019 Low-Rise Residential Mandatory Measures Summary

§ 150.0(k)2G:	**Interior Switches and Controls.** 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 EMCS requirements of § 130.0(e); and meets all other requirements in § 150.0(k)2.
§ 150.0(k)2H:	**Interior Switches and Controls.** A multiscene programmable controller may be used to comply with dimmer requirements in § 150.0(k) if it provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.0(k)2.
§ 150.0(k)2I:	**Interior Switches and Controls.** In bathrooms, garages, laundry rooms, and utility rooms, at least one luminaire in 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 manual-on operation using the manual control required under Section 150.0(k)2C.
§ 150.0(k)2J:	**Interior Switches and Controls.** Luminaires that are or contain light sources that meet Reference Joint Appendix JA8 requirements for dimming, and that are not controlled by occupancy or vacancy sensors, must have dimming controls.*
§ 150.0(k)2K:	**Interior Switches and Controls.** Under cabinet lighting must be controlled separately from ceiling-installed lighting systems.
§ 150.0(k)3A:	**Residential Outdoor Lighting.** For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or to other buildings on the same lot, must meet the requirement in item § 150.0(k)3Ai (ON and OFF switch) and the requirements in either § 150.0(k)3Aii (photocell and either a motion sensor or automatic time switch control) or § 150.0(k)3Aiii (astronomical time clock), or an EMCS.
§ 150.0(k)3B:	**Residential Outdoor Lighting.** 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 carports with less than eight vehicles per site must comply with either § 150.0(k)3A or with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.
§ 150.0(k)3C:	**Residential Outdoor Lighting.** For low-rise residential buildings with four or more dwelling units, any outdoor lighting for residential parking lots or carports with a total of eight or more vehicles per site and any outdoor lighting not regulated by § 150.0(k)3B or § 150.0(k)3D must comply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.
§ 150.0(k)4:	**Internally illuminated address signs.** Internally illuminated address signs must comply with § 140.8; or must consume no more than 5 watts of power as determined according to § 130.0(c).
§ 150.0(k)5:	**Residential Garages for Eight or More Vehicles.** Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.
§ 150.0(k)6A:	**Interior Common Areas of Low-rise Multifamily Residential Buildings.** In a low-rise multifamily residential building where the total interior common area 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 comply with Table 150.0-A and be controlled by an occupant sensor.
§ 150.0(k)6B:	**Interior Common Areas of Low-rise Multifamily Residential Buildings.** In a low-rise multifamily residential building where the total interior common area 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: i. Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0; and ii. Lighting installed in corridors and stairwells must be controlled by occupant sensors that reduce the lighting power 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.
Solar Ready Buildings:	
§ 110.10(a)1:	**Single Family Residences.** Single family residences located in subdivisions with 10 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(e).
§ 110.10(a)2:	**Low-rise Multifamily Buildings.** Low-rise multi-family buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.10(b) through § 110.10(c).
§ 110.10(b)1:	**Minimum Solar Zone Area.** 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 comprised of areas that have no dimension less than 5 feet and are no less than 80 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 multi-family 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 applicable to the entire building, including mixed occupancy.*
§ 110.10(b)2:	**Azimuth.** 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:	**Shading.** 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:	**Shading.** 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 nearest point of the solar zone, measured in the vertical plane.*
§ 110.10(b)4:	**Structural Design Loads on Construction Documents.** 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):	**Interconnection Pathways.** The construction documents must indicate: a location reserved for inverters and metering 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):	**Documentation.** 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:	**Main Electrical Service Panel.** The main electrical service panel must have a minimum busbar rating of 200 amps.
§ 110.10(e)2:	**Main Electrical Service Panel.** The main electrical service panel must have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric".

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name: UNIT "A" ADDITION — Date: 3/25/2021
System Name: UNIT "A" — Floor Area: 1,758

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK CFM	COIL COOLING PEAK Sensible	COIL COOLING PEAK Latent	COIL HTG. PEAK CFM	COIL HTG. PEAK Sensible
Number of Systems	1						
Heating System							
Output per System	71,000	Total Room Loads	2,523	53,892	1,083	1,389	56,473
Total Output (Btuh)	71,000	Return Vented Lighting		0			
Output (Btuh/sqft)	40.4	Return Air Ducts		2,508			2,975
Cooling System		Return Fan		0			0
Output per System	46,000	Ventilation	0	0	0	0	0
Total Output (Btuh)	46,000	Supply Fan		0			0
Total Output (Tons)	3.8	Supply Air Ducts		2,508			2,975
Total Output (Btuh/sqft)	26.2						
Total Output (sqft/Ton)	458.6	TOTAL SYSTEM LOAD		55,908	1,083		62,423
Air System							
CFM per System	1,600	HVAC EQUIPMENT SELECTION					
Airflow (cfm)	1,600	EXISTING A/C UNIT		36,063	10,583		71,000
Airflow (cfm/sqft)	0.91						
Airflow (cfm/Ton)	417.4						
Outside Air (%)	0.0%	Total Adjusted System Output (Adjusted for Peak Design conditions)		36,063	10,583		71,000
Outside Air (cfm/sqft)	0.00	TIME OF SYSTEM PEAK		Aug 3 PM			Jan 1 AM

Note: values above given at ARI conditions

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

37 °F — 66 °F — 66 °F — 107 °F — Outside Air 0 cfm — Supply Fan 1,600 cfm — Heating Coil — 106 °F — ROOM — 68 °F — 66 °F

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

84 / 69 °F — 79 / 65 °F — 79 / 64 °F — 59 / 57 °F — Outside Air 0 cfm — Supply Fan 1,600 cfm — Cooling Coil — 60 / 58 °F — 47.2% — ROOM — 78 / 64 °F — 79 / 65 °F

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE
RESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2020, Includes August 2019 Supplement)

AIA California

Y = YES
N/A = NOT APPLICABLE
RESPON. PARTY = RESPONSIBLE PARTY (ie: ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR ETC.)

CHAPTER 3
GREEN BUILDING
SECTION 301 GENERAL

301.1 SCOPE. Buildings shall be designed to include the green building measures specified as mandatory in the application checklists contained in this code. Voluntary green building measures are also included in the application checklists and may be included in the design and construction of structures covered by this code, but are not required unless adopted by a city, county, or city and county as specified in Section 101.7.

301.1.1 Additions and alterations. [HCD] The mandatory provisions of Chapter 4 shall be applied to additions or alterations of existing residential buildings where the addition or alteration increases the building's conditioned area, volume, or size. The requirements shall apply only to and/or within the specific area of the addition or alteration.

Note: On and after January 1, 2014, residential buildings undergoing permitted alterations, additions, or improvements shall replace noncompliant plumbing fixtures with water-conserving plumbing fixtures. Plumbing fixture replacement is required prior to issuance of a certificate of final completion, certificate of occupancy or final permit approval by the local building department. See Civil Code Section 1101.1, et seq., for the definition of a noncompliant plumbing fixture, types of residential buildings affected and other important enactment dates.

301.2 LOW-RISE AND HIGH-RISE RESIDENTIAL BUILDINGS. [HCD] The provisions of individual sections of CALGreen may apply to either low-rise residential buildings high-rise residential buildings, or both. Individual sections will be designated by banners to indicate where the section applies specifically to low-rise only (LR) or high-rise only (HR). When the section applies to both low-rise and high-rise buildings, no banner will be used.

SECTION 302 MIXED OCCUPANCY BUILDINGS

302.1 MIXED OCCUPANCY BUILDINGS. In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.

ABBREVIATION DEFINITIONS:

HCD	Department of Housing and Community Development
BSC	California Building Standards Commission
DSA-SS	Division of the State Architect, Structural Safety
OSHPD	Office of Statewide Health Planning and Development
LR	Low Rise
HR	High Rise
AA	Additions and Alterations
N	New

CHAPTER 4
RESIDENTIAL MANDATORY MEASURES
DIVISION 4.1 PLANNING AND DESIGN
SECTION 4.102 DEFINITIONS
4.102.1 DEFINITIONS
The following terms are defined in Chapter 2 *(and are included here for reference)*

FRENCH DRAIN. A trench, hole or other depressed area loosely filled with rock, gravel, fragments of brick or similar pervious material used to collect or channel drainage or runoff water.

WATTLES. Wattles are used to reduce sediment in runoff. Wattles are often constructed of natural plant materials such as hay, straw or similar material shaped in the form of tubes and placed on a downflow slope. Wattles are also used for perimeter and inlet controls.

4.106 SITE DEVELOPMENT
4.106.1 GENERAL. Preservation and use of available natural resources shall be accomplished through evaluation and careful planning to minimize negative effects on the site and adjacent areas. Preservation of slopes, management of storm water drainage and erosion controls shall comply with this section.

4.106.2 STORM WATER DRAINAGE AND RETENTION DURING CONSTRUCTION. Projects which disturb less than one acre of soil and are not part of a larger common plan of development which in total disturb less than one acre or more, shall manage storm water drainage during construction. In order to manage storm water drainage during construction, one or more of the following measures shall be implemented to prevent flooding of adjacent property, prevent erosion and retain soil runoff on the site.

1. Retention basins of sufficient size shall be utilized to retain storm water on the site.
2. Where storm water is conveyed to a public drainage system, collection point, gutter or similar disposal method, water shall be filtered by use of a barrier system, wattle or other method approved by the enforcing agency.
3. Compliance with a lawfully enacted storm water management ordinance.

Note: Refer to the State Water Resources Control Board for projects which disturb one acre or more of soil, or are part of a larger common plan of development which in total disturbs one acre or more of soil,

(Website: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html)

4.106.3 GRADING AND PAVING. Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales
2. Water collection and disposal systems
3. French drains
4. Water retention gardens
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.

Exception: Additions and alterations not altering the drainage path.

4.106.4 Electric vehicle (EV) charging for new construction. New construction shall comply with Sections 4.106.4.1, 4.106.4.2, or 4.106.4.3 to facilitate future installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the *California Electrical Code*, Article 625.

Exceptions:
1. On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions:
   1.1 Where there is no commercial power supply.
   1.2 Where there is evidence substantiating that meeting the requirements will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the homeowner or the developer by more than $400.00 per dwelling unit.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.

4.106.4.1 New one- and two-family dwellings and townhouses with attached private garages. For each dwelling unit, 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, inaccessible or concealed areas and spaces. 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.

4.106.4.1.1 Identification. 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".

4.106.4.2 New multifamily dwellings. If residential parking is available, ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

Notes:
1. Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.
2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

4.106.4.2.1 Electric vehicle charging space (EV space) locations. Construction documents shall indicate the location of proposed EV spaces. Where common use parking is provided at least one EV space shall be located in the common use parking area and shall be available for use by all residents.

4.106.4.2.1 Electric Vehicle Charging Stations (EVCS) When EV chargers are installed, EV spaces required by Section 4.106.2.2, Item 3, shall comply with at least one of the following options:

1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the *California Building Code*, Chapter 11A, to allow use of the EV charger from the accessible parking space.
2. The EV space shall be located on an accessible route, as defined in the *California Building Code*, Chapter 2, to the building.

Exception: Electric vehicle charging stations designed and constructed in compliance with the *California Building Code*, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.

Note: Electric Vehicle charging stations serving public housing are required to comply with the *California Building Code*, Chapter 11B.

4.106.4.2.2 Electric vehicle charging space (EV space) dimensions. The EV space shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486 mm).
2. The minimum width of each EV space shall be 9 feet (2743 mm).
3. One in every 25 EV spaces, but not less than one EV space, shall have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).
   a. Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction.

4.106.4.2.3 Single EV space required. Install a listed raceway capable of accommodating a 208/240-volt dedicated 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 enclosure in close proximity to the proposed location of the EV space. Construction documents shall identify the raceway termination point. 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.

4.106.4.2.4 Multiple EV spaces required. Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at the full rated amperage of the EVSE. Plan design shall be based upon a 40-ampere minimum branch circuit. Required raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.

4.106.4.2.5 Identification. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as "EV CAPABLE" in accordance with the *California Electrical Code*.

4.106.4.3 New hotels and motels. All newly constructed hotels and motels shall provide EV spaces capable of supporting future installation of EVSE. The construction documents shall identify the location of the EV spaces.

Notes:

1. Construction documents are intended to demonstrate the project's capability and capacity or facilitating future EV charging.
2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

4.106.4.3.1 Number of required EV spaces. The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

TABLE 4.106.4.3.1

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED EV SPACES
0-9	0
10-25	1
26-50	2
51-75	4
76-100	5
101-150	7
151-200	10
201 and over	6 percent of total

4.106.4.3.2 Electric vehicle charging space (EV space) dimensions. The EV spaces shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486mm).
2. The minimum width of each EV space shall be 9 feet (2743mm)

4.106.4.3.3 Single EV space required. When a single EV space is required, the EV space shall be designed in accordance with Section 4.106.4.2.3.

4.106.4.3.4 Multiple EV spaces required. When multiple EV spaces are required, the EV spaces shall be designed in accordance with Section 4.106.4.2.4.

4.106.4.3.5 Identification. The service panels or sub-panels shall be identified in accordance with Section 4.106.4.2.5.

4.106.4.3.6 Accessible EV spaces. In addition to the requirements in Section 4.106.4.3, EV spaces for hotels/motels and all EVSE, when installed, shall comply with the accessibility provisions for the EV charging stations in the *California Building Code*, Chapter 11B.

DIVISION 4.2 ENERGY EFFICIENCY
4.201 GENERAL
4.201.1 SCOPE. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards.

DIVISION 4.3 WATER EFFICIENCY AND CONSERVATION
4.303 INDOOR WATER USE
4.303.1 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the sections 4.303.1.1, 4.303.1.2, 4.303.1.3, and 4.303.4.4.

Note: All noncompliant plumbing fixtures in any residential real property shall be replaced with water-conserving plumbing fixtures. Plumbing fixture replacement is required prior to issuance of a certificate of final completion, certificate of occupancy, or final permit approval by the local building department. See Civil Code Section 1101.1, et seq., for the definition of a noncompliant plumbing fixture, types of residential buildings affected and other important enactment dates.

4.303.1.1 Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-type Toilets.

Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.

4.303.1.2 Urinals. The effective flush volume of wall mounted urinals shall not exceed 0.125 gallons per flush. The effective flush volume of all other urinals shall not exceed 0.5 gallons per flush.

4.303.1.3 Showerheads.

4.303.1.3.1 Single Showerhead. Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.

4.303.1.3.2 Multiple showerheads serving one shower. When a shower is served by more than one showerhead, the combined flow rate of all the showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to only allow one shower outlet to be in operation at a time.

Note: A hand-held shower shall be considered a showerhead.

4.303.1.4 Faucets.

4.303.1.4.1 Residential Lavatory Faucets. The maximum flow rate of residential lavatory faucets shall not exceed 1.2 gallons per minute at 60 psi. The minimum flow rate of residential lavatory faucets shall not be less than 0.8 gallons per minute at 20 psi.

4.303.1.4.2 Lavatory Faucets in Common and Public Use Areas. The maximum flow rate of lavatory faucets installed in common and public use areas (outside of dwellings or sleeping units) in residential buildings shall not exceed 0.5 gallons per minute at 60 psi.

4.303.1.4.3 Metering Faucets. Metering faucets when installed in residential buildings shall not deliver more than 0.2 gallons per cycle.

4.303.1.4.4 Kitchen Faucets. The maximum flow rate of kitchen faucets shall not exceed 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.

Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

4.303.2 STANDARDS FOR PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code*, and shall meet the applicable standards referenced in Table 1701.1 of the *California Plumbing Code*.

NOTE:
THIS TABLE COMPILES THE DATA IN SECTION 4.303.1, AND
IS INCLUDED AS A CONVENIENCE FOR THE USER.

TABLE - MAXIMUM FIXTURE WATER USE

FIXTURE TYPE	FLOW RATE
SHOWER HEADS (RESIDENTIAL)	1.8 GMP @ 80 PSI
LAVATORY FAUCETS (RESIDENTIAL)	MAX. 1.2 GPM @ 60 PSI MIN. 0.8 GPM @ 20 PSI
LAVATORY FAUCETS IN COMMON & PUBLIC USE AREAS	0.5 GPM @ 60 PSI
KITCHEN FAUCETS	1.8 GPM @ 60 PSI
METERING FAUCETS	0.2 GAL/CYCLE
WATER CLOSET	1.28 GAL/FLUSH
URINALS	0.125 GAL/FLUSH

4.304 OUTDOOR WATER USE
4.304.1 OUTDOOR POTABLE WATER USE IN LANDSCAPE AREAS. Residential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.

NOTES:

1. The Model Water Efficient Landscape Ordinance (MWELO) is located in the *California Code Regulations,* Title 23, Chapter 2.7, Division 2, MWELO and supporting documents, including water budget calculator, are available at: https://www.water.ca.gov/

DIVISION 4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY
4.406 ENHANCED DURABILITY AND REDUCED MAINTENANCE
4.406.1 RODENT PROOFING. Annular spaces around pipes, electric cables, conduits or other openings in sole/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.

4.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING
4.408.1 CONSTRUCTION WASTE MANAGEMENT. Recycle and/or salvage for reuse a minimum of 65 percent of the non-hazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3 or 4.408.4, or meet a more stringent local construction and demolition waste management ordinance.

Exceptions:

1. Excavated soil and land-clearing debris.
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite.
3. The enforcing agency may make exceptions to the requirements of this section when isolated jobsites are located in areas beyond the haul boundaries of the diversion facility.

4.408.2 CONSTRUCTION WASTE MANAGEMENT PLAN. Submit a construction waste management plan in conformance with Items 1 through 5. The construction waste management plan shall be updated as necessary and shall be available during construction for examination by the enforcing agency.

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 construction and demolition waste material collected 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.

4.408.3 WASTE MANAGEMENT COMPANY. Utilize a waste management company, approved by the enforcing agency, which can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with Section 4.408.1.

Note: The owner or contractor may make the determination if the construction and demolition waste materials will be diverted by a waste management company.

4.408.4 WASTE STREAM REDUCTION ALTERNATIVE [LR]. Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 3.4 lbs./sq.ft. of the building area shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1

4.408.4.1 WASTE STREAM REDUCTION ALTERNATIVE. Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 2 pounds per square foot of the building area, shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1

4.408.5 DOCUMENTATION. Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 4.408.2, items 1 through 5, Section 4.408.3 or Section 4.408.4..

Notes:

1. Sample forms found in "A Guide to the California Green Building Standards Code (Residential)" located at www.hcd.ca.gov/CALGreen.html may be used to assist in documenting compliance with this section.
2. Mixed construction and demolition debris (C & D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

4.410 BUILDING MAINTENANCE AND OPERATION
4.410.1 OPERATION AND MAINTENANCE MANUAL. At the time of final inspection, a manual, compact disc, web-based reference or other media acceptable to the enforcing agency which includes all of the following shall be placed in the building:

1. Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.
2. Operation and maintenance instructions for the following:
   a. Equipment and appliances, including water-saving devices and systems, HVAC systems, photovoltaic systems, electric vehicle chargers, water-heating systems and other major appliances and equipment.
   b. Roof and yard drainage, including gutters and downspouts.
   c. Space conditioning systems, including condensers and air filters.
   d. Landscape irrigation systems.
   e. 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. Public transportation and/or carpool options available in the area.
5. 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 level in that range.
6. Information about water-conserving landscape and irrigation design and controllers which conserve water.
7. Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation.
8. Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around the building, etc.
9. Information about state solar energy and incentive programs available.
10. A copy of all special inspections verifications required by the enforcing agency or this code.

4.410.2 RECYCLING BY OCCUPANTS. Where 5 or more multifamily dwelling units are constructed on a building site, provide readily accessible area(s) that serves all buildings on the site and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waster, and metals, or meet a lawfully enacted local recycling ordinance, if more restrictive.

Exception: Rural jurisdictions that meet and apply for the exemption in Public Resources Code Section 42649.82 (a)(2)(A) et seq. are note required to comply with the organic waste portion of this section.

DIVISION 4.5 ENVIRONMENTAL QUALITY
SECTION 4.501 GENERAL
4.501.1 Scope
The provisions of this chapter shall outline means of reducing the quality of air contaminants that are odorous, irritating and/or harmful to the comfort and well being of a building's installers, occupants and neighbors.

SECTION 4.502 DEFINITIONS
5.102.1 DEFINITIONS
The following terms are defined in Chapter 2 *(and are included here for reference)*

AGRIFIBER PRODUCTS. Agrifiber products include wheatboard, strawboard, panel substrates and door cores, not including furniture, fixtures and equipment (FF&E) not considered base building elements.

COMPOSITE WOOD PRODUCTS. Composite wood products include hardwood plywood, particleboard and medium density fiberboard. "Composite wood products" does not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber, prefabricated wood I-joists or finger-jointed lumber, all as specified in California Code of regulations (CCR), title 17, Section 93120.1.

DIRECT-VENT APPLIANCE. A fuel-burning appliance with a sealed combustion system that draws all air for combustion from the outside atmosphere and discharges all flue gases to the outside atmosphere.

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2019 CALIFORNIA GREEN BUILDING STANDARDS CODE
RESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2020, Includes August 2019 Supplement)

AIA California

Y = YES
N/A = NOT APPLICABLE
RESPON. PARTY = RESPONSIBLE PARTY (ie: ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR ETC.)

MAXIMUM INCREMENTAL REACTIVITY (MIR). The maximum change in weight of ozone formed by adding a compound to the "Base Reactive Organic Gas (ROG) Mixture" per weight of compound added, expressed to hundredths of a gram (g O^3/g ROC).
Note: MIR values for individual compounds and hydrocarbon solvents are specified in CCR, Title 17, Sections 94700 and 94701.

MOISTURE CONTENT. The weight of the water in wood expressed in percentage of the weight of the oven-dry wood.

PRODUCT-WEIGHTED MIR (PWMR). The sum of all weighted-MIR for all ingredients in a product subject to this article. The PWMR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging).
Note: PWMR is calculated according to equations found in CCR, Title 17, Section 94521 (a).

REACTIVE ORGANIC COMPOUND (ROC). Any compound that has the potential, once emitted, to contribute to ozone formation in the troposphere.

VOC. A volatile organic compound (VOC) broadly defined as a chemical compound based on carbon chains or rings with vapor pressures greater than 0.1 millimeters of mercury at room temperature. These compounds typically contain hydrogen and may contain oxygen, nitrogen and other elements. See CCR Title 17, Section 94508(a).

4.503 FIREPLACES
4.503.1 GENERAL. Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits. Woodstoves, pellet stoves and fireplaces shall also comply with applicable local ordinances.

4.504 POLLUTANT CONTROL
4.504.1 COVERING OF DUCT OPENINGS & PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION. At the time of rough installation, during storage on the construction site and until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of water, dust or debris which may enter the system.

4.504.2 FINISH MATERIAL POLLUTANT CONTROL. Finish materials shall comply with this section.

4.504.2.1 Adhesives, Sealants and Caulks. Adhesives, sealant and caulks used on the project shall meet the requirements of the following standards unless more stringent local or regional air pollution or air quality management district rules apply:

1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable or SCAQMD Rule 1168 VOC limits, as shown in Table 4.504.1 or 4.504.2, as applicable. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products, as specified in Subsection 2 below.
2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than 1 pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of *California Code of Regulations*, Title 17, commencing with section 94507.

4.504.2.2 Paints and Coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Suggested Control Measure, as shown in Table 4.504.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 4.504.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in subsections 4.21, 4.36, and 4.37 of the 2007 California Air Resources Board, Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 4.504.3 shall apply.

4.504.2.3 Aerosol Paints and Coatings. Aerosol paints and coatings shall meet the Product-weighted MIR Limits for ROC in Section 94522(a)(2) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(e)(1) and (f)(1) of *California Code of Regulations*, Title 17, commencing with Section 94522; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8, Rule 49.

4.504.2.4 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:

1. Manufacturer's product specification,
2. Field verification of on-site product containers.

TABLE 4.504.1 - ADHESIVE VOC LIMIT[1,2]

(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 ADHESIVES	100
RUBBER FLOOR ADHESIVES	60
SUBFLOOR ADHESIVES	50
CERAMIC TILE ADHESIVES	65
VCT & ASPHALT TILE ADHESIVES	50
DRYWALL & PANEL ADHESIVES	50
COVE BASE ADHESIVES	50
MULTIPURPOSE CONSTRUCTION ADHESIVE	70
STRUCTURAL GLAZING ADHESIVES	100
SINGLE-PLY ROOF MEMBRANE ADHESIVES	250
OTHER ADHESIVES NOT 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 & 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 4.504.2 - 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	
NON-POROUS	250
POROUS	775
MODIFIED BITUMINOUS	500
MARINE DECK	760
OTHER	750

TABLE 4.504.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS[1,2,3]

GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS	
COATING CATEGORY	VOC LIMIT
FLAT COATINGS	50
NON-FLAT 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
BOND BREAKERS	350
CONCRETE CURING COMPOUNDS	350
CONCRETE/MASONRY SEALERS	100
DRIVEWAY SEALERS	50
DRY FOG COATINGS	150
FAUX 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[5]	120
MAGNESITE CEMENT COATINGS	450
MASTIC TEXTURE COATINGS	100
METALLIC PIGMENTED COATINGS	500
MULTICOLOR COATINGS	250
PRETREATMENT WASH PRIMERS	420
PRIMERS, SEALERS, & UNDERCOATERS	100
REACTIVE PENETRATING SEALERS	350
RECYCLED COATINGS	250
ROOF COATINGS	50
RUST PREVENTATIVE COATINGS	250
SHELLACS	
CLEAR	730
OPAQUE	550
SPECIALTY PRIMERS, SEALERS & UNDERCOATERS	100
STAINS	250
STONE CONSOLIDANTS	450
SWIMMING POOL COATINGS	340
TRAFFIC MARKING COATINGS	100
TUB & TILE REFINISH 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 & 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, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.

TABLE 4.504.5 - FORMALDEHYDE LIMITS[1]

MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION	
PRODUCT	**CURRENT LIMIT**
HARDWOOD PLYWOOD VENEER CORE	0.05
HARDWOOD PLYWOOD COMPOSITE CORE	0.05
PARTICLE BOARD	0.09
MEDIUM DENSITY FIBERBOARD	0.11
THIN MEDIUM DENSITY FIBERBOARD[2]	0.13

1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIF. AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIF. CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.

2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16" (8 MM).

DIVISION 4.5 ENVIRONMENTAL QUALITY (continued)
4.504.3 CARPET SYSTEMS. All carpet installed in the building interior shall meet the testing and product requirements of at least one of the following:

1. Carpet and Rug Institute's Green Label Plus Program.
2. California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers" Version 1.1, February 2010 (also known as Specification 01350).
3. NSF/ANSI 140 at the Gold level.
4. Scientific Certifications Systems Indoor Advantage™ Gold.

4.504.3.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label program.

4.504.3.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 4.504.1.

4.504.4 RESILIENT FLOORING SYSTEMS. Where resilient flooring is installed, at least 80% of floor area receiving resilient flooring shall comply with one or more of the following:

1. Products compliant with the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350), certified as a CHPS Low-Emitting Material in the Collaborative for High Performance Schools (CHPS) High Performance Products Database.
2. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children & Schools program).
3. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program.
4. Meet the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers", Version 1.1, February 2010 (also known as Specification 01350).

4.504.5 COMPOSITE WOOD PRODUCTS. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et seq.), by or before the dates specified in those sections, as shown in Table 4.504.5

4.504.5.1 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.).
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269, European 636 3S standards, and Canadian CSA 0121, CSA 0151, CSA 0153 and CSA 0325 standards.
5. Other methods acceptable to the enforcing agency.

4.505 INTERIOR MOISTURE CONTROL
4.505.1 General. Buildings shall meet or exceed the provisions of the *California Building Standards Code*.

4.505.2 CONCRETE SLAB FOUNDATIONS. Concrete slab foundations required to have a vapor retarder by California Building Code, Chapter 19, or concrete slab-on-ground floors required to have a vapor retarder by the California Residential Code, Chapter 5, shall also comply with this section.

4.505.2.1 Capillary break. A capillary break shall be installed in compliance with at least one of the following:

1. A 4-inch (101.6 mm) thick base of 1/2 inch (12.7mm) or larger clean aggregate shall be provided with a vapor barrier in direct contact with concrete and a concrete mix design, which will address bleeding, shrinkage, and curling, shall be used. For additional information, see American Concrete Institute, ACI 302.2R-06.
2. Other equivalent methods approved by the enforcing agency.
3. A slab design specified by a licensed design professional.

4.505.3 MOISTURE CONTENT OF BUILDING MATERIALS. Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19 percent moisture content. Moisture content shall be verified in compliance with the following:

1. Moisture content shall be determined with either a probe-type or contact-type moisture meter. Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements found in Section 101.8 of this code.
2. Moisture readings shall be taken at a point 2 feet (610 mm) to 4 feet (1219 mm) from the grade stamped end of each piece verified.
3. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing.

Insulation products which are visibly wet or have a high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Wet-applied insulation products shall follow the manufacturers' drying recommendations prior to enclosure.

4.506 INDOOR AIR QUALITY AND EXHAUST
4.506.1 Bathroom exhaust fans. Each bathroom shall be mechanically ventilated and shall comply with the following:

1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.
2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidity control.
   a. Humidity controls shall be capable of adjustment between a relative humidity range less than or equal to 50% to a maximum of 80%. A humidity control may utilize manual or automatic means of adjustment.
   b. A humidity control may be a separate component to the exhaust fan and is not required to be integral (i.e., built-in)

Notes:

1. For the purposes of this section, a bathroom is a room which contains a bathtub, shower or tub/shower combination.
2. Lighting integral to bathroom exhaust fans shall comply with the *California Energy Code*.

4.507 ENVIRONMENTAL COMFORT
4.507.2 HEATING AND AIR-CONDITIONING SYSTEM DESIGN. Heating and air conditioning systems shall be sized, designed and have their equipment selected using the following methods:

1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J - 2011 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods.
2. Duct systems are sized according to ANSI/ACCA 1 Manual D - 2014 (Residential Duct Systems), ASHRAE handbooks or other equivalent design software or methods.
3. Select heating and cooling equipment according to ANSI/ACCA 3 Manual S - 2014 (Residential Equipment Selection), or other equivalent design software or methods.

Exception: Use of alternate design temperatures necessary to ensure the system functions are acceptable.

CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS

702 QUALIFICATIONS
702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

702.2 SPECIAL INSPECTION [HCD]. When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition to other certifications or qualifications acceptable to the enforcing agency, the following certifications or education may be considered by the enforcing agency when evaluating the qualifications of a special inspector:

1. Certification by a national or regional green building program or standard publisher.
2. Certification by a statewide energy consulting or verification organization, such as HERS raters, building performance contractors, and home energy auditors.
3. Successful completion of a third party apprentice training program in the appropriate trade.
4. Other programs acceptable to the enforcing agency.

Notes:

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

703 VERIFICATIONS
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.

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