



## SOLANO COUNTY BUILDING AND SAFETY DIVISION

### REBUILDING DWELLINGS FOLLOWING THE LNU LIGHTNING COMPLEX FIRES

#### Minimum Requirements

#### **GENERAL REQUIREMENTS**

1. All work shall conform to the 2019 CRC, CPC, CMC, CEC, CA Energy Code & California Green Building Standards Code.
2. Fire Sprinklers are required. Submit (2) copies of the fire sprinkler drawings to the Solano County Building Division for review and approval prior to installation.
3. Truss calculations are required prior to truss fabrication and shall include a letter by the architect or designer stating that the truss calculations conform to the plans. Submit (2) copies of sprinkler drawings to the Solano County Building Division for review and approval prior to installation.

#### **FIRE HAZARD DESIGN REQUIREMENTS**

This project is located within the Fire Hazard Severity Zone and shall comply with requirements of materials, systems and construction methods of chapter 7A of the 2019 California Building Code and section 337 of the 2019 California Residential Code.

1. Roof covering must be Class A roof material per CBC 705A & CBC 1505.2 (CRC 337.5.1 & CRC 902.1.1).
2. Valley flashing shall be not less than 0.019-inch (26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide underlayment consisting of one layer of no. 72 ASTM cap sheet running the full length of the Valley. CBC 705A.3 (CRC 337.5.3).
3. Roof gutters shall be provided with the means to prevent the accumulation of leaves and debris into the gutter. CBC 705A.4 (CRC 337.5.4)
4. Roof, Attic, and Exterior wall vents shall resist the intrusion of flames or embers into the attic area of the structure, or shall be protected by corrosion-resistant, noncombustible wire mesh with a minimum of 1/16 inch openings and a maximum of 1/8 -inch openings. Vents shall not be installed on the underside of eaves and cornices unless they are approved by SFM. CBC 706A (CRC 337.6)
5. Eaves and soffits shall meet the requirements of SFM 12-7A-3 or shall be protected by ignition-resistant materials or noncombustible construction on the exposed underside. CBC 707A.5 (CRC 337.7.5)
6. Exterior walls shall be approved noncombustible or ignition-resistant material, heavy timber, or log wall construction, or shall meet the performance criteria set forth in SFM 12-7A-1. CBC707A.3 (CRC 337.7.3)
7. Exterior windows, window walls, glazed doors, skylights and glazed openings shall be constructed of multiplane glazing with a minimum of one tempered pane, or glass block units, or have a fire-resistance rating of not less than 20 minutes, when tested according to NFPA 257, or conform to the performance requirements of SFM 12-7A-2. CBC 708A.2.1 (CRC 337.8.2.1)
8. Exterior doors assemblies shall conform to the performance requirements of standard SFM 12-7A-1 or shall be approved noncombustible construction, or solid core wood having stiles and rails not less than 1 3/8 inches thick with interior field panel thickness no less than 1 ¼ inches thick or shall have a fire-resistance rating of not less than 20 minutes when tested according to NFPA 252. CBC 708A.3 (CRC 337.8.3)
9. Decking, surfaces, stair treads, risers, and landings of decks, porches, and balconies where any portion of such surface is within 10 feet of the primary structure shall be constructed of approved materials per CBC 709A (CRC 337.9).
10. Vegetation clearance requirements per California Government Code Section 51182
  - a. Maintain around and adjacent to the building or structure a firebreak made by removing and clearing away fuels for a distance of not less than 30 feet on each side of the building or structure
  - b. Maintain around and adjacent to the building or structure additional fire protection or firebreak made by removing all brush, flammable vegetation, or combustible growth that is located within 100 feet from the building or structure.
11. Provide a 30-foot setback for structure defensible space for buildings and accessory buildings from all property lines and/or the center of the road.

12. The underside of cantilevered and overhanging appendages and floor projections shall maintain the ignition-resistant integrity of exterior wall, or the projection shall be enclosed to the grade. CBC 707A.8 (CRC 337.7.8)
13. Exterior wall covering shall extend from the top of foundation to the roof and terminate at 2-inch nominal solid wood blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure. CBC 707A.3.2 (CRC 337.7.3.2)
14. Fire access roads shall meet the following requirements:
  - a. Minimum unobstructed width of 20 feet, exclusive of shoulders. Clearly dimension this on plan.
  - b. Minimum standard turning radius of 40 feet inside and 52 feet outside diameter
  - c. Grades between 12% and 16% shall be designed to have a finished surface of grooved concrete or rough asphalt to hold a 75,000lb traction load. Grooves shall be ¼" wide by ¼" deep and ¾" on center. Grades exceeding 16% are not permitted.

## **ARCHITECTURAL REQUIREMENTS**

1. Bedroom windows shall have openable areas of minimum 5.7 square foot with minimum dimensions of 20" wide and 24" high with sill heights of not more than 44" above the floor. CRC 310.2
2. Provide natural light in habitable rooms by means of exterior windows with area not less than 8% of floor area. CRC 303.1
3. Provide natural ventilation in habitable rooms by means openable exterior wall openings with area not less than 4% of floor area. CRC 303.1
4. CRC 302.6 requires the separation between the garage and habitable rooms above the garage to be not less than 5/8" Type X gypsum board.
5. Specify a 1-3/8" minimum solid core or 20-minute rated doors with self-closing or automatic-closing and self-latching device at the separation walls between garage and residence. CRC 302.5.1
6. All wood structural members, when designed to be exposed in outdoor applications, shall be wood of natural resistance to decay or treated wood. CRC 317.1
7. Please provide a landing at all exterior doors. Landings shall have a length measured in the direction of travel no less than 36" and landing slope shall not exceed 2%. CRC 311.3
8. Each bathroom containing a bathtub or shower shall be mechanically ventilated for purposes of humidity control. Window operation is not a permissible method of providing humidity control. CRC 303.3.1.
9. Stair riser height shall not exceed 7 ¾" measured vertically and the stair tread width shall be at least 10" measured horizontally. CRC 311.7.5.1 & 311.7.5.2
10. Stair Handrails shall be installed per CRC 311.7.8
11. Glazing in hazardous locations shall be tempered. CRC 308

## **STRUCTURAL REQUIREMENTS**

1. Minimum foundation depth of 12 inches into natural grade is required per CRC Table R403.3(1).
2. Truss calculations must be reviewed and approved by the project engineer or designer, (in the form of shop drawings approval or a separate letter), verifying that the project engineer has reviewed the truss calculations and the design of the trusses conform to the specifications and load requirements for this project. Submit all truss calculations to the Solano County Building Division prior to installation.
3. Provide a connection or hardware at each end of each roof truss or roof rafter capable of resisting net uplift due to wind.
4. Braced walls shall be designed by a CA registered civil engineer or comply with section 602.10 of the 2019 CRC.
5. Anchor bolt plate washers not less than 0.229"x3"x3" shall be provided between the foundation sill plate and the nut. CRC 602.11.1.

## **MECHANICAL, ELECTRICAL, AND PLUMBING REQUIREMENTS**

1. All receptacles and devices in the habitable portion of a dwelling unit, except for bathrooms, shall be protected by a listed and readily accessible AFCI. 2019 California Electrical Code (CEC) 210.12(A)
2. Two or more small appliance branch circuits for the kitchen are limited to supplying wall and the counter space outlets including the refrigerator (note they cannot serve the dining room, outside plugs, range hood, disposal, dishwasher or microwaves). CEC 210.52(B)

3. Laundry Branch Circuits: In addition to the other branch circuit requirements, at least one 20-amp branch circuit shall be provided to supply receptacle outlets required by CEC 210.52(F). CEC 210.11(C)(2)
4. Provide a dedicated 20-amp branch circuit to serve the required bathroom outlets. This circuit cannot supply any other receptacles, lights, fans, etc. CEC 210.11(C)3
5. Provide a dedicated branch circuit at the garage. This circuit shall not supply receptacles outside of the garage. Provide at least one receptacle for each car space not more than 5'-6" above the floor. CEC 210.11(C)(4) & CEC 210.52(G)1
6. Smoke detectors are required in all sleeping areas, outside each separate sleeping area, on each additional story of the dwelling, and not less than 3 feet horizontally from the door of a bathroom containing a shower or bathtub per CRC 314.3. Please indicate that all smoke detectors must be interconnected per CRC 314.4 and must be hard wired with battery backup per CRC 314.6.
7. Dwelling shall be provided with carbon monoxide alarms in accordance with CRC 315.2. Carbon monoxide alarms in dwelling units shall be installed outside of each separate sleeping area, on every occupiable level, and in each bedroom that contains a fuel-burning appliance per CRC 315.3. Alarms must be hard wired with a battery backup per CRC 315.5.
8. All 125-volt & 250-volt, 15 and 20 ampere receptacle outlets installed in dwelling units shall be listed tamper-resistant receptacles. CEC 406.12
9. Receptacles shall be installed so that no point measured along the floor line in any wall space is more than 6 ft. from a receptacle. Any space 2 ft. or more in width shall have a receptacle. CEC 210.52(A)
10. Receptacle outlet shall be installed at each wall counter space and work surface that is 12 in. or wider. Receptacle outlets shall be installed so that no point along the wall line is more than 24 in. measured from a receptacle. Receptacles shall be 20" maximum above the countertop or work surface. CEC 210.52(C)
11. GFCI protection shall be provided at all receptacles in bathrooms, garages, crawl spaces, unfinished basements, laundry areas, within 6 feet of sinks, within 6 feet of bathtub and shower stalls, receptacles serving kitchen countertop surfaces and dishwashers, and outdoor receptacles. CEC 210.8
12. Water heater must be strapped to prevent seismic movement. Strapping shall be at the points within the upper 1/3 and lower 1/3 of its vertical dimensions. CPC 507.2
13. Solano County requires that any residence over 1500 sq. ft. have an electrical panel of at least 200 amps.
14. Provide a raceway circuit to facilitate future installation of electric vehicle charging per section 4.106.4.1 of the 2019 California Green Building Standards Code.
15. All luminaires must be high-efficacy per section 150.0(k) of the 2019 CA Energy Code.
16. An automatic garage door opener that is installed in a residence shall have a battery backup function that is designed to operate when activated because of an electrical outage. Senate Bill 969.

### **VACAVILLE FIRE PROTECTION DISTRICT REQUIREMENTS**

1. All construction shall be sprinklered in accordance with the National Fire Protection Association Standards.
  - a. In all existing buildings/structures when a change in occupancy classification or use occurs, or when any existing occupancy regardless of total floor area, is converted to a hazardous use.
  - b. In all remodels/room additions where the total area exceeds 25% of the original square footage. (Allowance above 25% will require approval by the Fire Chief of the Vacaville Fire Protection District.)
  - c. In all remodels/room additions with an existing sprinkler system, the system must be recalculated and designed to accommodate the additional flow demand.
2. An approved flashing light shall be installed on all new dwellings in such a position as to be plainly visible from the road fronting the property. The signal light shall be installed in such a manner that it will automatically activate in conjunction with the required sprinkler system. The light may also be installed in so that it may be manually activated to assist in locating buildings during other emergencies. The signal light shall be a flashing blue or white light capable of a minimum of 80 flashes per minute and a minimum of 25000-candle power. The interconnected smoke alarms in the dwelling shall be connected to the fire sprinkler flow switch.
3. Smoke Detectors: Shall be provided and installed in accordance with section R314 of the California Residential Code.
  - a. The interconnected smoke alarms in the dwelling shall be connected to the fire sprinkler flow switch.

#### 4. Premises Identification

- a. To readily respond to emergencies, all homes, business and commercial properties must be easily identified with the address number.
- b. Upon receipt of the address number from Resource Management, the occupant or owner of the property or building shall display the number upon the building or land in such a manner as to be visible from the road upon which the land or building fronts.
- c. Address numbers shall be conspicuous to insure positive identification and placed on front doors, near garage doors or at a single driveway entrance.
- d. Where residences and/or property are not clearly visible from the road, access identification other than mailboxes shall be on 4" X 4" wood posts, metal stakes or equivalent markers elevated at least 3 feet for clear visibility and rapid directional identification.
- e. All numbers shall be a minimum height of 4 inches with a .5-inch stroke, reflective and/or color contrasting with the surface where placed.

#### 5. Driveways

Fire apparatus access shall be provided and maintained in accordance with the provisions of the California Fire Code as adopted by the Vacaville Fire Protection District.

To provide year-round, all weather access for heavy fire engines and other emergency equipment to residential building sites that are not covered in the Solano County Road and Street Standards, these minimum access road specifications shall apply:

- a. Plans for access shall be submitted to the District for review and approval prior to construction.
- b. Driveways shall extend from each building site to a public or private roadway and shall have an unobstructed width of not less than 20 feet (6096 mm) with suitable base material. Driveways may be a minimum 12 feet wide with authorization.
- c. The maximum grade allowed is 12 percent. 503.2.7 CFC
- d. Surface designed and maintained to support a 75,000 lb. Load.
- e. Driveways exceeding 150 feet in length, but less than 800 feet in length, shall provide a turnout near the midpoint of the driveway. Where the driveway exceeds 800 feet, turnouts shall be provided no more than 400 feet apart.
- f. Turnouts shall be a minimum of 12 feet wide and 30 feet long with a minimum 25 foot taper on each end.
- g. Minimum centerline curve radius of 40 feet.
- h. Necessary drainage improvements.
- i. Turn-around facilities shall be provided at all building sites on driveways over 300 feet in length, and shall be within 50 feet of the building. The minimum turning radius for a turnaround shall be 40 feet from the center line of the road. If hammerhead/T is used, the top of the "T" shall be a minimum of 60 feet in length.
- j. Any required culverts or bridges shall have a minimum load carrying capacity of 75, 000 lb. and certified by an engineer. Vehicle load limits shall be posted at both entrances to bridges.
- k. Overhead clearance of limbs, trees etc. shall be a minimum of 15 feet. Title 14 CCR Div. 1.5, Chapter 7, Subchapter 2, Articles 1-5

## 6. Hydrants

- a. All residences shall be no more than 1000 road feet from a fire hydrant.
- b. Hydrants shall be of approved type and contain a minimum of one 2 ½" and one 4 ½' NHS external thread outlets. (Equal to Model 614 Long Beach Iron Works)
- c. Hydrant fire flow shall conform to Fire District standards.
- d. Fire hydrants shall be clearly identified in an approved manner to prevent obstruction by parking and other obstructions.
- e. Fire hydrants shall be identified by the installation of blue reflective markers located in the center of the roadway.
- f. Fire hydrants subject to possible vehicular damage shall be adequately protected with guard posts in accordance with Section 312 CFC. 507.5.6 CFC
- g. A 3-foot (914.4 mm) clear space shall be maintained around the circumference of fire hydrants. 503.5.5 CFC
- h. The center of a hose outlet shall not be less than 18 in. (457 mm) to 36 inches above final grade. NFPA 24

## 7. Gates

A permit issued by the Solano County Building & Safety Division shall be obtained prior to the installation of a gate.

- a. Gates shall be at least two feet wider than the width of the traffic lane serving that gate.
- b. All gates providing access from a road to a driveway shall be located at least 30 feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on that road.
- c. Where a one-way road with a single traffic lane provides access to a gated entrance, a 40-foot turning radius shall be used.

### (1) Electrically Operated Gates

The design and installation of all electrically operated gates shall be in accordance with the following criteria:

- (a) The gate control shall be operable by an approved emergency override Knox key switch that is an integral part of the mechanism. In the event of a power failure, the gate shall automatically be transferred to a fail-safe mode allowing the gate to be pushed open without the use of special knowledge or equipment.
- (b) The key switch shall be labeled with a permanent red sign with not less than ½" contrasting letters reading "FIRE DEPT" or a "Knox" decal.
- (c) A transmitter-operated gate shall have a KNOX key switch on the right side of the gates opening approximately 48" above the roadway surface. It shall be visible and easily accessible with a label as specified above.
- (d) Upon activation of the KNOX key switch, the gate shall remain open until returned to normal operation by means of the key switch.

### (2) Manually Operated Gates and Barriers

- (a) A Knox padlock shall be used, in order for the Fire District to enter the property during an emergency in a timely manner without the destruction of private property.

- d. After investigation of the available products, it has been determined that only the product line offered by the Knox Company of Phoenix Arizona satisfies the security needs of the Fire District and the community. The only acceptable order form will be provided by the **Fire District**. 506.1.1 CFC

**FROM:** Tim Walton, Battalion Chief - Vacaville Fire Protection District

**EMAIL:** Tim.walton@vfpd.net

**PHONE #:** 447-2252 ext. 18