

PROJECT DATA

* REFER TO ATTACHED OWNER CERTIFICATION FORM CDD-0438 FOR ADDRESS, PARCEL NUMBER, PROPERTY OWNER OR ANY ADDITIONAL SITE SPECIFIC PROJECT DATA.

JURISDICTION: CITY OF SACRAMENTO

OCCUPANCY:

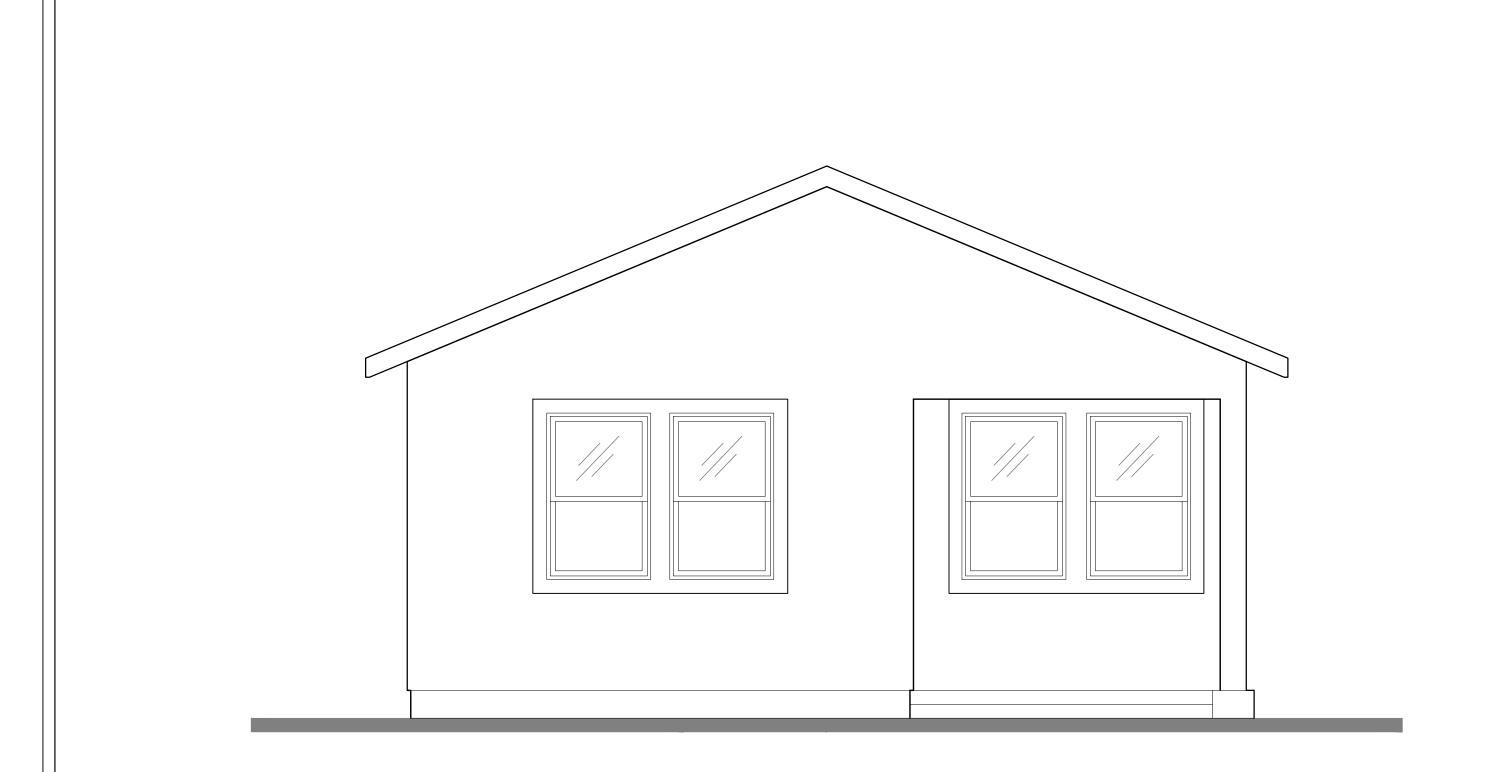
TYPE OF CONSTRUCTION:

FIRE SPRINKLERS:

NO

2022 CALIFORNIA BUILDING CODE (CBC)

PV REQUIRED: YES



CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

2022 CALIFORNIA RESIDENTIAL BUILDING CODE
2022 CALIFORNIA ELECTRICAL CODE (CEC)
2022 CALIFORNIA MECHANICAL CODE (CMC)
2022 CALIFORNIA PLUMBING CODE (CPC)
2022 CALIFORNIA ENERGY CODE (CENC)
2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen CODE)
2022 CALIFORNIA REFERENCE STANDARDS CODE
CURRENT CITY OF SACRAMENTO CODES AND ORDINANCES

PROJECT DESCRIPTION

PROPOSED 20'x40' ACCESSORY DWELLING UNIT:

BEDROOMS: 2
BATHROOMS: I

UTILITY CLOSET:

HABITABLE LIVING AREA: 747 SQ FT
COVERED PORCH: 44 SQ FT

NOTES TO OWNER/BUILDER

- . ALL WORK SHALL CONFORM TO APPLICABLE CODES, REGULATIONS, LAWS AND ORDINANCES AS REQUIRED BY CODES AND REGULATIONS LISTED HEREIN AND AS REQUIRED BY THE STATE OF CALIFORNIA AND ALL RELEVANT REGULATORY BODIES.
- 2. FLOOR PLAN DIMENSIONS SHOWN ARE FACE OF FRAME UNLESS OTHERWISE NOTED AT NEW CONSTRUCTION. DIMENSIONS NOTED AS "CLEAR" ARE TO PRECISELY MAINTAINED.
- 3. DO NOT DRILL OR CUT JOISTS, BEAMS, COLUMNS OR OTHER STRUCTURAL ELEMENTS UNLESS SPECIFICALLY INDICATED. MAKE OPENINGS OF PROPER SIZE FOR CONDUITS, DUCTS, PIPES, AND OTHER ITEMS PASSING THROUGH OPENINGS.
- 4. "ALIGN" SHALL MEAN TO ACCURATELY LOCATE FINISH FACES IN THE SAME PLANE.
 "TYPICAL" OR "TYP" SHALL MEAN THAT THE CONDITION IS REPRESENTATIVE FOR
 SIMILAR CONDITIONS THROUGHOUT, UNLESS OTHERWISE NOTED. DETAILS ARE
 USUALLY KEYED AND NOTED "TYP" ONLY ONCE, WHEN THEY FIRST OCCUR.
 "SIMILAR" MEANS COMPARABLE CHARACTERISTICS FOR THE CONDITIONS NOTED.
 VERIFY DIMENSIONS AND ORIENTATION ON PLANS AND ELEVATIONS.
- 5. ANY ERRORS, OMISSIONS OR CONFLICTS FOUND IN THE VARIOUS PARTS OF THE CONSTRUCTION DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE CITY FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- 6. PROTECT AREA OF WORK AND ADJACENT AREAS FROM DAMAGE.
- 7. BLOCKING TO BE PROVIDED BEHIND ALL WALL-MOUNTED ACCESSORIES.

NOTES TO OWNER/BUILDER

- I. BUILDER TO VERIFY THAT THE SANITARY SEWER SERVING THE ADU WILL HAVE A MINIMUM SLOPE OF 2% FROM THE LOWEST PART OF THE SYSTEM IN THE ADU TO THE POINT IT CONNECTS TO THE SEWER SYSTEM OF THE MAIN HOUSE. IF EXISTING SLOPE IS LESS THAN 2%, A PUMP MAY BE USED.
- 2. AN ENGINEERING PERMIT WILL BE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY, INCLUDING BUT NOT LIMITED TO CONSTRUCTION STAGING, CONSTRUCTION PARKING, SIDEWALK, DRAINAGE, OR SEWER WORK. APPROVAL OF THIS BUILDING PERMIT DOES NOT AUTHORIZE WORK IN THE PUBLIC RIGHT-OF-WAY. THE GROUND IMMEDIATELY ADJACENT TO THE ADU FOUNDATION SHALL BE SLOPED AWAY FROM BUILDING AT A SLOPE OF NOT LESS THAN 6" (5% SLOPE) IN THE FIRST 10 FEET MEASURED PERPENDICULAR TO THE FACE OF THE WALL. IMPERVIOUS SURFACES WITHIN 10 FEET OF BUILDING SHALL BE SLOPE A MINIMUM OF 2% AWAY FROM BUILDING.
- 3. ADDRESS ASSIGNMENT IS REQUIRED PRIOR TO FINAL INSPECTION OF THE BUILDING PERMIT.

NOTE TO PERSONS WITH DISABILITIES

PLANS HAVE BEEN DESIGNED TO ACCOMMODATE CBC, CHAPTER 11B ACCESSIBLE FEATURES, AND PLANS ARE INCLUSIVE OF COMMONLY UTILIZED DETAIL DRAWINGS. THESE MAY BE INCORPORATED INTO THE CONSTRUCTION AT THE OWNER'S DISCRETION, AND ARE CONSIDERED COMPLETELY VOLUNTARY ON PART OF THE PERMIT HOLDER.

RESTRICTIONS AND REQUIREMENTS FOR USE OF THESE PLANS

- 1. THIS STRUCTURE MUST BE LOCATED A MINIMUM HORIZONTAL DISTANCE OF 5' FROM ALL LOT LINES, WITH THE EXCEPTION OF WALL LINE "I" (SEE SHEET FSD.I FOR WALL LINE "I" OPTIONS).
- 2. SOLAR-VOLTAIC EQUIPMENT IS REQUIRED BY THE ENERGY CODE COMPLIANCE REPORT INCLUDED IN THIS PLAN SET. IT IS THE APPLICANT'S RESPONSIBILITY TO OBTAIN PLANS FOR THE SOLAR PHOTO-VOLTAIC EQUIPMENT. THE PHOTO-VOLTAIC PLANS MUST BE ADDED TO THE PLAN SET PRIOR TO SUBMITTING PLANS FOR A BUILDING PERMIT.
- 3. THIS STRUCTURE MUST BE LOCATED A MINIMUM HORIZONTAL DISTANCE OF 4' FROM ANY RESIDENTIAL STRUCTURE (OR STRUCTURES ACCESSORY TO ON THE SAME LOT, WITHOUT EXCEPTION.
- 4. ALL PORTIONS OF THIS STRUCTURE MUST BE LOCATED WITHIN 150 FEET FROM THE STREET ACCESS TO THIS LOT.
- THESE PLANS ARE NOT VALID FOR USE WHEN THE MAIN RESIDENCE ON THE PARCEL IS, OR IS REQUIRED TO BE PROVIDED WITH AN AUTOMATIC FIRE SPRINKLER SYSTEM.
- 6. THESE PLANS MAY ONLY BE USED FOR CONSTRUCTION ON LOTS WITHIN THE CITY OF SACRAMENTO AND ONLY IF ALL PROPERTY OWNERS EXECUTE A HOLD HARMLESS AGREEMENT TO THE SATISFACTION OF THE CITY OF SACRAMENTO.
- 7. APPLICANT IS REQUIRED TO PROVIDE A SITE PLAN AND INCORPORATE IT INTO THIS PLAN SET PRIOR TO SUBMITTING PLANS.

SHEETINDEX

TI.I TITLE SHEET, PROJECT DATA
 CI.I SITE PLAN (PROVIDED BY APPLICANT)
 FSD.I FIRE SEPARATION DISTANCE DETAILS
 AI.I RESIDENTIAL CODE REQUIREMENTS

9 SQ FT

- A2. I FLOOR PLAN, DIMENSIONED FLOOR PLAN
 A2.2 ROOF PLAN, ELECTRICAL PLAN
 A3. I ELEVATIONS
- 8. S1.1 FOUNDATION PLAN, WALL BRACING PLAN
 9. S1.2 ROOF FRAMING PLAN, CEILING FRAMING PLAN
 10. S2.1 STRUCTURAL SECTION
- II. SN.I STRUCTURAL NOTESI2. SD.I STRUCTURAL DETAILSI3. EN.I ENERGY COMPLIANCE DOCU
- I3. EN.I ENERGY COMPLIANCE DOCUMENTS
 I4. EN.2 ENERGY COMPLIANCE DOCUMENTS
 I5. EN.3 ENERGY COMPLIANCE DOCUMENTS
- I6. GB.I 2022 CALIFORNIA GREEN BUILDING STANDARDSI7. GB.2 2022 CALIFORNIA GREEN BUILDING STANDARDS
- 18. AD.I ACCESSIBILITY DETAILS

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20x40 T 747 SQ

File:
Drawn By: JCE
Checked By: MB
Scale: AS NOTED
Date: 01/04/2023

TI.I

EXTERIOR SIDE:

CBC TABLE 721.1(2), ITEM 15-1.3 2" × 4" WOOD STUDS 16" ON CENTER WITH 7/8" CEMENT PLASTER (MEASURED FROM THE FACE OF STUDS) ON THE EXTERIOR SURFACE. PLASTER MIX 1:4 FOR SCRATCH COAT AND 1:5 FOR BROWN COAT, BY VOLUME, CEMENT TO SAND.

CBC TABLE 721.1(2), ITEM 14-1.3

2" × 4" WOOD STUDS 24" ON CENTER WITH 5/8" TYPE X GYPSUM WALLBOARD APPLIED VERTICALLY OR HORIZONTALLY NAILED WITH 6D COOLER OR WALLBOARD NAILS AT 7" ON CENTER WITH END JOINTS ON NAILING MEMBERS. STAGGER JOINTS EACH SIDE.

NOTE: WOOD STRUCTURAL PANELS SHALL BE PERMITTED TO BE INSTALLED BETWEEN THE FIRE PROTECTION AND THE WOOD STUDS ON EITHER THE INTERIOR OR EXTERIOR SIDE OF THE WOOD FRAME ASSEMBLIES IN THIS TABLE, PROVIDED THAT THE LENGTH OF THE FASTENERS USED TO ATTACH THE FIRE PROTECTION IS INCREASED BY AN AMOUNT NOT LESS THAN THE THICKNESS OF THE WOOD STRUCTURAL PANEL.

EXTERIOR AND INTERIORS SIDES: CBC TABLE 721.1(2), ITEM 15-1.14

2" × 6" WOOD STUDS AT 16" WITH DOUBLE TOP PLATES, SINGLE BOTTOM PLATE; INTERIOR AND EXTERIOR SIDES COVERED WITH 5/8" TYPE X GYPSUM WALLBOARD, 4' WIDE, APPLIED HORIZONTALLY OR VERTICALLY WITH VERTICAL JOINTS OVER STUDS, AND FASTENED WITH 21/4" TYPE S DRYWALL SCREWS, SPACED 7" ON CENTER.

NOTE: WOOD STRUCTURAL PANELS SHALL BE PERMITTED TO BE INSTALLED BETWEEN THE FIRE PROTECTION AND THE WOOD STUDS ON EITHER THE INTERIOR OR EXTERIOR SIDE OF THE WOOD FRAME ASSEMBLIES IN THIS TABLE, PROVIDED THAT THE LENGTH OF THE FASTENERS USED TO ATTACH THE FIRE PROTECTION IS INCREASED BY AN AMOUNT NOT LESS THAN THE THICKNESS OF THE WOOD STRUCTURAL PANEL.

HORIZONTAL WOOD SIDING OVER WATER-RESISTIVE BARRIER INSTALLED PER [R703.5.3]

5/8" TYPE X GYPSUM WALLBOARD, 4' WIDE, APPLIED

OVER STUDS, AND FASTENED WITH 21/4" TYPE S

DRYWALL SCREWS, SPACED 7" ON CENTER.

2x6 WOOD STUDS 16" ON CENTER

WALL SHEATHING PER PLAN

HORIZONTALLY OR VERTICALLY WITH VERTICAL JOINTS

WOOD SIDING FIRE RESISTANCE RATED WALL ASSEMBLY \FSD.I \sqrt{SCALE: I" = I'-0"

\FSD.I \ SCALE: I" = I'-0"

PROPERTY LINE PROPERTY LINE PROPERTY LINE NO PROJECTION PERMITTED < 5'-0" NO EAVE VENTS PERMITTED NO EAVE VENTS PERMITTED NO RESTRICTIONS SOLID BLOCKING REQUIRED > 2'-0" SOLID BLOCKING REQUIRED > 5'-0" < 2'-0" I'-0" MIN. FIRE RESISTANCE < 5'-0" RATED WALL ASSEMBLY REQUIRED FSD.I FSD.I ASSEMBLY REQUIRED > 5'-0" FIRE PROTECTION FIRE PROTECTION NO FIRE PROTECTION REQUIRED REQUIRED REQUIRED CONDITION #2: WHERE THE EXTERIOR CONDITION #1: WHERE THE EXTERIOR CONDITION #3: WHERE THE EXTERIOR FACE OF FACE OF WALL IS LESS THAN 5 FEET FACE OF WALL AND ROOF PROJECTION WALL IS BETWEEN 2 FEET AND I FOOT FROM THE FROM THE PROPERTY LINE AND THE ARE GREATER THAN OR EQUAL TO 5 PROPERTY LINE. NO PROJECTION PERMITTED. ROOF PROJECTION IS BETWEEN 5 FEET FEET FROM THE PROPERTY LINE. AND 2 FEET FROM THE PROPERTY LINE.

> FIRE SEPARATION DISTANCE SECTIONS \backslash FSD.I \backslash SCALE: 3/4'' = 1'-0''

(ALLOWED ALONG WALL I ONLY)

SEE SITE PLAN FOR -LOCATION ON PROPERTY PROPERTY LINE— FSD.I (B)

FIRE SEPARATION PARTIAL FLOOR PLAN

FSD.I / SCALE: 1/4" = 1'-0"

DETAILS

BEDRO 20x40 TWO 747 SQ FT.

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Revisions:



300 Richards Blvd., 3rd Floor Sacramento, CA 95811 Help Line: 916-264-5011 CityofSacramento.org/dsd

Residential Code Requirements

2022 Adopted Codes effective January 1st, 2023

The code requirements in this document are excerpts only, not a comprehensive list of all requirements that may apply to your project. These sheets, when attached to a set of plans, become part of those plans, and must remain attached thereto. The approval of these plans and specifications shall not be held to permit or approve the violation of any City ordinance or State or Federal law.

Building Code Requirements

- B-1 In dwelling units, smoke alarms shall be installed on the wall or ceiling of the area immediately outside each separate sleeping area, in each room used for sleeping purposes, and on each story within the dwelling unit. In dwellings with basements, an alarm shall be installed on each story and in the basement. In dwelling units where a story or basement is split into two or more levels and does not have an intervening door between the adjacent levels, a smoke alarm need only be installed on the upper level, except that when the lower level is less than one full story below the upper level, an alarm shall be installed on each level. Where the ceiling height of a room that opens onto a hallway serving a bedroom exceeds the height of the hallway by 24 inches, smoke alarms shall be installed in the hallway and in the adjacent room. In new construction, the required smoke alarms shall receive their primary power from a commercial source and have a battery backup. When more than one smoke alarm is being provided the alarms shall be interconnected. 2022 CRC, Section R314.
- B-2 When interior <u>alterations</u>, <u>repairs</u>, <u>or additions</u> having a value in excess of \$1,000 are made, provide approved **smoke alarms** as required for new buildings. The alarm may be battery operated. 2022 CRC, Section R314.6.2.
- For new construction, and alteration, repairs and additions, an approved carbon monoxide alarm shall be installed in dwelling units and in sleeping units within which fuel-burning appliances including fireplaces are installed and in dwelling units that have attached garages. 2022 CRC, Section R315.1.
- Sprinklers shall be installed to protect all areas of a new dwelling unit. Fire sprinklers shall be designed and installed per 2022 CRC, Section R313.2.1.
- Basements, habitable attics, and every sleeping room in dwelling units shall have not less than one operable emergency escape and rescue opening approved for emergency escape or rescue that shall open directly into a public way, yard, or court that opens to a public way. Escape or rescue windows shall have a minimum net clear opening area of not less than 5.7 square feet, except that when escape and rescue windows are on the grade-floor they can have a minimum net clear opening area of 5 square feet. All emergency escape and rescue windows shall have the bottom of the clear opening not greater than 44 inches measured from the floor. The minimum net clear opening height shall be 24 inches. The minimum net clear opening width shall be 20 inches. Storm shelters and basements that are less than 200 square feet and are only used to house mechanical equipment are exempt from this requirement. 2022 CRC, Section R310.1. See Exception 2 Where the dwelling or townhouse is equipped with an automatic sprinkler system installed in accordance with Section P2904, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following: 2.1 One means of egress complying with Section R311 and one emergency escape and rescue opening. 2.2 Two means of egress complying with Section R311.
- Private garages shall be separated from a dwelling unit and its attic space by minimum ½ inch gypsum board applied on the garage side. Private garages located beneath habitable spaces shall be separated from the habitable space by means of minimum 5/8 inch gypsum board. A garage shall not open directly into a room used for sleeping purposes. Door openings between a private garage and a dwelling unit are required to be self-closing and selflatching. When not protected by fire sprinklers, the door shall be constructed of solid wood, solid material, or honeycomb core steel and must be 1-3/8 inch thick or have a 20 minute fire rating. 2022 CRC, Sections R302.5 &
- <u>Ducts</u> may pass through the walls or a ceiling <u>separating a private garage from a dwelling unit</u> provided the ducts within the garage are constructed of steel having a thickness of not less than 26 gauge galvanized sheet steel and the duct has no openings into the garage. 2022 CRC, Section R302.5.2.
- Provide readily accessible natural ventilation directly to the outdoors for all habitable rooms within a dwelling unit equal to 4 percent of the floor area ventilated, 2022 CRC, Section R303.1.

CDD-0250 Revised 01-01-2023 Page 1 of 8 B-9 Provide natural or artificial light to all habitable rooms within a dwelling unit. Natural light shall be equal to 8 percent of the floor area served. Artificial light shall have an average illumination of 6 foot-candles at a height of 30 inches above the floor level. 2022 CRC, Section R303.1.

- B-10 Rooms containing bathtubs, showers, spas, and similar bathing fixtures shall be provided with an aggregate glazing area of not less than 3 square feet of which at least one half must be openable or be mechanically ventilated with the exhaust air going directly to the outside. 2022 CRC, Section R303.3.
- Age-in-place design and fall prevention in newly constructed dwellings shall be designed and constructed in accordance with 2022 CRC, Sections R327.1.1 through R327.1.4. Reinforcement for grab bars shall be provided in at least one bathroom on entry level. Where there is no bathroom on the entry level, at least one bathroom on the second or third floor of the dwelling shall comply with this section. Electrical receptacle outlets, switches, and controls (including controls for heating, ventilation, and air conditioning) intended to be used by occupants shall be located no more than 48 inches measured from the top of the outlet box and not less than **15 inches** measured from the bottom of the outlet box above the finish floor. Effective July 1, 2024, at least one bathroom and one bedroom on the entry level shall provide a doorway with a net clear opening of not less than 32 inches, measured with the door positioned at an angle of 90 degrees from the closed position. Doorbell buttons or controls, when installed, shall not exceed 48 inches above exterior floor or landing, measured from the top of the doorbell button assembly.
- B-12 Provide safety glazing for all glazing in locations specified as hazardous in the 2022 CRC, Section R308.4.
- B-13 Shower compartments and walls above bathtubs with installed shower heads shall be finished with a smooth, nonabsorbent surface to a height of not less than 6 feet above the floor. 2022 CRC, Section R307.2.
- Provide an approved attic access in a readily accessible location sized 22 inches by 30 inches with minimum 30 inch vertical headroom. 2022 CRC, Section R807.1. <u>If mechanical equipment</u> is installed in the attic space the access must be sized so that the largest piece of equipment can be removed, but in no case smaller than 22 inch by 30 inch with 30 inch vertical headroom clearance per 2022 CMC, section 304.4.
- Enclosed usable space under interior stairways in dwelling units shall have the walls and soffits protected on the enclosed side with ½ inch gypsum board. 2022 CRC, Section R302.7.
- Private stairways shall be constructed with a 7-3/4 inch maximum rise, a 10 inch minimum run, and a 36 inch minimum width. A nosing not less than \(^3\)/4 inch but not more than 1-1/4 inch shall be provided on stairways with solid risers where the tread depth is less than 11 inches. The largest tread run and the greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch. Maintain a continuous 6 foot 8 inch headroom clearance above the stairway. 2022 CRC, Section R311.7.
- B-17 A minimum of one handrail is required on all stairway runs with four or more risers that serve dwelling units. The top of handrails shall be placed not less than 34 inches nor more than 38 inches above the nosing of the treads except for at the lowest riser, landing transitions, and the start of the flight where they may be allowed to be higher. A clear space of 1-1/2 inches is required between the handrail and the wall. The maximum projection of the handrail into the required stairway width shall be 4-1/2 inches. Openings in open guards on stairways shall be sized such that a 4-3/8 inch sphere will not pass through. The triangular openings formed by the riser, tread, and bottom rail at the open side of a stairway shall be of a maximum size such that a sphere of 6 inches in diameter cannot pass through the opening. 2022 CRC, Section R311.7.8 and R312.1.3.
- Circular handrails shall have a minimum diameter of 1-1/4 inches and a maximum diameter of 2 inches. Noncircular handrails shall have a minimum perimeter dimension of 4 inches, a maximum perimeter dimension of 6-1/4 inches, and a maximum cross-section of 2-1/4 inches. Handrails with a perimeter greater than 6-1/4 inches shall have a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of 3/4 inch measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16 inch within 7/8 inch below the widest part of the profile. The required depth shall continue for at least 1-3/4 inches below the tallest portion of the profile. The minimum width of the handrail above the recess shall be 1-1/4 inches to a maximum of 2-3/4 inches. 2022 CRC, Section R311.7.8.5.
- Guards are required where open-sided walking surfaces including stairs, ramps, and landings are located more than 30 inches above the floor below. These guards shall be a minimum of 42 inches in height. Openings in open guards for these areas shall be sized such that a 4 inch diameter sphere cannot pass through any opening. 2022 CRC, Section R312.1.
- On stairways, guards whose top rail also serves as a handrail shall have a height not less than 34 inches and not more than 38 inches measured vertically from a line connecting the leading edge of the treads. 2022 CRC, Section 312.1.2 exception #2.
- Interior spaces intended for human occupancy shall be provided with heating facilities capable of maintaining a room temperature of 68 degrees Fahrenheit at a point 3 feet above the floor and 2 feet from exterior walls in all habitable rooms. 2022 CRC, Section R303.10.

Revised 01-01-2023 CDD-0250 Page 2 of 8 B-22 <u>Ceiling heights</u> for habitable space, hallways and portions of basements containing these spaces shall have a ceiling height of not less than 7 feet. Bathrooms, toilet rooms and laundry rooms shall have a ceiling height not less than 6 feet 8 inches. 2022 CRC, Section R305.1.

- B-23 Factory built chimneys and factory built fireplaces shall be listed and installed in accordance with the terms of their listing and the manufacturer's instructions. 2022 CRC, Sections R1004.1 & R1005.1.
- B-24 Braced wall lines shall consist of braced wall panels that meet the requirements for location, size, spacing and type of bracing as shown in 2022 CRC, Sections R602.10.1.1, Tables R602.10.1.2(2) & R602.10.1.2(3), R602.10.1.4.1, and R602.10.3. Brace wall lines shall be in line or offset from each other by not more than 4 feet. All braced wall panels shall be clearly indicated on the plans.
- B-25 Any braced wall panel may be replaced by an <u>alternate braced wall panel</u> constructed in accordance with 2022 CRC, Section R602.10.6.1 and Table R602.10.6.1.
- B-26 Cripple walls having a stud height exceeding 14 inches shall be framed of studs not less in size than the studs above. Cripple walls exceeding 4 feet in height shall be framed with studs sized as required for an additional story. Cripple walls with studs less than 14 inches high shall be framed of solid blocking or shall be sheathed on at least one side with a wood structural panel that is fastened to both the top and bottom plate. All cripple walls shall be supported on a continuous foundation. 2022 CRC, Section R602.9.
- B-27 Stud size, height, and spacing shall conform to 2022 CRC, Table R602.3(5).
- B-28 Provide access to all under-floor spaces. Access provided through the floor shall be a minimum size of 18 inches by 24 inches. Access provide through the wall shall be a minimum of 16 inches by 24 inches and shall not be located under a door to the residence. 2022 CRC, Section 408.4.
- B-29 Provide adequate <u>ventilation at all under-floor spaces</u>. 2022 CRC, Section 408.1.
- B-30 Wood framing members and wood-based products must be foundation grade redwood or treated and marked by an approved agency when required by 2022 CRC, section R317.
- B-31 Foundation plates or sills shall be bolted or anchored to the foundation with not less than ½ inch diameter steel bolts or approved anchors spaced a minimum of 6 feet on center for one and two story dwellings and a minimum of 4 feet on center for three of more story dwellings. There shall be at least two bolts per plate that start within 12 inches or 7 bolt diameters of the end of the plate. All foundation bolts shall be embedded a minimum of 7 inches into the concrete or masonry. Each bolt shall have a properly sized nut and washer. 2022 CRC, Sections R403.1.6 & R403.1.6.1. The washers must be a minimum 3 x 3 inches square and .229 inches thick. A diagonal slot is allowed of a width 3/16 inch larger than the bolt diameter and a maximum 1-3/4 in length, provided a standard cut washer is used between the nut and plate washer. 2022 CRC, Section R602.11.1.
- B-32 Cutting and notching of exterior walls and bearing partitions shall not be greater than 25 percent of the stud width. Cutting or notching of studs to a depth not greater than 40 percent of the width of the stud is permitted in nonbearing partitions supporting no loads other than the weight of the partition. 2022 CRC, Section 602.6 #1.
- B-33 A drilled or bored hole not greater in diameter than 60 percent of the stud width is permitted in a non-bearing partition or in a wall where the bored stud is doubled provided not more than two such successive studs are bored. A minimum 5/8 inch of wood is required between the bored hole and the edge of the wood. Where the diameter of a bored hole in a stud located in exterior walls or bearing partitions is over 40 percent, such stud shall be doubled and not more than two successive doubled studs shall be so bored. Bored holes cannot be located in the same vicinity as a cut or a notch. 2022 CRC, Section 602.6 #2.
- B-34 Footings shall be designed so that the allowable bearing capacity of the soil is not exceeded per Table R401.4.1. Where a specific design is not provided, the size of concrete footings supporting walls of light-frame construction shall conform to the requirements of 2022 CRC, Table R403.1. The minimum depth of footings shall be 12 inches below undisturbed ground. 2022 CRC, Section R403.1.4.
- B-35 Where **post and beam or girder construction** is used, a **positive connection** shall be provided to ensure against uplift and lateral displacement. 2022 CRC, Section R502.9.
- B-36 Where rafters are not parallel with the ceiling joist, rafters shall be tied to an equivalent <u>rafter tie</u> that is connected per Table 802.5.2. The rafter ties shall be a minimum of 2 inch by 4 inch. 2022 CRC, Section R802.5.2. Where ceiling joists or rafter ties are not provided, the ridge formed by these rafters shall be supported by a wall or girder designed in accordance with accepted engineering practice.
- B-37 Provide adequate <u>ventilation to all attic spaces</u>. 2022 CRC, Section R806.1
- B-38 Provide <u>fire blocking and draft stopping</u> in concealed locations of combustible construction in accordance with the 2022 CRC, Sections R302.11 & R302.12.
- B-39 All gypsum board, stucco, plaster, and lath shall be installed as per 2022 CRC, Chapter 7.

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Electrical Code Requirements

- Provide a **grounding electrode** as per 2022 CEC 250.50
- Grounding conductors to be provided where installing a branch circuit or feeder supplying a separate building or structure. 2022 CEC 250.32(B).
- Contact SMUD's Customer Service Department for service location. Phone 1-888-456-SMUD (7683) or 916-732-
- E-4 At least one wall switch-controlled lighting outlet shall be installed in every habitable room, in bathrooms, hallways, stairways, attached garages, detached garages with electrical power, Attics, under floor spaces, utility rooms, basements used for storage or having equipment that requires servicing, and at outdoor entrances or exits. 2022 CEC 210.70.
- Dwellings with direct grade level access shall have at least one receptacle outlet at grade level at the front and back of the dwelling. All 125 volt, 15 and 20 amp, receptacles installed outdoors with direct grade level access shall be GFCI protected. All receptacles installed outdoors in wet or damp locations shall be in a weatherproof enclosure as per 2022 CEC 210.52(E), 210.8(A)(3), & 406.9.
- At least one receptacle outlet, in addition to any provided for specific equipment, shall be installed in each basement, in each attached garage, and in each detached garage or accessory building with electric power. These outlets are to be GFCI protected. 2022 CEC 210.52(G).
- Provide GFCI protection to all 125 volt, 15 amp and 20 amp receptacles installed in bathrooms, garages, outdoors, crawlspaces at or below grade, unfinished basements, receptacles to serve countertop surfaces installed in kitchens, and receptacles within 6 feet of a sink, or shower/tub and laundry areas. 2022 CEC 210.8(A).
- ARC -fault circuit interrupter protection is required in dwellings for all 120 volt single phase 15 and 20 amp branch circuits specified in 2022 CEC 210.12.
- Receptacle outlets shall be spaced not more than 12 feet apart and a maximum of 6 feet from the ends of walls or openings. Receptacle outlets are also required in walls 2 feet or greater. 2022 CEC 210.52(A).
- Provide two or more 20 amp small appliance branch circuits evenly proportioned in the kitchen, pantry, breakfast room, dining room, or similar area. Such circuits shall have no other outlets. 2022 CEC 210.52(B). Note: One additional 20 amp branch circuit shall be provided to supply the laundry receptacle outlet(s). This circuit shall have no other outlets. 2022CEC 210.11(C)(2).
- Provide fuses or approved circuit breakers at air conditioning units and heat pumps as per 2022 CEC 440. (Do not exceed maximum fuse requirements or minimum on equipment specification plate).
- E-12 An equipment grounding conductor is required with all branch circuits and feeders supplying a separate building or structure. 2022 CEC 250.32(B). E-13 Provide an intersystem bonding termination means that includes provisions for connecting three grounding or
- bonding conductors for communications systems using a #6 copper conductor. 2022 CEC 250.94, E-14 Equipment grounding conductors to be provided for grounding means and effective ground-fault path by performing both grounding and bonding functions. 2022 CEC 250.118
- E-15 Equipment bonding jumpers that connect grounding terminals of receptacles to a grounded metal box must be sized according to Table 250.122 using the rating of the overcurrent device, fuse, or circuit breaker for the circuit.
- E-16 Device or equipment fill in a junction box to be calculated using twice the wire size volume if the device is wider
- than 2 inches. 2022 CEC 314.16(B)(4). Lighting junction boxes to be designed for the purpose and listed with the capacity of holding 50 pounds. It must be marked for the purpose of holding luminaries. 2022 CEC 314.27(A).
- E-18 Armored clad cable (AC) is acceptable for branch circuits and feeders. 2022 CEC 320.10(1).
- E-19 Metal clad cable (MC) is permitted for wet locations if meeting the conditions of 2022 CEC 330.10(A)(11).
- E-20 Flexible metal conduit is not permitted for use in wet locations, regardless of any conditions. 2022 CEC 348.12(1).
- E-21 Flexible metal conduit and liquid tight flexible metal conduit may be fished within walls or concealed spaces without the need for support. 2022 CEC 348.30(A).

- E-22 An equipment disconnecting means that is not within sight of the equipment it serves is required to be capable of being locked open (off position) and have a means for adding a lock that must remain with the equipment whether the lock is installed or not. This is a special device that connects to the breaker. 2022 CEC 110.25.
- Tamper-resistant receptacles in dwelling to be installed in areas specified by 210.52 shall be listed tamper-

E-23 Receptacles in wet locations. 125 volt and 250 volt are required to be listed weather-resistant type. 2022 CEC

- resistant type. 2022 CEC 406.12. E-25 All luminaires and lamp holders shall be listed. 2022 CEC 410.6.
- E-26 Those luminaries allowed in clothes closets by 2022 CEC 410.16(A) shall be installed per the requirements of 2022 CEC 410.16(C)
- E-27 The disconnecting means for pool and spa or hot tub shall simultaneously open all ungrounded conductors. It shall be further than 5 feet from the water's edge. 2022 CEC 680.12 Receptacles shall be greater than 6 feet from the water edge of the pool, fountain, spa, or similar installation.
- It shall be GFCI protected. 2022 CEC 680.22, 680.34, and 680.43. E-30 **GFCI protection is required for all pool pump motors** for either 125 volt or 240 volt. 2022 CEC 680.21(C).
- **Equipotential bonding** will be required around pool areas. A conductor sized at a minimum of #8 copper shall be used. 2022 CEC 680.26.
- E-32 Pumps for portable pools shall have an integral GFCI protected cord within 12 inches of the attachment plug. All 125 volt, 15- and 20-amp receptacles within 20 feet of a pool shall be GFCI protected. 2022 CEC 680.31 & 680.32.
- E-33 **Hydro massage bathtubs** and their associated equipment must be supplied by at least one separate individual circuit. 2022 CEC 680.71.

Plumbing Code Requirements

- P-1 Provide an approved dishwasher air gap fitting as per 2022 CPC, Section 807.3 Potable water outlets with hose attachments, other than water heater drains, boiler drains, and clothes washer connectors, shall be protected by a listed non-removable hose bib type backflow preventor or a listed atmospheric vacuum breaker as per 2022 CPC, Section 603.5.7.
- Joints. Where a fixture comes in contact with the wall or floor, the joint between the fixture and the wall or floor shall be made watertight. 2022 CPC, Section 402.2
- P-4 No underfloor cleanout shall be located more than 5 feet from an access door, trap door, or crawl hole. 2022 CPC.
- Gas Water heaters located in residential garages or adjacent spaces open to the garage that are not part of the living space shall be installed so that the pilots, burners, and burner-igniter devices are at least 18 inches above the floor unless listed as flammable vapor ignition resistant. 2022 CPC, Section 507.13.
- P-6 Fuel burning water heaters shall be installed per 2022 CPC, Section 506.0, for combustion air.
- Water heaters that depend on the combustion of fuel for heat shall not be installed in bedrooms or bathrooms M-5 Fuel burning equipment shall be assured a sufficient supply of combustion air as per Chapter 7, 2022 CMC. unless installed in an approved closet or direct vent type per 2022 CPC, Section 504.1.
- **Listed water heaters shall be installed in** accordance with their listing and the manufactures' instructions. Unlisted water heaters shall be installed with a clearance of 12" on all sides and rear. 2022 CPC, Section 504.3.1
- P-9 Any water system containing storage water heating equipment shall be provided with an approved, listed, and adequately sized combination pressure and temperature relief valve. 2022 CPC, Section 608.3.
- P-10 Relief valves located inside a building shall be provided with a drain of galvanized steel, hard drawn copper piping and fittings, CPVC, or listed valve drain. The drain shall extend from the valve to the outside of the building with the end of the pipe not more than 2 feet nor less than 6 inches above the ground and pointing downward. 2022 CPC, Section 608.5.
- Note: No part of such drainpipe shall be trapped, and the terminal end of the drainpipe shall not be threaded.
- P-11 Water heaters shall be anchored or strapped to resist horizontal displacement due to earthquake motion. Strapping shall be at points within the upper one-third and lower one-third of its vertical dimensions. At the lower point, a minimum distance of 4 inches shall be maintained above the controls with the strapping. 2022 CPC, Section
- P-12 Gas utilization equipment connected to a piping system shall have an accessible approved manual shut off valve with a non-displaceable valve member, or a listed gas convenience outlet installed within 6' of the equipment it serves. Shut off valves serving decorative gas appliances shall be permitted to be installed in fireplaces if listed for such use. 2022 CPC, Section 1212.6.
- P-13 Showers and tub-shower combinations in all buildings shall be provided with individual control valves of the pressure balance or the thermostatic mixing valve type. 2022 CPC, Section 408.3.

Mechanical Code Requirements

Domestic clothes dryer moisture exhaust ducts shall terminate on the outside of the building and shall be equipped with a back-draft damper. Sheet metal screws or other fasteners that will obstruct the flow shall not be used. Unless otherwise permitted or required by the dryer manufacturer's installation instructions and by the building official, domestic dryer moisture exhaust ducts shall not exceed a total combined horizontal and vertical length of 14 feet including two 90° elbows. Two feet shall be deducted for each 90° elbow in excess of two. 2022 CMC,

Note: When lath is applied over wood base sheathing, include two layers of grade D paper. 2022 CRC, Section

of discharge or the inlet of an approved drainage device a minimum of 12 inches plus 2 percent per foot (1/4 inch

per linear foot measured from the gutter to the edge of the footing). Where a gutter is not present, the measurement

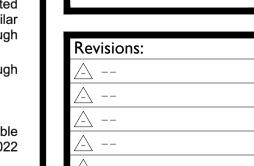
B-40 Provide weather protection on all exterior walls located above grade that are not constructed of concrete or

B-41 On graded sites, the top of any exterior foundation shall extend above the elevation of the street gutter at point

masonry. 2022 CRC, Section R703.1.

shall be taken from the crown of road. 2022 CRC, Section R403.1.7.3.

- M-2 Make up air. When a closet is designed for the installation of a clothes dryer, a minimum opening of 100 square inches for makeup air shall be provided in the door or by other approved means. 2022 CMC, Section 504.4.1.
- Installation of a Listed Cooking Appliance or Microwave Oven above a Listed Cooking Appliance. The installation of a listed cooking appliance or microwave oven over a listed cooking appliance shall conform to the conditions of the upper appliance's listing and the manufacturers' installation instructions. 2022 CMC, Section 921.4
- Domestic range vents. Ducts for domestic kitchen downdraft grill-range ventilation shall be installed as per 2022 CMC. Section 504.2.
- Warm air furnaces shall not be installed in a room used or designed to be used as a bedroom or bathroom unless direct vent type or installed in an approved closet enclosure per 2022 CMC, Section 904.1.
- Attic furnace. The distance from the passageway access to the furnace shall not exceed 20 feet measured along the center line of the passageway. The passageway shall be unobstructed and shall have continuous solid flooring not less than 24 inches wide from the entrance opening to the furnace. A level working platform not less than 30 inches in depth and width shall be provided in front of the entire fire box side of the warm air furnace. If the furnace temperature limit control, air filter, fuel control valve, vent collar, or air handling unit is not serviceable from the fire box side of the furnace, a continuous floor not less than 24 inches in width shall be provided from the platform in front of the fire box side of the furnace to and in front of this equipment. A permanent electric outlet and lighting fixture controlled by a switch located at the required passageway opening shall be provided at or near the furnace. 2022 CMC, Section 304.4.
- **Vent termination**. Gas vents with listed vent caps 12 inches in size or smaller shall be permitted to be terminated in accordance with Table 802.6.2, provided they are located at least 8 feet from the vertical wall or similar obstruction. All other gas vents shall terminate not less than 2 feet above the highest point where they pass through the roof and at least 2 feet higher than any portion of a building within 10 feet. 2022 CMC, Section 802.6.2. Note: Single wall metal pipe shall not originate in an unoccupied attic or concealed space and shall not pass through any attic, inside wall, concealed space, or floor. 2019 CMC, Section 802.7.3.2.
- Approval of Equipment. Listed and unlisted equipment shall comply with the 2022 CMC, Section 301.2.
- **Ignition source.** Heating and cooling equipment located in a garage that generates a glow, spark, or flame capable of igniting flammable vapors shall be installed with sources of ignition at least 18 inches above the floor level. 2022 CMC, Section 305.



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20x 747

REQUIRMEN

SID

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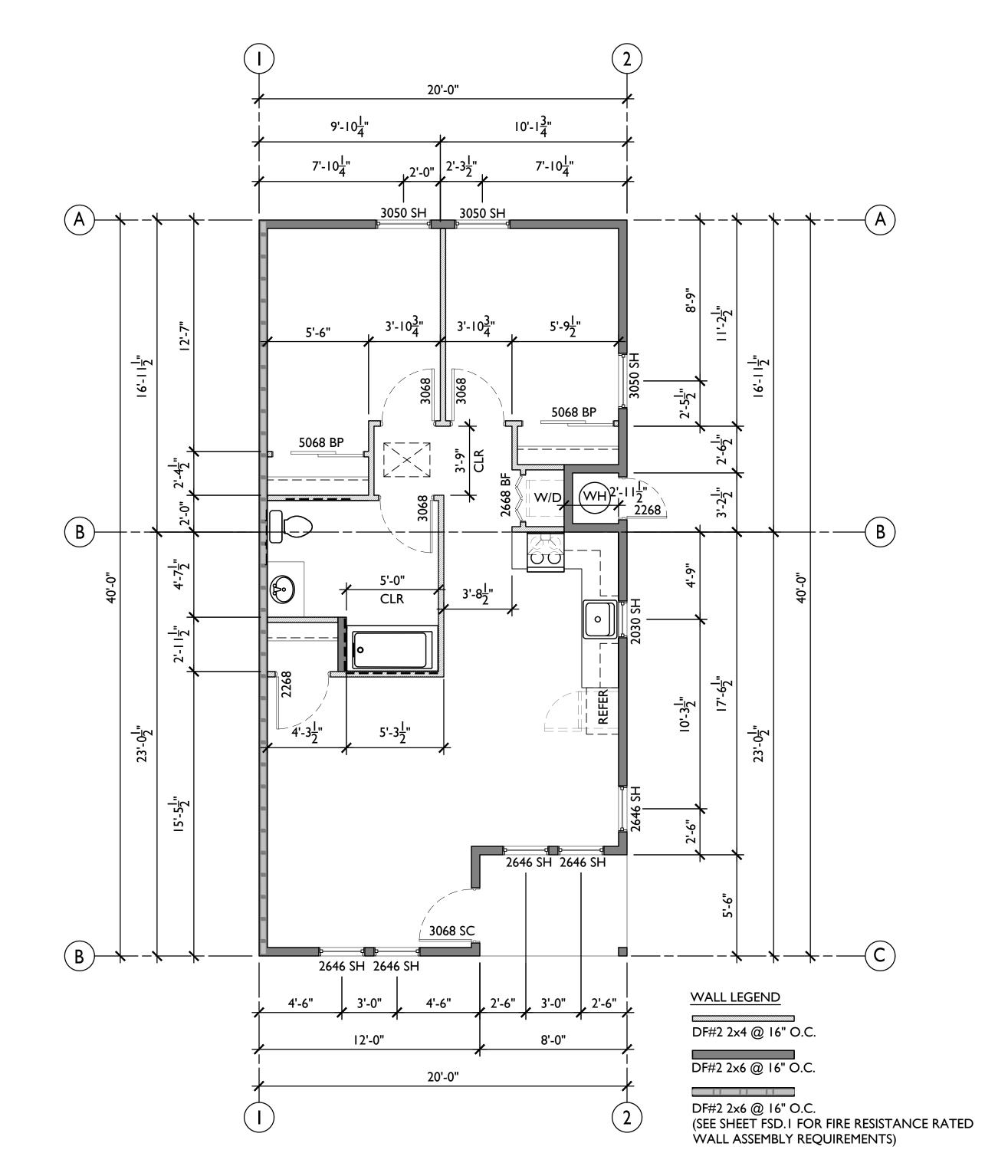
BEDROOM

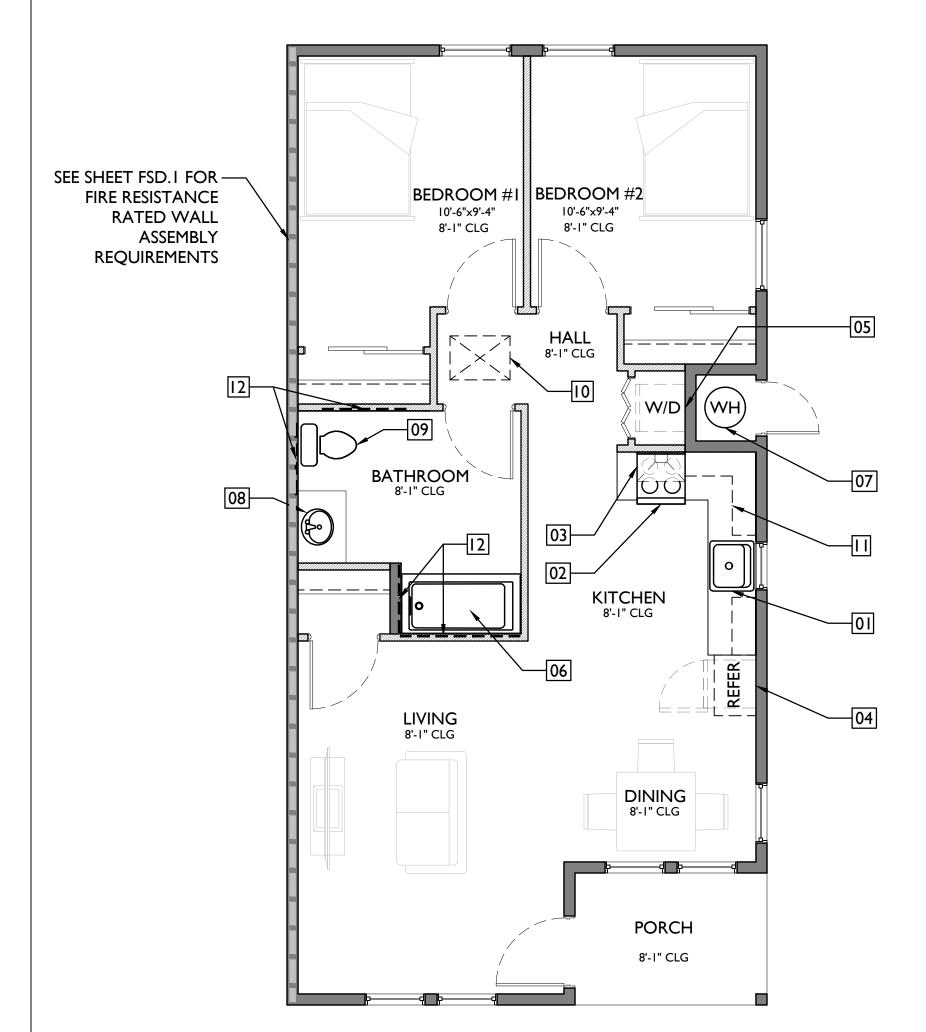
20x40 TWO I 747 SQ FT.

Revisions:

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Job No.





FLOOR PLAN KEYNOTES

- 01 KITCHEN SINK [CPC TABLE 422.1]
- 02 ELECTRIC COOK TOP OR RANGE OVEN
- LOCAL EXHAUST VENTILATION HOOD, MIN. 100 CFM
- 04 REFRIGERATOR
- 05 AUTOMATIC CLOTHES WASHER CONNECTION [CPC TABLE 422.1]
- 06 SHOWER OR TUB/SHOWER COMBINATION: FLOORS AND WALLS SHALL BE FINISHED WITH A NONABSORBENT SURFACE. SUCH WALL SURFACES SHALL EXTEND TO A HEIGHT OF NOT LESS THAN 6 FEET ABOVE THE FLOOR. [CRC R307.2]
- 07 ELECTRIC WATER HEATER, SPECIFICATIONS PER ENERGY DOCUMENTATION
- 08 LAVATORY SINK [CPC TABLE 422.1] (PENETRATIONS IN WALL LINE (I) SHALL COMPLY WITH CRC R302.4)
- TOILET [CPC TABLE 422.1]
 (PENETRATIONS IN WALL LINE (I) SHALL COMPLY WITH CRC R302.4)
- ATTIC ACCESS: PROVIDE 22"X30" OPENING OR LARGE ENOUGH TO REMOVE THE LARGEST PIECE OF EQUIPMENT. LOCATION APPROXIMATE, VERIFY/COORDINATE WITH CEILING FRAMING. [R807.1]
- II KITCHEN CABINET LAYOUT BY OWNER/CONTRACTOR

FLOOR PLAN

A2.I SCALE: I/4" = I'-0"

SOLID BLOCKING REINFORCEMENT FOR GRAB BARS PER [CRC R327.1.1]

ENERGY COMPLIANCE REQUIREMENTS

BUILDING ENVELOPE INSULATION R-VALUES

EXTERIOR WALLS R-21
ATTIC ROOF R-4
CEILING (BELOW ATTIC) R-30

ATTIC ROOF

ROOF REFLECTANCE 0.2
ROOF EMITTANCE 0.75
RADIANT BARRIER NO
COOL ROOF YES

WINDOW/ GLAZING VALUES

U-FACTOR 0.3 SHGC 0.23

SPACE CONDITIONING SYSTEMS

SYSTEM TYPE CENTRAL SPLIT HEAT PUMP SEER/EER 14/11.7

SEER/EER HSPF DUCT INSUL. R-VALUE

INDOOR AIR QUALITY (IAQ) FAN

AIRFLOW 44 CFM

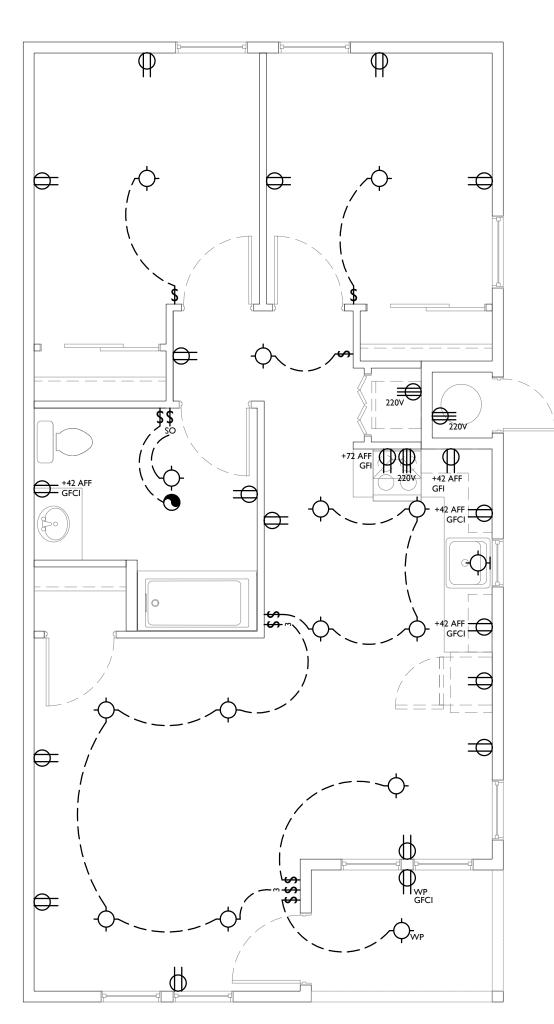
WATER HEATER EFFICIENCY TYPE NEEA HEAT PUMP

PV SYSTEM REQUIRMENTS

STANDARD DESIGN PV CAPACITY 2.06 kWdc

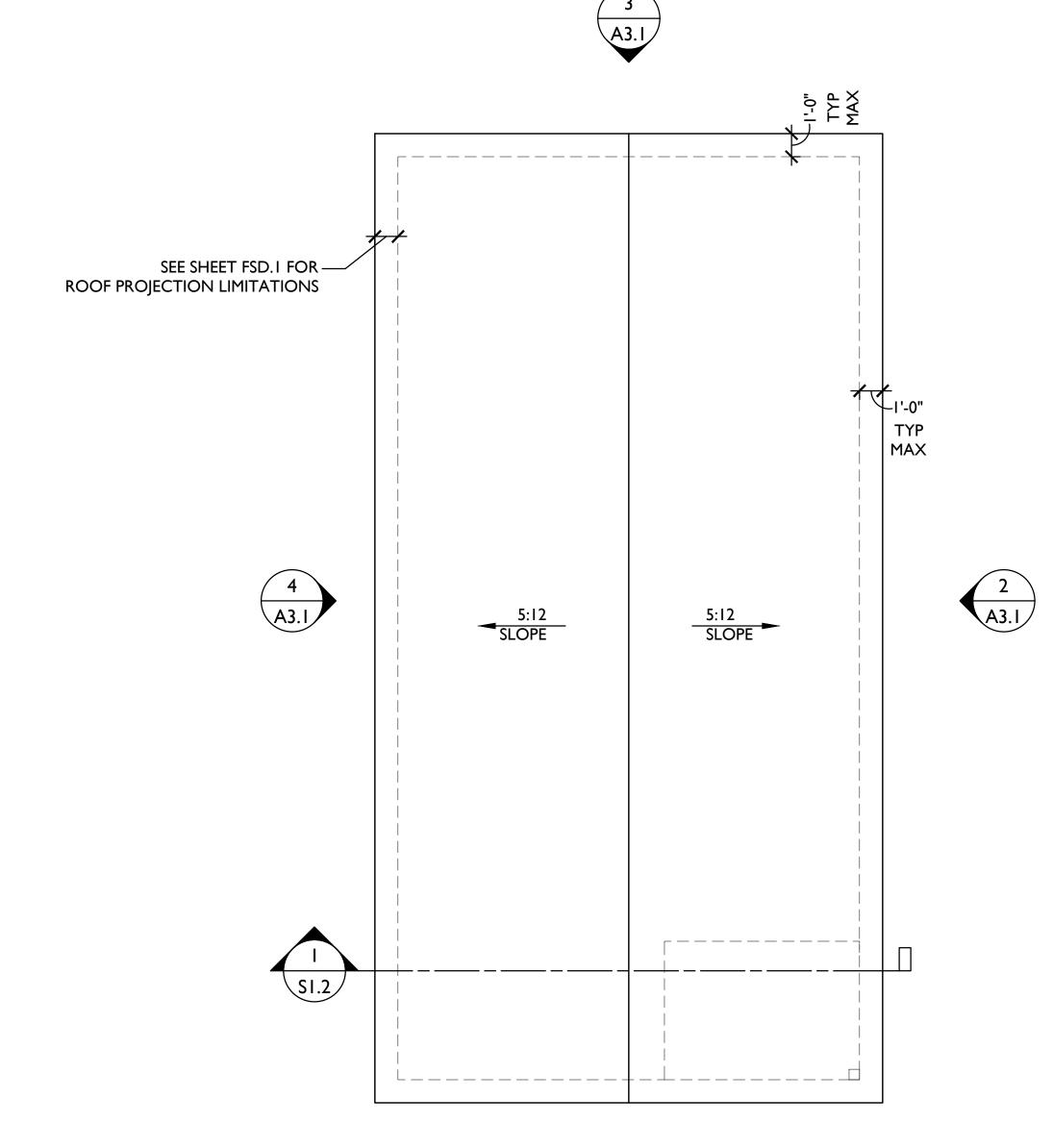
REQUIRED HERS VERIFICATIONS

QUALITY INSULATION INSTALLATION (QII)
INDOOR AIR QUALITY VENTILATION
KITCHEN RANGE HOOD
MINIMUM AIRFLOW
VERIFIED REFRIGERANT CHARGE
FAN EFFICACY WATTS/CFM
VERIFIED HSPF2
VERIFIED HEAT PUMP RATED HEATING CAPACITY
DUCT LEAKAGE TESTING



ELECTRICAL SYMBOLS

- EXHAUST VENT, VENT TO EXTERIOR
- **⇒** 220V RECEPTACLE
- WALL MOUNTED FIXTURE (HIGH EFFICACY)
- DUPLEX WALL RECEPTACLE (ARC FAULT PROTECTED)
- GFCI DUPLEX WALL RECEPTACLE (GROUND FAULT INTERRUPTER)
- DUPLEX WALL RECEPTACLE EXTERIOR
 WEATHER PROOF (GROUND FAULT INTERRUPTER)
 - \$ WALL SWITCH
 - S WALL SWITCH (OCCUPANCY SENSOR)
 - \$ WALL SWITCH (3-WAY)





ATTIC VENTILATION:

NOTE: CONTRACTOR SHALL VERIFY THAT INSTALLED VENTING PROVIDES THE MINIMUM REQUIRED NET FREE AREA AS SPECIFIED BELOW:

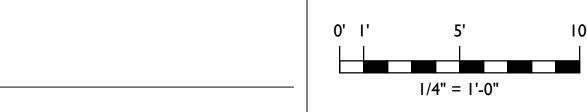
ATTIC AREA: 800 SQ FT

VENT RATIO: 1/300

MINIMUM UPPER VENTING REQUIRED: 192 SQ. INCHES

MINIMUM LOWER VENTING REQUIRED: 192 SQ. INCHES

MINIMUM TOTAL VENTING REQUIRED: 384 SQ. INCHES





SACRAMENTC Community Developmer

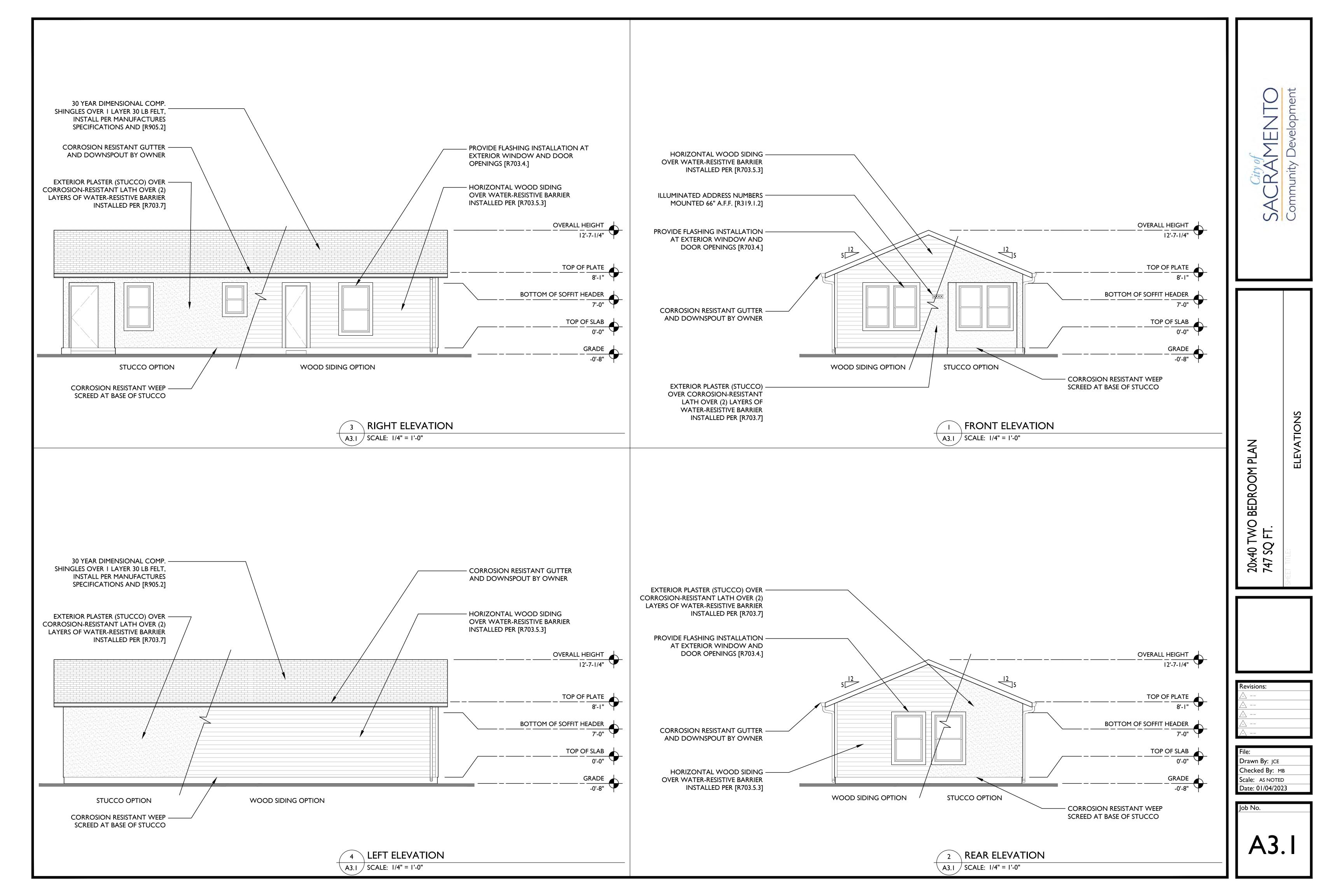
F PLAN, ELECTRICAL PLAN

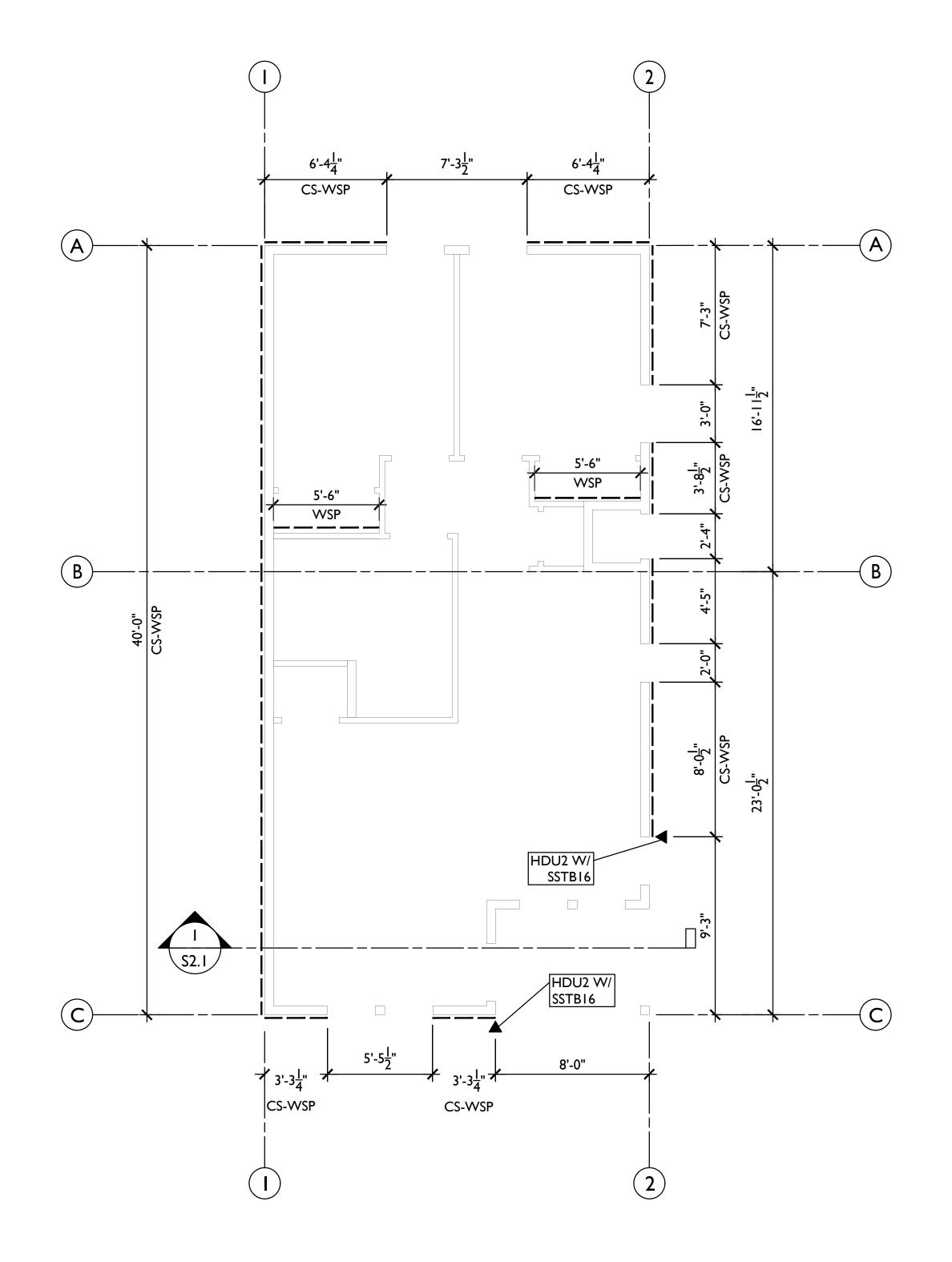
20x40 TWO | 747 SQ FT.

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A2.2

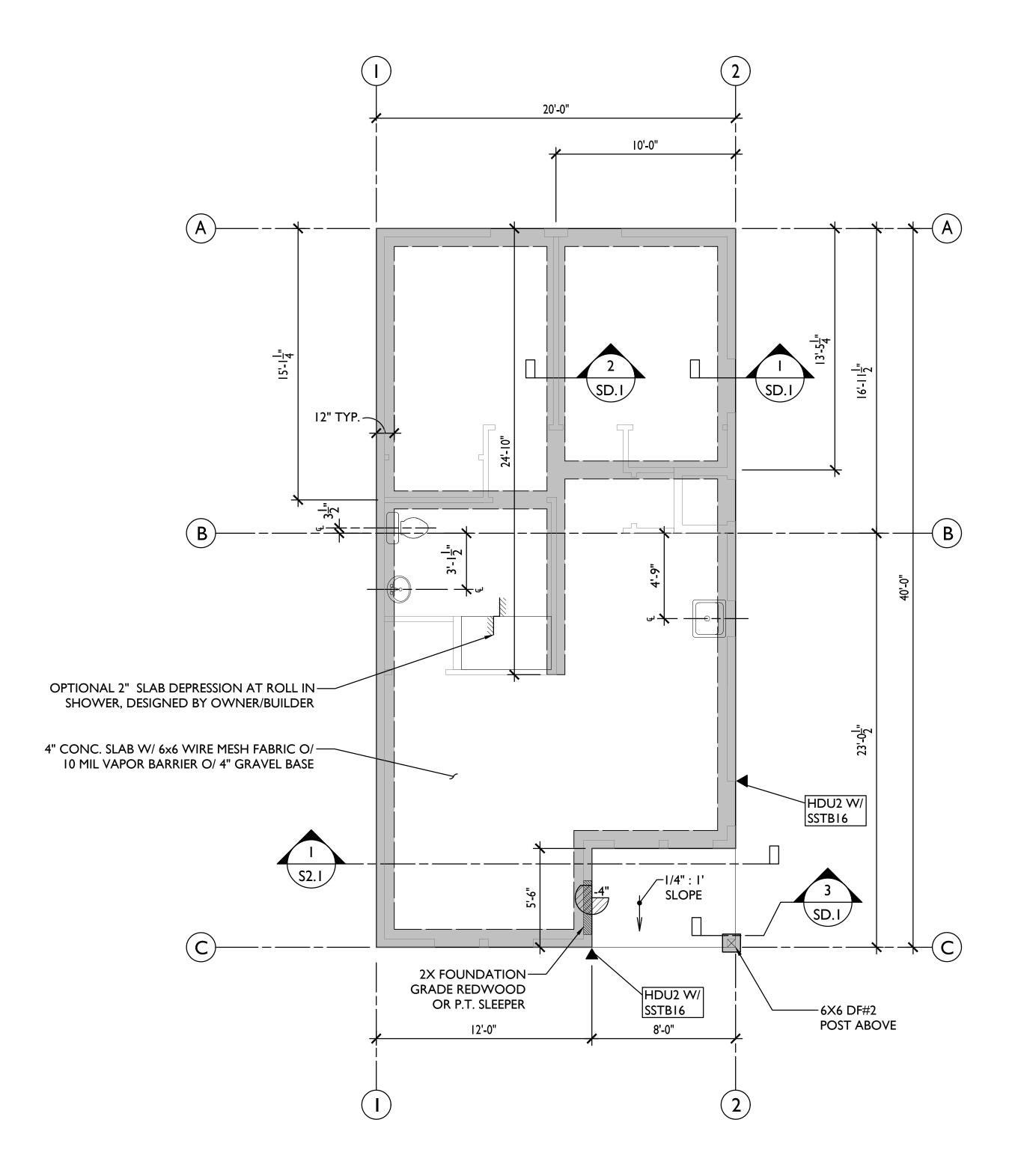




METLIOD	MINIMUM PANEL	NAILING	
METHOD	THICKNESS	EDGE	FIELD
CS-WSP (CONTINUOUSLY SHEATHED WOOD STRUCTURAL PANEL)			
WSP (WOOD STRUCTURAL PANEL)	3/8" OSB	8d @ 6" O.C.	8d @ 12" O.C.
ABW (ALTERNATE BRACE WALL)	1		

2 BRACE WALL PLAN

SI.I SCALE: 1/4" = 1'-0"



		HOL	DOWN SCHEDULE		
SYMBOL	HOLDOWN ID	CAPACITY (LBS)	MINIMUM FRAMING MEMBER	ANCHOR BOLT	EMBEDMENT
•	HDU2*	1,810	DBL 2x	SSTB16	12-5/8"

* OTHER LISTED DEVICE WITH MIN. CAPACITY OF 1,800 LB MAY BE UTILIZED

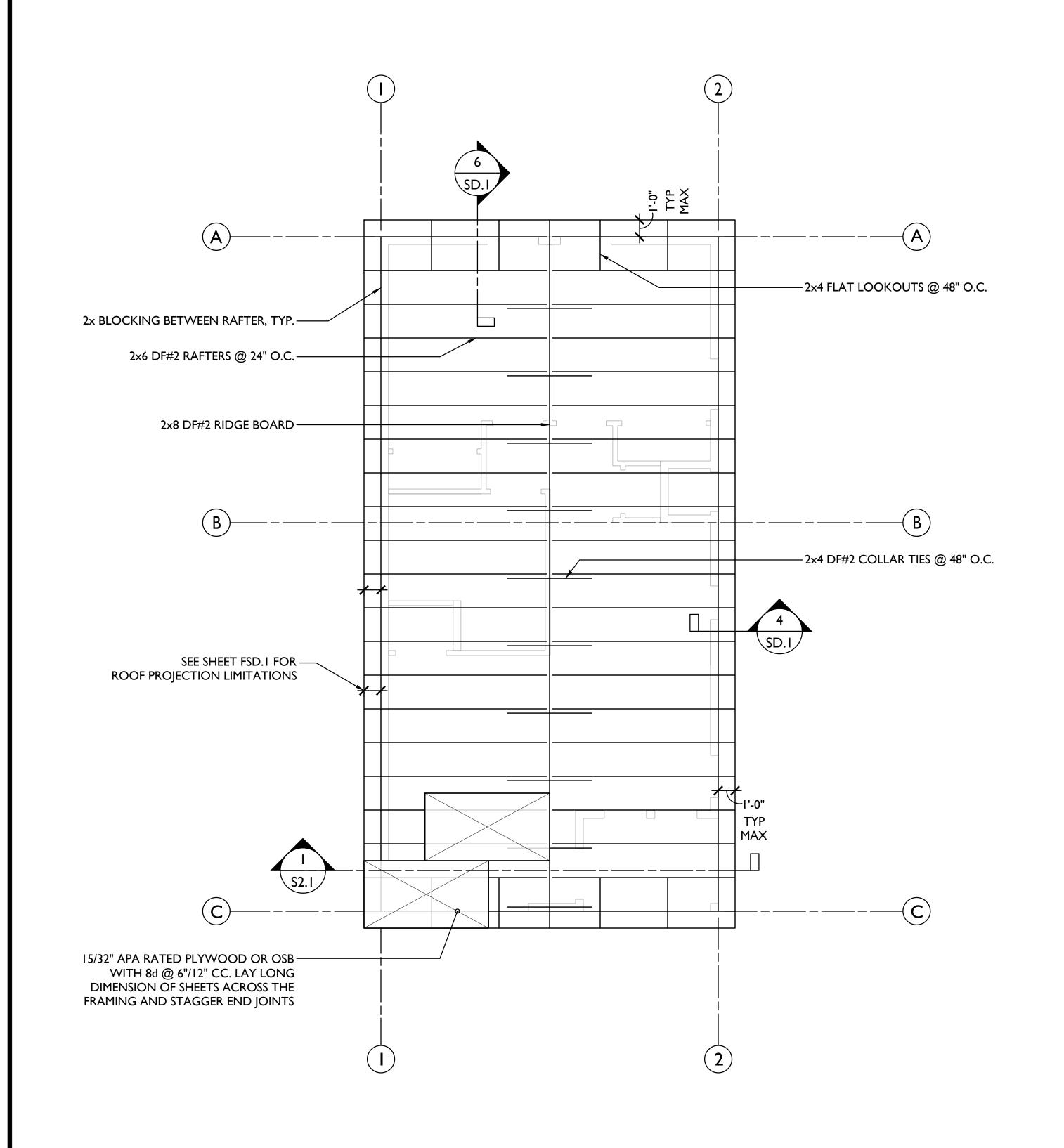
FOUNDATION PLAN
SI.I SCALE: 1/4" = 1'-0"

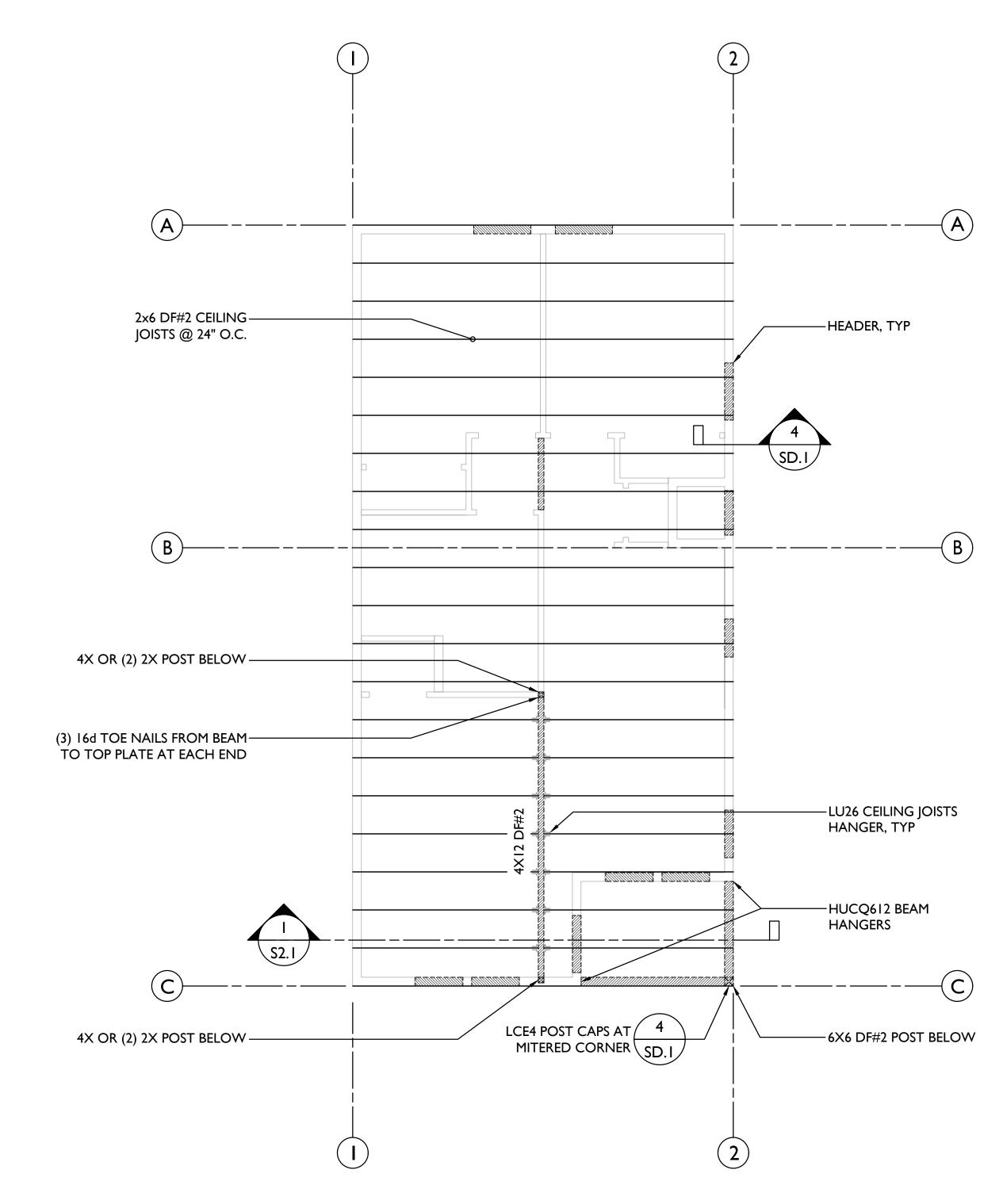
SACRAMENTC
Community Developmer

20x40 TWO BEDROOM PLAN
747 SQ FT.
FOUNDATION PLAN, BRACE WA

File:
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Checked By: MB
Scale: AS NOTED
Date: 01/04/2023

SI.I





BEAM	HEADER SCHE	DULE	[TABLE R602.7(1)]
SPAN	MEMBER SIZE (DF#2)	SUPPORT (JACK STUDS)	FULL HEIGHT (KING STUDS)
>4'	4x4	(1)	(1)
>6'	4×6	(1)	(1)
>7'-7"	4×8	(1)	(1)
>9'	4×10	(1)	(1)
>10'-7"	4×12	(2)	(2)

CEILING FRAMING PLAN

S1.2 | SCALE: 1/4" = 1'-0"

SACRAMENTO Community Development

ING PLAN ROOF FRAMING PLA

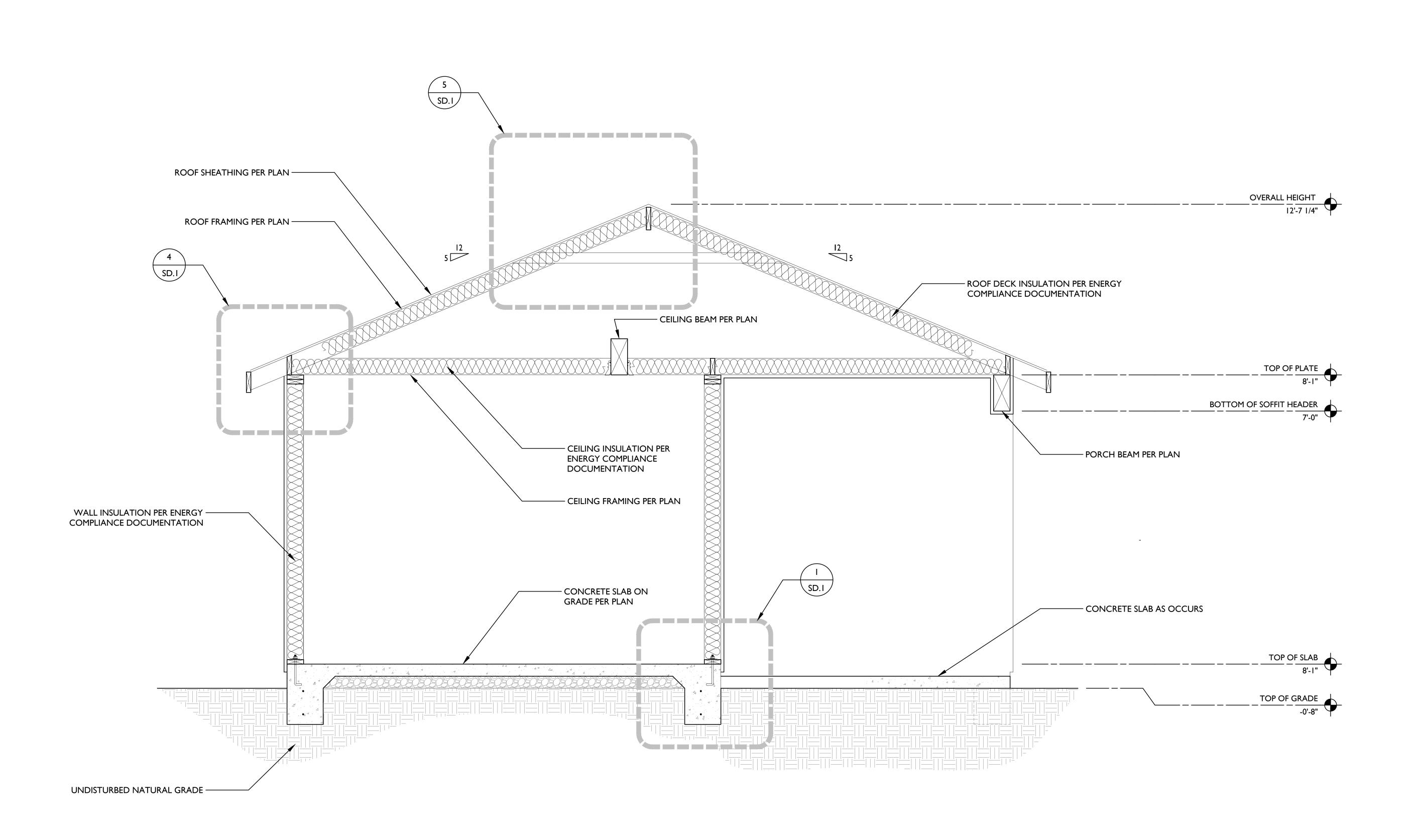
20x40 TWO BEDROOM 747 SQ FT.

File:
Drawn By: JCE
Checked By: MB
Scale: AS NOTED
Date: 01/04/2023

S1.2

ROOF FRAMING PLAN

S1.2 | SCALE: 1/4" = 1'-0"



SACRAMENTO Community Development

RUCTURAL SECTION

20x40 TWO BEDROOM 747 SQ FT.

File:
Drawn By: JCE
Checked By: MB
Scale: AS NOTED
Date: 01/04/2023

S2.1

STRUCTURAL SECTION

S2.1 | SCALE: 3/4" = 1'-0"

CHAPTER 6 WALL CONSTRUCTION TABLE R602.3(1)

		TABLE R602.3(1) FASTENING SCHEDULE	
ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER ^{a, b, c}	SPACING AND LOCATION
		Roof	
		4-8d box (2 ¹ / ₂ " × 0.113"); or	
	Blocking between ceiling joists, rafters or trusses to	3-8d common (2 ¹ / ₂ " × 0.131"); or	Toe nail
	top plate or other framing below	3-10d box (3" × 0.128"); or	105.100
		3-3" × 0.131" nails 2-8d common (2 ¹ / ₂ " × 0.131"); or	
1		<u> </u>	Each end toe nail
	Blocking between rafters or truss not at the wall top		
	plates, to rafter or truss	2-16d common (3 ¹ / ₂ " × 0.162"); or	
			<u>End nail</u>
		3-3" × 0.131" nails	
	Flat blocking to truss and web filler	16d common (3½/2" × 0.162"); or	<u>6" o.c. face nail</u>
		250 5255	
		3" × 0.131" nails 4-8d box (2 ¹ / ₂ " × 0.113"); or	
		3-8d common (2 ¹ / ₂ " × 0.131"); or	
2	Ceiling joists to top plate		Per joist, toe nail
		3-10d box (3" × 0.128"); or	
		3-3" × 0.131" nails	
		4-10d box (3" × 0.128"); or	
3	Ceiling joist not attached to parallel rafter, laps over partitions [see Section R802.5.2 and Table R802.5.2(1)]	3-16d common ($3^{1}/_{2}'' \times 0.162''$); or	Face nail
	Ceiling joist attached to parallel rafter (heel joint)	4-3" × 0.131" nails	
4	[see Section R802.5.2 and Table R802.5.2(1)]	Table R802.5.2(1)	Face nail
		4-10d box (3" × 0.128"); or	
<u>5</u>	Collar tie to rafter, face nail	3-10d common (3" × 0.148"); or	<u>Face nail each rafter</u>
		4-3" × 0.131" nails	
		3-16d box (3 ¹ / ₂ " × 0.135"); or	
ـ ا		3-10d common (3" × 0.148"); or	2 toe nails on one side and 1 toe nail on
6	Rafter or roof truss to plate	4-10d box (3" × 0.128"); or	opposite side of each rafter or truss ⁱ
		4-3" × 0.131" nails	

		4-16d box (3 ¹ / ₂ " × 0.135"); or	
		3-10d common (3" × 0.148"); or	
		4-10d box (3" × 0.128"); or	Toe nail
	Roof rafters to ridge, valley or hip rafters or roof	4-3" × 0.131" nails	
7	rafter to minimum 2" ridge beam	3-16d box (3 ¹ / ₂ " × 0.135"); or	
		2-16d common ($3^{1}/_{2}$ " × 0.162"); or	End nail
		3-10d box (3" × 0.128"); or	289800000000
		3-3" × 0.131" nails	
	T:	Wall	24" o.c. face nail
		16d common (3 ¹ / ₂ " × 0.162") 10d box (3" × 0.128"); or	z4 o.c. face half
8	Stud to stud (not at braced wall panels)	100 box (5 × 0.128); or	16" o.c. face nail
		3" × 0.131" nails	
		16d box (3 ¹ / ₂ " × 0.135"); or	
	Stud to stud and abutting studs at intersecting wall		12" o.c. face nail
9	corners (at braced wall panels)	Contract Street Street Contract Contract Contract	12 S.C. Idee Hall
	W - W	3" × 0.131" nails	
		16d common (3 ¹ / ₂ " × 0.162") 16d common (3 ¹ / ₂ " × 0.162")	16" o.c. face nail
10	Built-up header (2" to 2" header with 1/2" spacer)	16d box (3 ¹ / ₂ " × 0.135")	16" o.c. each edge face nail 12" o.c. each edge face nail
		5-8d box (2 ¹ / ₂ " × 0.113"); or	12 o.c. each eage face fiall
11	Continuous header to stud	4-8d common (2 ¹ / ₂ " × 0.131"); or 4-10d box (3" × 0.128")	Toe nail
		4-16d box (3 ¹ / ₂ "× 0.135"); or	
12	Adjacent full-height stud to end of header	3-16d common (3 ¹ / ₂ " × 0.162"); or	End nail
		4-10d box (3" x 0.128"); or	
		4-10d box (3" × 0.128"); or	
		4-3" × 0.131" nails	
		4-3" × 0.131" nails 16d common (3 ¹ / ₂ " × 0.162")	16° o.c. face nail
13	Top plate to top plate	4-3" × 0.131" nails	16° o.c. face nail
13	Top plate to top plate	4-3" × 0.131" nails 16d common (3 ¹ / ₂ " × 0.162") 10d box (3" × 0.128"); or 3" × 0.131" nails	
13	Top plate to top plate	4-3" × 0.131" nails 16d common (3 ¹ / ₂ " × 0.162") 10d box (3" × 0.128"); or	
	Top plate to top plate Double top plate splice	4-3" × 0.131" nails 16d common (3 ¹ / ₂ " × 0.162") 10d box (3" × 0.128"); or 3" × 0.131" nails	12° o.c. face nail Face nail on each side of end joint (minimum 24° lap splice length each sid
1900		4-3" × 0.131" nails 16d common (3 ¹ / ₂ " × 0.162") 10d box (3" × 0.128"); or 3" × 0.131" nails 8-16d common (3 ¹ / ₂ " × 0.162"); or	12° o.c. face nail Face nail on each side of end joint
1900		4-3" × 0.131" nails 16d common (3 ¹ / ₂ " × 0.162") 10d box (3" × 0.128"); or 3" × 0.131" nails 8-16d common (3 ¹ / ₂ " × 0.162"); or 12-16d box (3 ¹ / ₂ " × 0.135"); or 12-10d box (3" × 0.128"); or	12" o.c. face nail Face nail on each side of end joint (minimum 24" lap splice length each sid of end joint)
1900	Double top plate splice	4-3" × 0.131" nails 16d common (3 ¹ / ₂ " × 0.162") 10d box (3" × 0.128"); or 3" × 0.131" nails 8-16d common (3 ¹ / ₂ " × 0.162"); or 12-16d box (3 ¹ / ₂ " × 0.135"); or 12-10d box (3" × 0.128"); or 12-3" × 0.131" nails 16d common (3 ¹ / ₂ " × 0.162") 16d box (3 ¹ / ₂ " × 0.135"); or	12° o.c. face nail Face nail on each side of end joint (minimum 24" lap splice length each sid
		4-3" × 0.131" nails 16d common (3 ¹ / ₂ " × 0.162") 10d box (3" × 0.128"); or 3" × 0.131" nails 8-16d common (3 ¹ / ₂ " × 0.162"); or 12-16d box (3 ¹ / ₂ " × 0.135"); or 12-10d box (3" × 0.128"); or 12-3" × 0.131" nails 16d common (3 ¹ / ₂ " × 0.162") 16d box (3 ¹ / ₂ " × 0.135"); or	12" o.c. face nail Face nail on each side of end joint (minimum 24" lap splice length each side of end joint)

		3-16d box ($3^{1}/2^{-} \times 0.135^{-}$); or	
<u>16</u>	Bottom plate to joist, rim joist, band joist or blocking (at braced wall panel)	2-16d common (3 ¹ / ₂ " × 0.162"); or	16" o.c. face nail
		4-3" × 0.131" nails	
		4-8d box (2 ¹ / ₂ " × 0.113"); or	
		3-16d box (3 ¹ / ₂ " × 0.135"); or	
		4-8d common (2 ¹ / ₂ " × 0.131"); or	Toe nail
		4-10d box (3" × 0.128"); or	
17	Top or bottom plate to stud	4-3" × 0.131" nails	
		3-16d box (3 ¹ / ₂ " × 0.135"); or	
		And the state of t	
		2-16d common ($3^{1}/_{2}^{-} \times 0.162^{-}$); or	End nail
		3-10d box (3" × 0.128"); or	
		3-3" × 0.131" nails	
		3-10d box (3" × 0.128"); or	
18	Top plates, laps at corners and intersections	2-16d common ($3^{1}/2^{"} \times 0.162"$); or	Face nail
		3-3" × 0.131" nails	
		3-8d box $(2^{1}/2^{"} \times 0.113")$; or	
19	1" brace to each stud and plate	2-8d common ($2^{1}/_{2}$ " × 0.131"); or	Face nail
		2-10d box (3" × 0.128"); or	
		2 staples 1 ³ / ₄ "	
		2 staples 1 ³ / ₄ " 3-8d box (2 ¹ / ₂ " × 0.113"); or	
		2-8d common ($2^{1}/_{2}^{-} \times 0.131^{-}$); or	
20	1" × 6" sheathing to each bearing	2-10d box (3" × 0.128"); or	Face nail
		2	
		2 staples, 1" crown, 16 ga., 1 ³ / ₄ " long 3-8d box (2 ¹ / ₂ " × 0.113"); or	
		1,00	
		3-8d common (2 ¹ / ₂ " × 0.131"); or	
		3-10d box (3" × 0.128"); or	
		3 staples, 1" crown, 16 ga., 1 ³ / ₄ " long	-
	$1^{"} \times 8^{"}$ and wider sheathing to each bearing		Face nail

		Wider than 1" × 8"	
		4-8d box $(2^{1}/2^{r} \times 0.113^{r})$; or	
		3-8d common ($2^{1}/_{2}$ " × 0.131"); or	
		3-10d box (3" × 0.128"); or	
		4 staples, 1" crown, 16 ga., 1 ³ / ₄ " long	
	I	Floor 4-8d box ($2^{1}/_{2}$ " × 0.113"); or	
		3-8d common (2 ¹ / ₂ " × 0.131"); or	
22	Joist to sill, top plate or girder		Toe nail
		3-10d box (3" × 0.128"); or	
		3-3" × 0.131" nails	
		8d box (2 ¹ / ₂ " × 0.113")	4" o.c. toe nail
		8d common (2 ¹ / ₂ " × 0.131"); or	
23	Rim joist, band joist or blocking to sill or top plate (roof applications also)	10d box (3" × 0.128"); or	6" o.c. toe nail
		3" × 0.131" nails	
		3-8d box (2 ¹ / ₂ " × 0.113"); or	
24	$1^{\circ} \times 6^{\circ}$ subfloor or less to each joist	2-8d common ($2^{1}/_{2}^{-} \times 0.131^{-}$); or	Face nail
		3-10d box (3" × 0.128"); or	
		2 staples, 1" crown, 16 ga., 13/4" long	
25	2" subfloor to joist or girder	3-16d box (3 ¹ / ₂ " × 0.135"); or	Blind and face nail
		2-16d common (3 ¹ / ₂ " × 0.162")	
		3-16d box (3 ¹ / ₂ " × 0.135"); or	
26	2" planks (plank & beam—floor & roof)		At each bearing, face nail
		2-16d common ($3^{1}/2^{"} \times 0.162"$) 3-16d common ($3^{1}/2^{"} \times 0.162"$); or	
		3-100 common (3-/2 × 0.162); or	
		4-10 box (3" × 0.128"); or	
27	Band or rim joist to joist	4-10 DOX 13 - 0.120 1, 01	End nail
21	Suite of Time post to joist	4-3" × 0.131" nails; or	<u>Lite Hell</u>
		4-3" × 14 ga. staples, ½/16" crown	Nail each laver as follows: 22" o s at
		20d common (4" × 0.192"); or	Nail each layer as follows: 32" o.c. at and bottom and staggered.
	_	10d box (3" × 0.128"); or 3" × 0.131" nails	24" o.c. face nail at top and botton staggered on opposite sides
	1		

		And:		
		2-20d common (4" × 0.192"); or		
			Face nail	at ends and at each splice
		3-10d box (3" × 0.128"); or		
		3-3" × 0.131" nails		
		4-16d box (3 ¹ / ₂ " × 0.135"); or		
		3-16d common (3 ¹ / ₂ " × 0.162"); or		
29	Ledger strip supporting joists or rafters		At each	joist or rafter, face nail
		4-10d box (3" × 0.128"); or		
		4-3" × 0.131" nails		
		2-10d box (3" × 0.128"); or		
<u>30</u>	Bridging or blocking to joist, rafter or truss	2-8d common (2 ¹ / ₂ " × 0.131"); or	<u> </u>	ach end, toe nail
		<u>2-3" × 0.131" nails</u>	CDAC	ING OF FASTENERS
ГЕМ	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER ^{a, b, c}	Edgesh	Intermediate supports ^{c,}
	Wood structural nanels	, subfloor, roof and interior wall sheathing to fra	(inches)	e(inches)
	particleboard wall sheathing to framing [see	able R602.3(3) for wood structural panel exterior	r wall sheath	ing to wall framing]
	particleboard wall sheathing to framing [see	6d common or deformed (2" \times 0.113" \times 0.266" head); or $2^3/8$ " \times 0.113" \times 0.266" head nail	r wall sheath	ing to wall framing]
21		6d common or deformed $(2^{\circ} \times 0.113^{\circ} \times 0.266^{\circ})$ head); or $2^{3}/8^{\circ} \times 0.113^{\circ} \times 0.266^{\circ}$ head nail (subfloor, wall)		
<u>31</u>	particleboard wall sheathing to framing [see] $\frac{3}{48^{''}-\frac{1}{2}}\frac{42^{''}}{2}$	6d common or deformed (2" \times 0.113" \times 0.266" head); or $2^3/8$ " \times 0.113" \times 0.266" head nail	<u>6</u>	<u>6</u> f
31		6d common or deformed $(2" \times 0.113" \times 0.266"$ head); or $2^3/8" \times 0.113" \times 0.266"$ head nail (subfloor, wall) ¹ 8d common $(2^1/2" \times 0.131")$ nail (roof); or		
31		$\label{eq:common or deformed (2" × 0.113" × 0.266" head); or $2^3/8" \times 0.113" \times 0.266"$ head nail (subfloor, wail)^i$ 8d common ($2^1/2" \times 0.131") nail (roof); or \label{eq:common condition} \text{RSRS-01 } (2^3/8" \times 0.113") \text{ nail (roof)}^b$ 8d common $(2-2^1/2" \times 0.131")$ nail (subfloor, wall)}$	<u>6</u>	<u>6</u> f
31			<u>6</u>	6 ^f
		$\label{eq:common or deformed (2" × 0.113" × 0.266" head); or $2^3/8" \times 0.113" \times 0.266"$ head nail (subfloor, wail)^i$ 8d common ($2^1/2" \times 0.131") nail (roof); or \label{eq:common condition} \text{RSRS-01 } (2^3/8" \times 0.113") \text{ nail (roof)}^b$ 8d common $(2-2^1/2" \times 0.131")$ nail (subfloor, wall)}$	<u>6</u>	6 ^f
	3/ <u>8" - 1/2"</u>		<u>6</u> 6	<u>6</u> f 6f
	3/ <u>8" - 1/2"</u>		<u>6</u> 6	<u>6</u> f 6f
32	³ / ₈ " - ¹ / ₂ " 19/ ₃₂ " - ³ / ₄ "		<u>6</u> 6 <u>6</u>	<u>6</u> f 12 <u>6</u> f
32	3/ <u>8" - 1/2"</u>		<u>6</u> 6 <u>6</u>	<u>6</u> f 12 <u>6</u> f
32	³ / ₈ " - ¹ / ₂ " 19/ ₃₂ " - ³ / ₄ "		<u>6</u> 6 <u>6</u>	6 ^f 12 6 ^f
32	³ / ₈ " - ¹ / ₂ " 19/ ₃₂ " - ³ / ₄ "		<u>6</u> 6 <u>6</u>	6 ^f 12 6 ^f
32	$\frac{3}{48'' - \frac{1}{2}} \frac{1}{2''}$ $\frac{19}{32'' - \frac{3}{4}} \frac{4}{4''}$		6 6 6 6	6 ^f 12 6 ^f 12
32	³ / ₈ " - ¹ / ₂ " 19/ ₃₂ " - ³ / ₄ "		<u>6</u> 6 <u>6</u>	6 ^f 12 6 ^f
32	$\frac{3}{48'' - \frac{1}{2}} \frac{1}{2''}$ $\frac{19}{32'' - \frac{3}{4}} \frac{4}{4''}$	6d common or deformed $(2^x \times 0.113^x \times 0.266^x)$ head): or $2^3 l_8^x \times 0.113^x \times 0.266^x$ head nail (subfloor, wall) 8d common $(2^1 l_2^x \times 0.131^x)$ nail (roof); or RSRS-01 $(2^3 l_8^x \times 0.113^x)$ nail (roof)b 8d common $(2 \cdot 2^1 l_2^x \times 0.131^x)$ nail (subfloor, wall) 8d common $(2^1 l_2^x \times 0.131^x)$ nail (roof)b RSRS-01: $(2^3 l_8^x \times 0.113^x)$ nail (roof)b Deformed $2^3 l_8^x \times 0.113^x \times 0.266^x$ head (wall or subfloor) 10d common $(3^x \times 0.148^x)$ nail; or $(2^1 l_2^x \times 0.131 \times 0.281^x$ head) deformed nail Other wall sheathing9 $1^2 l_2^x \times 0.120^x$ galvanized roofing nail,7/16 x head diameter; or	6 6 6 6	6 ^f 12 6 ^f 12
32	$\frac{3}{48'' - \frac{1}{2}} \frac{1}{2''}$ $\frac{19}{32'' - \frac{3}{4}} \frac{4}{4''}$		6 6 6 6	6 ^f 12 6 ^f 12
33 33 34	$\frac{3}{48'' - \frac{1}{2}} \frac{1}{2''}$ $\frac{19}{32'' - \frac{3}{4}} \frac{4}{4''}$	6d common or deformed $(2^x \times 0.113^x \times 0.266^x)$ head): or $2^3lg^x \times 0.113^x \times 0.266^x$ head nail (subfloor, wall)! 8d common $(2^1/2^x \times 0.131^x)$ nail (roof); or RSRS-01 $(2^3/8^x \times 0.113^x)$ nail (roof)b 8d common $(2\cdot 2^1/2^x \times 0.131^x)$ nail (subfloor, wall) 8d common $(2^1/2^x \times 0.131^x)$ nail (roof)b 8d common $(2^1/2^x \times 0.131^x)$ nail (roof)b Deformed $2^3lg^x \times 0.113^x \times 0.266^x$ head (wall or subfloor) 10d common $(3^x \times 0.148^x)$ nail; or $(2^1/2^x \times 0.131 \times 0.281^x$ head) deformed nail Other wall sheathing9 $1^1/2^x \times 0.120^x$ galvanized roofing nail, $7/16^x$ head diameter; or $1^1/4^x$ long 16 ga. staple with $7/16^x$ or 1" crown $1^3/4^x \times 0.120^x$ galvanized roofing nail, $7/16^x$ head	6 6 6 6	6 ^f 12 6 ^f 12
33 33 34	$\frac{3}{48''} - \frac{1}{42''}$ $\frac{19}{32''} - \frac{3}{4}''$ $\frac{7}{48''} - \frac{1}{44''}$ $\frac{1}{2''}$ structural cellulosic fiberboard sheathing	6d common or deformed $(2^x \times 0.113^x \times 0.266^x)$ head): or $2^3lg^x \times 0.113^x \times 0.266^x$ head nail (subfloor, wall)! 8d common $(2^1/2^x \times 0.131^x)$ nail (roof); or RSRS-01 $(2^3/8^x \times 0.113^x)$ nail (roof)b 8d common $(2^1/2^x \times 0.131^x)$ nail (subfloor, wall) 8d common $(2^1/2^x \times 0.131^x)$ nail (roof)b 8d common $(2^1/2^x \times 0.131^x)$ nail (roof)b Deformed $2^3lg^x \times 0.113^x \times 0.266^x$ head (wall or subfloor) 10d common $(3^x \times 0.148^x)$ nail; or $(2^1/2^x \times 0.131 \times 0.281^x$ head) deformed nail Other wall sheathing9 $1^1/2^x \times 0.120^x$ galvanized roofing nail, $7^1/2^x$ head diameter; or $1^1/4^x$ long 16 ga. staple with $7^1/2^x$ or 1^x crown $1^1/4^x \times 0.120^x$ galvanized roofing nail, $7^1/2^x$ head diameter; or	<u>6</u> 6 <u>6</u> <u>6</u>	6f 6f 12 6f 12 12 12
<u>32</u> <u>33</u>	$\frac{3}{48''} - \frac{1}{42''}$ $\frac{19}{32''} - \frac{3}{4}''$ $\frac{7}{48''} - \frac{1}{44''}$ $\frac{1}{2''}$ structural cellulosic fiberboard sheathing	6d common or deformed $(2^x \times 0.113^x \times 0.266^x)$ head): or $2^3lg^x \times 0.113^x \times 0.266^x$ head nail (subfloor, wall)! 8d common $(2^1/2^x \times 0.131^x)$ nail (roof); or RSRS-01 $(2^3/8^x \times 0.113^x)$ nail (roof)b 8d common $(2^1/2^x \times 0.131^x)$ nail (subfloor, wall) 8d common $(2^1/2^x \times 0.131^x)$ nail (roof)b 8d common $(2^1/2^x \times 0.131^x)$ nail (roof)b Deformed $2^3lg^x \times 0.113^x \times 0.266^x$ head (wall or subfloor) 10d common $(3^x \times 0.148^x)$ nail; or $(2^1/2^x \times 0.131 \times 0.281^x \text{ head}) \text{ deformed nail}$ Other wall sheathing9 $1^1/2^x \times 0.120^x \text{ galvanized roofing nail}, 7/16^x \text{ head}$ diameter; or $1^1/4^x \text{ long } 16 \text{ ga. staple with } 7/16^x \text{ or } 1^x \text{ crown}$ $1^3/4^x \times 0.120^x \text{ galvanized roofing nail}, 7/16^x \text{ head}$ diameter; or	<u>6</u> 6 <u>6</u> <u>6</u>	6f 6f 12 6f 12 12 12
<u>32</u> <u>33</u>	$\frac{3}{48''} - \frac{1}{42''}$ $\frac{19}{32''} - \frac{3}{4}''$ $\frac{7}{48''} - \frac{1}{44''}$ $\frac{1}{2''}$ structural cellulosic fiberboard sheathing	6d common or deformed $(2^x \times 0.113^x \times 0.266^x)$ head): or $2^3lg^x \times 0.113^x \times 0.266^x$ head nail (subfloor, wall)! 8d common $(2^1/2^x \times 0.131^x)$ nail (roof); or RSRS-01 $(2^3/8^x \times 0.113^x)$ nail (roof)b 8d common $(2^1/2^x \times 0.131^x)$ nail (subfloor, wall) 8d common $(2^1/2^x \times 0.131^x)$ nail (roof)b 8d common $(2^1/2^x \times 0.131^x)$ nail (roof)b Deformed $2^3lg^x \times 0.113^x \times 0.266^x$ head (wall or subfloor) 10d common $(3^x \times 0.148^x)$ nail; or $(2^1/2^x \times 0.131 \times 0.281^x$ head) deformed nail Other wall sheathing9 $1^1/2^x \times 0.120^x$ galvanized roofing nail, $7^1/2^x$ head diameter; or $1^1/4^x$ long 16 ga. staple with $7^1/2^x$ or 1^x crown $1^1/4^x \times 0.120^x$ galvanized roofing nail, $7^1/2^x$ head diameter; or	<u>6</u> 6 <u>6</u> <u>6</u>	6f 6f 12 6f 12 12 12
<u>33</u>	$\frac{3}{l_8'' - \frac{1}{2}l_2''}$ $\frac{7}{l_8'' - \frac{1}{2}l_4''}$ $\frac{7}{l_2''}$ structural cellulosic fiberboard sheathing		6 6 6 6 3	6f 12 6f 12 12 16 6
<u>33</u>	$\frac{3}{48''} - \frac{1}{42''}$ $\frac{19}{32''} - \frac{3}{4}''$ $\frac{7}{48''} - \frac{1}{44''}$ $\frac{1}{2''}$ structural cellulosic fiberboard sheathing	6d common or deformed $(2^x \times 0.113^x \times 0.266^x)$ head): or $2^3lg^x \times 0.113^x \times 0.266^x$ head nail (subfloor, wall)! 8d common $(2^1/2^x \times 0.131^x)$ nail (roof); or RSRS-01 $(2^3/8^x \times 0.113^x)$ nail (roof)b 8d common $(2^1/2^x \times 0.131^x)$ nail (subfloor, wall) 8d common $(2^1/2^x \times 0.131^x)$ nail (roof)b 8d common $(2^1/2^x \times 0.131^x)$ nail (roof)b Deformed $2^3lg^x \times 0.113^x \times 0.266^x$ head (wall or subfloor) 10d common $(3^x \times 0.148^x)$ nail; or $(2^1/2^x \times 0.131 \times 0.281^x \text{ head}) \text{ deformed nail}$ Other wall sheathing9 $1^1/2^x \times 0.120^x \text{ galvanized roofing nail}, 7/16^x \text{ head}$ diameter; or $1^1/4^x \text{ long } 16 \text{ ga. staple with } 7/16^x \text{ or } 1^x \text{ crown}$ $1^3/4^x \times 0.120^x \text{ galvanized roofing nail}, 7/16^x \text{ head}$ diameter; or	<u>6</u> 6 <u>6</u> <u>6</u>	6f 6f 12 6f 12 12 12
<u>32</u> <u>33</u> 34	$\frac{3}{l_8'' - \frac{1}{2}l_2''}$ $\frac{7}{l_8'' - \frac{1}{2}l_4''}$ $\frac{7}{l_2''}$ structural cellulosic fiberboard sheathing		6 6 6 6 3	6f 12 6f 12 12 16 6

		$1^3 l_4$ " \times 0.120" galvanized roofing nail, $^2 l_1$ 6" head diameter, or $1^2 l_4$ " long 16 ga.;		
37	⁵ / ₈ ″ gypsum sheathing ^d		7	7
		staple galvanized, $1^{1}/_{2}$ long; $^{7}/_{16}$ or 1"crown or $1^{1}/_{2}$ screws, Type W or S		
	Wood :	structural panels, combination subfloor underlayment to fr	aming	
		<u>Deformed (2"× 0.113") or</u>		
38	$^{3}\!I_{4}^{-}$ and less	Deformed (2" × 0.120") nail; or	6	12
		8d common (2 ¹ / ₂ " × 0.131") nail		
39	<u> </u>	8d common $(2^{\underline{1}}l_{\underline{2}''} \times 0.131'')$ nail; or Deformed $(2'' \times 0.113'')$; or	<u>6</u>	12
		<u>Deformed (2¹/2" × 0.120") nail</u>		
		10d common (3" × 0.148") nail; or		
<u>40</u>	$11/8^{-} - 11/4^{-}$	<u>Deformed (2" × 0.113");or</u>	6	12
		<u>Deformed (2¹/2" × 0.120") nail</u>		

FRAMING NOTES:

- I. FIRE BLOCKING SHALL BE PROVIDED IN ALL CONCEALED SPACES.
- 2. ALL FRAMING MEMBERS TO BE A MINIMUM GRADE OF DOUGLAS FIR #2, U.N.O.
- 3. ALL DOORS TO BE CENTERED WITHIN ADJACENT WALLS, OR DOOR JAMB TO BE FRAMING AT 3" U.N.O.
- DIMENSIONS SHOWN ARE FROM FACE OF STUD U.N.O. DIMENSIONS NOTED AS "CLR" ARE TO BE PRECISELY MAINTAINED.
- 3. FOUNDATION SILL PLATES SHALL BE PRESSURE TREATED DOUGLAS FIR #2 MINIMUM, U.N.O.
- 4. PROVIDE RESTRAINT AT ENDS OF ALL MEMBERS TO PREVENT ROTATION.
- 5. ALL WOOD EXPOSED TO WEATHER TO BE NATURALLY DURABLE OR PRESSURE TREATED.
- 6. ALL NAILS & HARDWARE EXPOSED WEATHER SHALL BE HOT-DIP GALVANIZED STEEL (PER ASTM A153 OR A653), MECHANICALLY-COATED GALVANIZED STEEL (PER ASTM B695), OR STAINLESS STEEL.

FOUNDATION NOTES

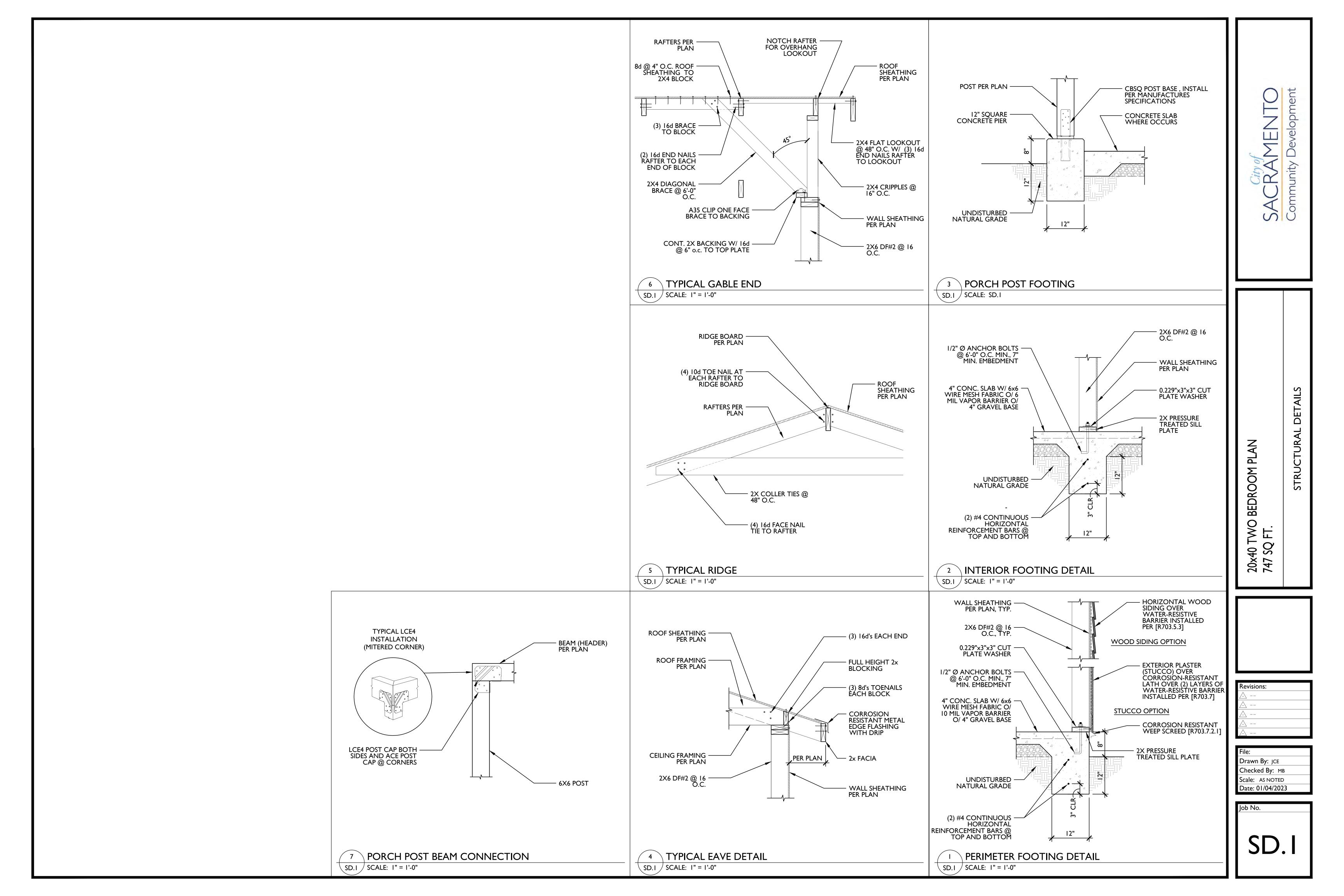
FASTENERS AND CONNECTORS IN CONTACT WITH PRESERVATIVE TREATED WOOD SHALL BE HOT DIPPED ZINC COATED GALVANIZED STEEL

MATERIAL SPECIFICATIONS

2500 psi 2500 PSI FOUNDATION CONCRETE SLAB ASTM A615 GR60 REINFORCEMENT STEEL FOUNDATION ANCHOR BOLTS ASTM A307

BEDROOM 20x40 TWO I 747 SQ FT.

Revisions:





2022 Single-Family Residential Mandatory Requirements Summary

NOTE: Single-family residential buildings subject to the Energy Codes must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information.

Building Envolope:

Building Envelope	9:
§ 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):	Roof Deck, Ceiling and Rafter Roof Insulation. Roof decks in newly constructed attics in climate zones 4 and 8-16 area-weighted average U-factor not exceeding U-0.184. Ceiling and rafter roofs minimum R-22 insulation in wood-frame ceiling; or area-weighted average U-factor must not exceed 0.043. Rafter roof alterations minimum R-19 or area-weighted average U-factor of 0.054 or less. 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 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. *

Loose-fill Insulation. Loose fill insulation must meet the manufacturer's required density for the labeled R-value. 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 0.45; or area-weighted average U-factor of all fenestration must not exceed 0.45.

Fireplaces, Decorative Gas Appliances, and Gas Log:

§ 110.5(e)	Pliot 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:

Space Conditioning, water nearing, and Flumbing System.		
	Certification. Heating, ventilation, and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other	
§ 110.0-§ 110.3:	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-N. *	
§ 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. *
Insulation. Unfired service water heater storage tanks and solar water-heating backup tanks must have adequate insulation, or tank surface heat loss rating.

Isolation Valves. Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) 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.



2022 Single-Family Residential Mandatory Requirements Summary

the blank cover identified as "240V ready;" and a reserved main electrical service panel space to allow for the installation of a double pole

§ 150.0(s)	Energy Storage System (ESS) Ready. All single-family residences must meet all of the following: Either ESS-ready interconnection equipment with backed up capacity of 60 amps or more and four or more ESS supplied branch circuits, <u>or</u> a dedicated raceway from the main service to a subpanel that supplies the branch circuits in § 150.0(s); at least four branch circuits must be identified and have their source collocated at a single panelboard suitable to be supplied by the ESS, with one circuit supplying the refrigerator, one lighting circuit near the primary exit, and one circuit supplying a sleeping room receptacle outlet; main panelboard must have a minimum busbar rating of 225 amps; sufficient space must be reserved to allow future installation of a system isolation equipment/transfer switch within 3' of the main panelboard, with raceways installed between the panelboard and the switch location to allow the connection of backup power source.
§ 150.0(t)	Heat Pump Space Heater Ready. Systems using gas or propane furnaces to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the furnace with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready;" and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(u)	Electric Cooktop Ready. Systems using gas or propane cooktop to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the cooktop with circuit conductors rated at least 50 amps with the blank cover identified as "240V ready;" and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(v)	Electric Clothes Dryer Ready. Clothes dryer locations with gas or propane plumbing to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the dryer location with circuit conductors rated at least 30 amps with

circuit breaker permanently marked as "For Future 240V use."

*Exceptions may apply.



2022 Single-Family Residential Mandatory Requirements Summary

§ 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 an	
3	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.	
§ 150.0(h)3A: Clearances. Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the 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:	Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation. All domestic hot water piping must be insulated as specified in § 609.11 of the California Plumbing Code.*	
§ 150.0(j)2:	Insulation Protection. Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment' maintenance, and wind as required by §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 designate a space at least 2.5' x 2.5' x 7' suitable for the future installation of a heat pump water heater, and meet electrical and plumbing requirements, based on the distance between this designated space and the water heater location; and a condensate drain no more than 2" higher than the base of the water heater	
§ 150.0(n)3:	Solar Water-heating Systems. Solar water-heating systems and collectors must be certified and rated by the Solar Rating and	

and Fans:	
10.8(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.
50.0(m)1:	CMC Compliance. All air-distribution system ducts and plenums must meet CMC §§ 601.0-605.0 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 R-6.0 or higher; ducts located entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8) do not require insulation. 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 UL requirements, or aerosol sealant that meets UL 723. The combination of mastic and either mesh or tape must be used to seal openings greater than ¼", If mastic or tape is used. Building cavities, air handler support platforms, 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

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 due tosunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service (e.g., protected by aluminum, sheet metal, painted canvas, or plastic cover). Cellular foam insulation must be protected as above or painted with a water retardant and solar radiation-resistant coating.
§ 150.0(m)10:	Porous Inner Core Flex Duct. Porous inner cores of flex ducts must have a non-porous layer or air barrier between the inner core and outer vapor barrier.
	Duct System Sealing and Leakage Test. When space conditioning systems use forced air duct systems to supply conditioned air to an

§ 150.0(m)11: occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with Reference Residential Appendix RA3.1. Air Filtration. Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 § 150.0(m)12: 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. Clean-filter pressure drop and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service. Filter racks or grilles must use gaskets, sealing, or other means to close gaps around the inserted filters to and prevents air from bypassing the

Electric and Energy Storage Ready:

2022 Single-Family Residential Mandatory Requirements Summary

Light Sources in Enclosed or Recessed Luminaires. Lamps and other separable light sources that are not compliant with the JA8

§ 150.0(k)1G: Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.

§ 150.0(k)1H: elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.

3 100.0(k) 111.	elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminialies.
§ 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)2A:	Accessible Controls. Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off. *
§ 150.0(k)2B:	Multiple Controls. Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the dimmer or sensor is installed to comply with § 150.0(k).
§ 150.0(k)2C:	Mandatory Requirements. Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.0(k)2D:	Energy Management Control Systems. An energy management control system (EMCS) may be used to comply with dimming, occupancy, and control requirements if it provides the functionality of the specified control per § 110.9 and the physical controls specified in § 150.0(k)2A.
§ 150.0(k)2E:	Automatic Shutoff Controls. In bathrooms, garages, laundry rooms, utility rooms and walk-in closets, at least one installed luminaire must be controlled by an occupancy or vacancy sensor providing automatic-off functionality. Lighting inside drawers and cabinets with opaque fronts or doors must have controls that turn the light off when the drawer or door is closed.
§ 150.0(k)2F:	Dimmers. Lighting in habitable spaces (e.g., living rooms, dining rooms, kitchens, and bedrooms) must have readily accessible wall-mounted dimming controls that allow the lighting to be manually adjusted up and down. Forward phase cut dimmers controlling LED light sources in these spaces must comply with NEMA SSL 7A.
§ 150.0(k)2K:	Independent controls. Integrated lighting of exhaust fans shall be controlled independently from the fans. Lighting under cabinets or shelves, lighting in display cabinets, and switched outlets must be controlled separately from ceiling-installed lighting.
§ 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 have a manual on/off switch and either a photocell and motion sensor or automatic time switch control) or an astronomical time clock. An energy management control system that provides the specified control functionality and meets all applicable requirements may be used to meet these requirements.
§ 150.0(k)4:	Internally illuminated address signs. Internally illuminated address signs must either comply with § 140.8 or consume no more than 5 watts of power.
§ 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 §§ 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.
olar Readiness:	
§ 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)-(e).
§110.10(b)1A:	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.
§ 110.10(b)2:	Azimuth. All sections of the solar zone located on steep-sloped roofs must have an azimuth between 90-300° 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 horizontal distance 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. Documentation. A copy of the construction documents or a comparable document indicating the information from § 110.10(b)-(c) must be
§ 110.10(d):	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."

2022 Single-Family Residential Mandatory Requirements Summary

§ 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 nomin 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.*
	Reference Residential Appendix RA3.3. *

§ 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)1B:	Central Fan Integrated (CFI) Ventilation Systems. Continuous operation of CFI air handlers is not allowed to provide the whole-dwelling unit ventilation airflow required per §150.0(o)1C. A motorized damper(s) must be installed on the ventilation duct(s) that prevents all airflow through the space conditioning duct system when the damper(s) is closed and controlled per §150.0(o)1Biii&iv. CFI ventilation systems must have controls that track outdoor air ventilation run time, and either open or close the motorized damper(s) for compliance with §150.0(o)1C.
§ 150.0(o)1C:	Whole-Dwelling Unit Mechanical Ventilation for Single-Family Detached and townhouses. 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 specified in § 150.0(o)1Ci-iii.
§ 150.0(o)1G:	Local Mechanical Exhaust. Kitchens and bathrooms must have local mechanical exhaust; nonenclosed kitchens must have demand-controlled exhaust system meeting requirements of §150.0(o)1Giii,enclosed kitchens and bathrooms can use demand-controlled or continuous exhaust meeting §150.0(o)1Giii-iv. Airflow must be measured by the installer per §150.0(o)1Gv, and rated for sound per §150.0(o)1Gvi. *
§ 150.0(o)1H&I:	Airflow Measurement and Sound Ratings of Whole-Dwelling Unit Ventilation Systems. The airflow required per § 150.0(o)1C must be measured by using a flow hood, flow grid, or other airflow measuring device at the fan's inlet or outlet terminals/grilles per Reference Residential Appendix RA3.7. Whole-Dwelling unit ventilation systems must be rated for sound per ASHRAE 62.2 §7.2 at no less than the minimum airflow rate required by §150.0(o)1C.
§ 150.0(o)2:	Field Verification and Diagnostic Testing. Whole-Dwelling Unit ventilation airflow, vented range hood airflow and sound rating, and HRV and ERV fan efficacy must be verified in accordance with Reference Residential Appendix RA3.7. Vented range hoods must be verified per Reference Residential Appendix RA3.7.4.3 to confirm if it is rated by HVI or AHAM to comply with the airflow rates and sound requirements per §150.0(o)1G

Pool and Spa Systems and Equipment:

§ 110.4(a):	Certification by Manufacturers. Any pool or spa heating system or equipment must be certified to have all of the following: compliance with the Appliance Efficiency Regulations and listing in MAEDbS; 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

§ 150.0(p):	sizing, flow rate, piping, filters, and valves. Î	
Lighting:		
	Lighting Controls and Components. All lighting control devices and systems, ballasts, and luminaires must meet the applicable	
§ 110.9:	requirements of § 110.9. *	
§ 150.0(k)1A:	Luminaire Efficacy. All installed luminaires must meet the requirements in Table 150.0-A, except lighting integral to exhaust fans, kitchen range hoods, bath vanity mirrors, and garage door openers; navigation lighting less than 5 watts; and lighting internal to drawers, cabinets, and linen closets with an efficacy of at least 45 lumens per watt.	
§ 150.0(k)1B:	Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8. *	
§ 150.0(k)1C:	Recessed Downlight Luminaires in Ceilings. Luminaires recessed into ceilings must not contain screw based sockets, must be airtight, and must be sealed with a gasket or caulk. California Electrical Code § 410.116 must also be met.	
§ 150.0(k)1D:	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)1E:	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 shall be no more than the number of bedrooms. These boxes must be served by a dimmer, vacancy sensor control, low voltage wiring, or fan speed control.	
§ 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).	

BEDROOM

20x40 TWO | 747 SQ FT.

Revisions:

Drawn By: JCE Checked By: MB Scale: AS NOTED Date: 01/04/2023

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EN.2

Revisions:

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE RESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2023)

2.Multiple EV spaces required. Construction documents shall indicate the raceway termination point and the

location of installed or future EV spaces, receptacles or EV chargers. Construction documents shall also provide

information on amperage of installed or future receptacles or EVSE, raceway method(s), wiring schematics and

electrical load calculations. 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

CHAPTER 3 4.106.4.2 New multifamily dwellings, hotels and motels and new residential parking facilities. **GREEN BUILDING** When parking is provided, parking spaces for new multifamily dwellings, hotels and motels shall meet the requirements of Sections 4.106.4.2.1 and 4.106.4.2.2. Calculations for spaces shall be rounded up to the nearest **SECTION 301 GENERAL** whole number. A parking space served by electric vehicle supply equipment or designed as a future EV charging space shall count as at least one standard automobile parking space only for the purpose of complying with any **301.1 SCOPE.** Buildings shall be designed to include the green building measures specified as mandatory in applicable minimum parking space requirements established by a local jurisdiction. See Vehicle Code Section 22511.2 the application checklists contained in this code. Voluntary green building measures are also included in the for further details. 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. 4.106.4.2.1Multifamily development projects with less than 20 dwelling units; and hotels and motels with less than 20 sleeping units or guest rooms. 301.1.1 Additions and alterations. [HCD] The mandatory provisions of Chapter 4 shall be applied to The number of dwelling units, sleeping units or guest rooms shall be based on all buildings on a project site subject 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. **1.EV Capable.** 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 Level 2 The mandatory provision of Section 4.106.4.2 may apply to additions or alterations of existing parking EVSE. Electrical load calculations shall demonstrate that the electrical panel service capacity and electrical facilities or the addition of new parking facilities serving existing multifamily buildings. See Section system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all 4.106.4.3 for application. EVs at all required EV spaces at a minimum of 40 amperes. **Note:** Repairs including, but not limited to, resurfacing, restriping and repairing or maintaining existing The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved lighting fixtures are not considered alterations for the purpose of this section. for future EV charging purposes as "EV CAPABLE" in accordance with the California Electrical Code. 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 1.When EV chargers (Level 2 EVSE) are installed in a number equal to or greater than the required number 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. 2.When EV chargers (Level 2 EVSE) are installed in a number less than the required number of EV capable spaces, the number of EV capable spaces required may be reduced by a number equal to the number of EV chargers installed. 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 a. Construction documents are intended to demonstrate the project's capability and capacity for facilitating high-rise buildings, no banner will be used. b. There is no requirement for EV spaces to be constructed or available until receptacles for EV charging or **SECTION 302 MIXED OCCUPANCY BUILDINGS 302.1 MIXED OCCUPANCY BUILDINGS.** In mixed occupancy buildings, each portion of a building 2.EV Ready. Twenty-five (25) percent of the total number of parking spaces shall be equipped with low power shall comply with the specific green building measures applicable to each specific occupancy. Level 2 EV charging receptacles. For multifamily parking facilities, no more than one receptacle is required per dwelling unit when more than one parking space is provided for use by a single dwelling unit. 1. [HCD] Accessory structures and accessory occupancies serving residential buildings shall comply with Chapter 4 and Appendix A4, as applicable. Exception: Areas of parking facilities served by parking lifts. 2. [HCD] For purposes of CALGreen, live/work units, complying with Section 419 of the California Building Code, shall not be considered mixed occupancies. Live/Work units shall comply with 4.106.4.2.2 Multifamily development projects with 20 or more dwelling units, hotels and motels with 20 or more Chapter 4 and Appendix A4, as applicable. **DIVISION 4.1 PLANNING AND DESIGN** The number of dwelling units, sleeping units or guest rooms shall be based on all buildings on a project site subject to **ABBREVIATION DEFINITIONS: 1.EV Capable**. Ten (10) percent of the total number of parking spaces on a building site, provided for all types Department of Housing and Community Development of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 California Building Standards Commission EVSE. Electrical load calculations shall demonstrate that the electrical panel service capacity and electrical Division of the State Architect, Structural Safety system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all OSHPD Office of Statewide Health Planning and Development EVs at all required EV spaces at a minimum of 40 amperes. Low Rise High Rise The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved Additions and Alterations for future EV charging purposes as "EV CAPABLE" in accordance with the California Electrical Code. **CHAPTER 4** Exception: When EV chargers (Level 2 EVSE) are installed in a number greater than five (5) percent of parking spaces required by Section 4.106.4.2.2, Item 3, the number of EV capable spaces required may be RESIDENTIAL MANDATORY MEASURES reduced by a number equal to the number of EV chargers installed over the five (5) percent required. **SECTION 4.102 DEFINITIONS** a. Construction documents shall show locations of future EV spaces. 4.102.1 DEFINITIONS The following terms are defined in Chapter 2 (and are included here for reference) b.There is no requirement for EV spaces to be constructed or available until receptacles for EV charging or FRENCH DRAIN. A trench, hole or other depressed area loosely filled with rock, gravel, fragments of brick or similar **2.EV Ready.** Twenty-five (25) percent of the total number of parking spaces shall be equipped with low power pervious material used to collect or channel drainage or runoff water. Level 2 EV charging receptacles. For multifamily parking facilities, no more than one receptacle is required per WATTLES. Wattles are used to reduce sediment in runoff. Wattles are often constructed of natural plant materials dwelling unit when more than one parking space is provided for use by a single dwelling unit. such as hay, straw or similar material shaped in the form of tubes and placed on a downflow slope. Wattles are also Exception: Areas of parking facilities served by parking lifts. 4.106 SITE DEVELOPMENT 3.EV Chargers. Five (5) percent of the total number of parking spaces shall be equipped with Level 2 EVSE. **4.106.1 GENERAL.** Preservation and use of available natural resources shall be accomplished through evaluation Where common use parking is provided, at least one EV charger shall be located in the common use parking and careful planning to minimize negative effects on the site and adjacent areas. Preservation of slopes, area and shall be available for use by all residents or guests. management of storm water drainage and erosion controls shall comply with this section. When low power Level 2 EV charging receptacles or Level 2 EVSE are installed beyond the minimum required, 4.106.2 STORM WATER DRAINAGE AND RETENTION DURING CONSTRUCTION. Projects which disturb less an automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers than one acre of soil and are not part of a larger common plan of development which in total disturbs one acre shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) or more, shall manage storm water drainage during construction. In order to manage storm water drainage served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EVSE shall during construction, one or more of the following measures shall be implemented to prevent flooding of adjacent have a capacity of not less than 30 amperes. ALMS shall not be used to reduce the minimum required electrical property, prevent erosion and retain soil runoff on the site. capacity to the required EV capable spaces. 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 4.106.4.2.2.1 Electric vehicle charging stations (EVCS). Electric vehicle charging stations required by Section 4.106.4.2.2, Item 3, shall comply with Section 4.106.4.2.2.1. 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. Exception: Electric vehicle charging stations serving public accommodations, public housing, motels and hotels shall not be required to comply with this section. See California Building Code, Chapter 11B, for applicable 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. 4.106.4.2.2.1.1 Location. (Website: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html) EVCS shall comply with at least one of the following options: **4.106.3 GRADING AND PAVING.** Construction plans shall indicate how the site grading or drainage system will 1.The charging space shall be located adjacent to an accessible parking space meeting the requirements of manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface the California Building Code, Chapter 11A, to allow use of the EV charger from the accessible parking space. water include, but are not limited to, the following: 2. The charging space shall be located on an accessible route, as defined in the California Building Code, Chapter 2, to the building. 2. Water collection and disposal systems Exception: Electric vehicle charging stations designed and constructed in compliance with the California . French drains Building Code, Chapter 11B, are not required to comply with Section 4.106.4.2.2.1.1 and Section 4. Water retention gardens 5. Other water measures which keep surface water away from buildings and aid in groundwater 4.106.4.2.2.1.2 Electric vehicle charging stations (EVCS) dimensions. **Exception**: Additions and alterations not altering the drainage path. The charging spaces shall be designed to comply with the following: **4.106.4 Electric vehicle (EV) charging for new construction.** New construction shall comply with Sections 1. The minimum length of each EV space shall be 18 feet (5486 mm). 4.106.4.1 or 4.106.4.2 to facilitate future installation and use of EV chargers. Electric vehicle supply 2. The minimum width of each EV space shall be 9 feet (2743 mm). equipment (EVSE) shall be installed in accordance with the California Electrical Code, Article 625. 3.One in every 25 charging spaces, but not less than one, shall also have an 8-foot (2438 mm) wide minimum 1. On a case-by-case basis, where the local enforcing agency has determined EV charging and aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is infrastructure are not feasible based upon one or more of the following conditions: 12 feet (3658 mm). 1.1 Where there is no local utility power supply or the local utility is unable to supply adequate a.Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 1.2 Where there is evidence suitable to the local enforcing agency substantiating that additional percent slope) in any direction. local utility infrastructure design requirements, directly related to the implementation of Section 4.106.4, may adversely impact the construction cost of the project. 4.106.4.2.2.1.3 Accessible EV spaces. 2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional In addition to the requirements in Sections 4.106.4.2.2.1.1 and 4.106.4.2.2.1.2, all EVSE, when installed, shall parking facilities. comply with the accessibility provisions for EV chargers in the California Building Code, Chapter 11B. EV ready spaces and EVCS in multifamily developments shall comply with California Building Code, Chapter 11A, Section 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 4.106.4.2.3 EV space requirements. shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main 1. 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 service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or proximity to the location or the proposed location of the EV space. Construction documents shall identify the concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere 208/240-volt minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit raceway termination point, receptacle or charger location, as applicable. The service panel and/ or subpanel shall have a 40-ampere minimum dedicated branch circuit, including branch circuit overcurrent protective device installed, or space(s) reserved to permit installation of a branch circuit overcurrent protective device. Exemption: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is Exception: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the proposed location of an EV charger at the time of original construction in installed in close proximity to the location or the proposed location of the EV space, at the time of original accordance with the California Electrical Code. construction in accordance with the California Electrical Code.

4.106.4.1.1 Identification. The service panel or subpanel circuit directory shall identify the overcurrent

location shall be permanently and visibly marked as "EV CAPABLE".

protective device space(s) reserved for future EV charging as "EV CAPABLE". The raceway termination

Exception: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the location or the proposed location of the EV space at the time of original construction in accordance with the California Electrical Code.

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.

4.106.4.2.5 Electric Vehicle Ready Space Signage.

Electric vehicle ready spaces shall be identified by signage or pavement markings, in compliance with Caltrans Traffic Operations Policy Directive 13-01 (Zero Emission Vehicle Signs and Pavement Markings) or its

4.106.4.3 Electric vehicle charging for additions and alterations of parking facilities serving existing

When new parking facilities are added, or electrical systems or lighting of existing parking facilities are added or altered and the work requires a building permit, ten (10) percent of the total number of parking spaces added or altered shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 EVSE.

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

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 urinals) and fittings (faucets and showerheads) shall comply with the sections 4.303.1.1, 4.303.1.2, 4.303.1.3,

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 .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 .125 gallons per flush. The effective flush volume of all other urinals shall not exceed 0.5 gallons per flush.

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

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 residential lavatory faucets shall not be less than 0.8 gallons per minute at 20

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.

4.303.1.4.5 Pre-rinse spray valves.

When installed, shall meet the requirements in the California Code of Regulations, Title 20 (Appliance Efficiency Regulations), Sections 1605.1 (h)(4) Table H-2, Section 1605.3(h)(4)(A), and Section 1607 (d)(7) and shall be equipped with an integral automatic

FOR REFERENCE ONLY: The following table and code section have been reprinted rom the *California Code of Regulations*, Title 20 (Appliance Efficiency Regulations),Section 1605.1 (h)(4) and Section 1605.3 (h)(4)(A)

TABLE H-2 STANDARDS FOR COMMERCIAL PRE-RINSE SPRAY VALUES MANUFACTURED ON OR AFTER JANUARY 28, 2019 PRODUCT CLASS MAXIMUM FLOW RATE (gpm) [spray force in ounce force (ozf)] Product Class I (≤ 5.0 ozf) 1.00 Product Class 2 (> 5.0 ozf and \leq 8.0 ozf) 1.20 Product Class 3 (> 8.0 ozf) 1.28

Title 20 Section 1605.3 (h)(4)(A): Commercial prerinse spray values manufactured 1, 2006, shall have a minimum spray force of not less on or after January than 4.0 ounces—force (ozf)[113 grams—force(gf)]

4.303.2 Submeters for multifamily buildings and dwelling units in mixed-used residential/commercial

Submeters shall be installed to measure water usage of individual rental dwelling units accordance with the California Plumbing Code.

4.303.3 Standards for plumbing fixtures and fittings. Plumbing fixtures and fittings shall be installed accordance with the California Plumbing Code, and shall meet the applicable standards referenced in Table 1701.1 of the California Plumbing Code.

FIXTURE TYPE	FLOW RATE	
SHOWER HEADS (RESIDENTIAL)	I.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	I.8 GPM @ 60 PSI	
METERING FAUCETS	0.2 GAL/CYCLE	
WATER CLOSET	I.28 GAL/FLUSH	
URINALS	0.125 GAL/FLUSH	

Y N/A RESPON. 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.

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 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

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:

Excavated soil and land-clearing debris. 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. 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

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 examinati 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 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

Note: The owner or contractor may make the determination if the construction and lemolition 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./sg.ft. of the building area shall mee't the minimum 65% construction waste reduction requirement in Section 4.408.1

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

4.408.4.1 WASTE STREAM REDUCTION ALTERNATIVE. Projects that generate a total

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

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

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: Directions to the owner or occupant that the manual shall remain with the building

throughout the life cycle of the structure. Operation and maintenance instructions for the following: 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. Roof and yard drainage, including gutters and downspouts.

Space conditioning systems, including condensers and air filters. Landscape irrigation systems.

Water reuse systems. Information from local utility, water and waste recovery providers on methods to further reduce resource consumption, including recycle programs and locations.

Public transportation and/or carpool options available in the area. 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.

Information about water—conserving landscape and irrigation design and controllers which conserve water. Instructions for maintaining gutters and downspouts and the importance of

diverting water at least 5 feet away from the foundation. Information on required routine maintenance measures, including, but not limited

to, caulking, painting, grading around the building, etc. 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.

11. Information from the Department of Forestry and Fire Protection on maintenance of defensible space around residential structures. 12. Information and/or drawings identifying the location of grab bar reinforcements.

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.

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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Revisions:

IFORNIA GREEN BUILDING STANDARDS CODE L MANDATORY MEASURES, SHEET 2 (January 2023)

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		MAXIMUM INCREMENTAL REACTIVITY (MIR). The maximum change in weight of ozone formed adding a compound to the "Base Reactive Organic Gas (ROG) Mixture" per weight of compound added, expressed to hundredths of a gram (g 0³/g ROC). Note: MIR values for individual compounds and hydrocarbon solvents are specified in CCF 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 (PWMIR). The sum of all weighted—MIR for all ingredients in a product subject to this article. The PWMIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and
		packaging). Note: PWMIR 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, 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 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 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 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 when 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 tricloroethylene), except for aerosol products, as specified in Subsection 2 below.
		 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 mor than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, includin prohibitions on use of certain toxic compounds, of <i>California Code of Regulations</i>, 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 or the ARB Architectural Suggested Control Measure, as shown in Table 4.504.3, unless more stringent local li apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categoric 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 Resource Board, Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 4.504.3 shall apply.
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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 94520; 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

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:

(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	

I. 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.

(Less Water and Less Exempt Compounds i	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

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	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

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		
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 FIBERBOARD2	0.13	

I. 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).

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LIMIT	

ADLE A ENA 3 NAMA AMBITERIT I IR	AITC EOD
ABLE 4.504.3 - VOC CONTENT LIN RCHITECTURAL COATINGS2.3	III 13 FUK
AMS OF VOC PER LITER OF COATING	, LESS WATER & LESS
ATING CATEGORY	VOC LIMIT
T COATINGS	50
N-FLAT COATINGS	100
NFLAT-HIGH GLOSS COATINGS	150
ECIALTY COATINGS	
JMINUM ROOF COATINGS	400
SEMENT SPECIALTY COATINGS	400
UMINOUS ROOF COATINGS	50
UMINOUS ROOF PRIMERS	350
ND BREAKERS	350
NCRETE CURING COMPOUNDS	350
NCRETE/MASONRY SEALERS	100
IVEWAY SEALERS	50
Y FOG COATINGS	150
IX FINISHING COATINGS	350
E RESISTIVE COATINGS	350
OOR COATINGS	100
RM-RELEASE COMPOUNDS	250
APHIC ARTS COATINGS (SIGN PAINTS)	500
GH TEMPERATURE COATINGS	420
DUSTRIAL MAINTENANCE COATINGS	250
W SOLIDS COATINGS:	120
GNESITE CEMENT COATINGS	450
STIC TEXTURE COATINGS	100
TALLIC PIGMENTED COATINGS	500
LTICOLOR COATINGS	250
TREATMENT WASH PRIMERS	420
MERS, SEALERS, & UNDERCOATERS	100
ACTIVE PENETRATING SEALERS	350
CYCLED COATINGS	250
OF COATINGS	50
ST PREVENTATIVE COATINGS	250
ELLACS	250
EAR	730
-AR AQUE	
CIALTY PRIMERS, SEALERS &	550
DERCOATERS	100
AINS	250
one consolidants	450
IMMING POOL COATINGS	340
AFFIC MARKING COATINGS	100
B & TILE REFINISH COATINGS	420
ATERPROOFING MEMBRANES	250
OOD COATINGS	275
OOD PRESERVATIVES	350
NC-RICH PRIMERS	340

Y N/A RESPON PARTY	4.504.3 CARPET SYSTEMS. All carpet installed in the building interior shall meet the requirements of 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 1.2, January 2017 (Emission testing method for California Specification 01350)
	See California Department of Public Health's website for certification programs and testing labs.
	https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.
	4.504.3.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of 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 1.2, January 2017 (Emission testing method for California Specification 01350)
	See California Department of Public Health's website for certification programs and testing labs.
	https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx. 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 meet the requirements of 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 1.2, January 2017 (Emission testing method for California Specification 01350)
	See California Department of Public Health's website for certification programs and testing labs.
	hhtps://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.
	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 or of the following:
	 Product certifications and specifications. 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.
	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 als 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 replace 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 <i>California Energy Code</i> .
	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.

1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J

2. Duct systems are sized according to ANSI/ACCA 1 Manual D — 2014 (Residential

3. Select heating and cooling equipment according to ANSI/ACCA 3 Manual S —

Exception: Use of alternate design temperatures necessary to ensure the system

2011 (Residential

software or methods.

software or methods.

2014 (Residential

equivalent design software or methods.

Load Calculation), AŠHRAE handbooks or other

ASHRAE handbooks or other equivalent design

Equipment Selection), or other equivalent design

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:

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

- 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.

considered by the enforcing agency when evaluating the qualifications of a special inspector:

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.

Revisions:

