



NORTHSTAR FIRE DEPARTMENT



Residential (R-3) – Guidelines & Specifications

Fire Prevention Guideline P-05

PURPOSE

The purpose of this guideline is to help in the facilitation of design and construction of residential R-3 structures only (new, remodels, rebuilds and additions).

SCOPE

Current California Fire, Building and Residential Codes (CFC, CBC and CRC), Public Resources Code (PRC), Placer County Land Development Manual (PCLDM), 39-22 Northstar Ordinance (NO), California Code of Regulations, Title 14 (T-14), Current National Fire Protection Association Standards (NFPA), Authority Having Jurisdiction Standards (AHJ).

For assistance regarding what is specifically required, see the attached "Checklist".

SUBMITTAL REQUIREMENTS

Submit an electronic copy of the plans/drawings in PDF format. The plans/drawings shall depict the following information when certain scopes of work are applicable to the project:

1. **Setbacks:** Plans must show the distances between the buildings/structures and all property lines and roadways.
2. **Driveways:** For new construction and additions only, plans must show width, length, and slope/grade measurements. Plans must show vertical clearance measurements as well.
3. **Hose Pull:** For new construction and additions only, plans must show the total distances that will be traveled by firefighters (on foot) from the parked engine to and around either side of the structure. For further information see Attachment A "Hose Pull Distance – Distance from Fire Engine to Building".
4. **Fire Hydrant:** For new construction only, plans must show closest fire hydrant to the driveway. The plans must show the vehicular travel distance measured from the closest hydrant to the property to a fire access point. (Fire access point is the closest location to the structure designated for access by fire equipment/apparatus.)
5. **Underground Fire Line:** The install of an underground fire line must be depicted on the plans from the street riser to the conditioned space of the structure (specifically, to the location of the fire riser). See Guideline "Fire Sprinkler 13D" for Northstar's requirements for underground fire lines.

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6. Gates: The plans must show the “details” of the gate. Details must show the measurements of the gate in relation to the driveway and roadways. Additionally, all horizontal and vertical clearances depicted. Location of the Knox box must be captured. Details must illustrate that the arms open vertically. Refer to Northstar’s fire code for local requirements.
7. Roofing: Plans must note that the roofing is CBC 7A compliant and the percentage (%) of the structure having roofing done. Must meet the requirements of the Northstar’s local ordinance.
8. Gas Meter: For new construction or due to a remodel of the exterior, the location of the gas meter must be shown. Refer to Northstar’s fire code for local requirements.
9. Electric Meter: For new construction or due to a remodel of the exterior, the location of the electrical meter must be shown.
10. Generator: Requires a deferred submittal. See guideline “Generator”. Refer to Northstar’s fire code for local requirements.
11. Solar Panels: Requires a deferred submittal. See guideline “Solar Photovoltaic Panels”. Refer to Northstar’s fire code for local requirements.
12. Shunt Trip Devices: The location of shunt devices (solar panels, generator, etc...) must be shown. See guidelines “Solar Photovoltaic Panels” and “Generator”. Refer to Northstar’s fire code for local requirements.
13. Smoke and Carbon Monoxide Detectors: Must show location of all detectors with device cut sheets. See guideline “Smoke Detector & Carbon Monoxide”.
14. Fire Sprinklers: Requires a deferred submittal. (For new construction or any work pertaining to the install of fire sprinklers, hydrant flow data from NCSU Utilities or NFD Staff must be provided.)
15. See Guidelines “Fire Sprinklers 13D” for specific requirements. Refer to Northstar’s fire code for local requirements.
16. Fire Alarm: Requires a deferred submittal. See Guidelines “Fire Alarm” for specific requirements. Refer to Northstar’s fire code for local requirements.
17. Knox Box: All new construction requires the installation of a box. Must show on plans location of placement. Refer to Northstar’s fire code for local requirements.

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CHECKLIST

*This checklist is not intended to be a comprehensive list of all potential requirements, nor is it intended to alleviate all parties' responsibilities to fully comply with all applicable laws, codes and standards for each project. It merely reflects the major areas encountered at the fire plan review and inspection stages of a project.

**For requirements regarding fire sprinklers, fire alarm, generator, battery back-up, solar panels, fire pit and landscaping, see separate NFD Guidelines.

FIRE DEPARTMENT ACCESS

REFERENCES

DIMENSIONS (CFC 503, T-14 1273, PCLDM Section 4.05, NO 39-22)

The minimum clearance is:

Driveways shall have 15' vertical clearance

1273.10(a),4.05(f6)

Driveways shall have 14' horizontal clearance

1273.10(a)

Roadways shall have a minimum vertical clearance of 13' 6"

503.2.1

The minimum width:

Driveways must be a minimum of 12' traffic lane (Driveways)

36-19

Driveways must have a 15'x15' wide paved apron

4.05(f6)

Roadways must be a minimum x2 10' traffic lanes (not including shoulder & striping)

1273.01, 503.2.1

Construction & Grade (T-14 1273, PCLDM Section 4.05)

Driveways shall not exceed 12% slope (with possible exceptions)

4.05(f6e)

Driveways shall be constructed of 2" Type "B" AC over 4" Class 2 AB (Driveways)

4.05(6)

Driveways shall be capable of supporting 40,000 pound (H-20) load

4.05(f6e)

Roadways shall be designed and maintained for a load of 75,000 lbs and aggregate base

1273.02

Roadways shall not exceed 16% slope (with possible exceptions)

1273.03, 4.05(a4)

TURNAROUNDS (CFC 503, T-14 1273, NO 39-22, PCLDM Section 4.05)

An approved turnaround required if length of a dead-end roadway/driveway is greater than 150'

503.2.5, 36-19

Minimum 40' centerline radius on approved turnaround & is within 50' for driveways over 300' long

1273.05

TURNOUTS (CFC 503, T-14 1273, PCLDM Section 4.05)

Turnouts shall be a minimum of 12' wide & 30' long with a minimum 25' taper on each end

1273.06

Driveways exceeding 150' in length, but less than 800' in length, shall provide a turnout near midway point of the driveway. Where driveway exceeds 800' in length, turnouts shall be provided no more than 400' apart.

4.05(6a), 1273.10

ACCESS (CFC 503, T-14 1273, PCLDM Section 4.05)

AHJ may require more than 1 fire apparatus access road based upon the potential for impairment

503.1.2

All fire apparatus access roads must extend within 150' of all portions of the facility and portions of the exterior walls of the 1st story

GATES (CFC 503; T-14 1273, 39-22)

Gate entrances to be 2' wider than driveway width

503.6, 1273.11

14' unobstructed horizontal clearance & 15' vertical clearance

503.6, 1273.11

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If secured, it has an Knox override switch	AHJ, 1273.11
It is located at least 35' from the primary road and does not create traffic obstruction	1273.11

The installation of security gates across a fire apparatus access road shall be approved by the Fire Chief. Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be listed in accordance with U.L. 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.

Security gates shall meet the following additional standards (NO 39-22):

- A. Radio signal "click to enter" system using a fire department approved frequency. Activation of the gate shall occur within fifty (50) feet from the transmitter.
- B. Closure delay range between 30 and 45 seconds.
- C. Reflectors on both sides of swing arms.
- D. Knox Box (#3261 series).
- E. Knox Pad Lock (#3770 Exterior Model) on meter box/electrical breaker box access.
- F. Knox Key switch (#3502 or 3503 Model) access for both Northstar Fire Department and Truckee Fire Protection District.
- G. Gate mechanical boxes to be protected from vehicle impact (Bollards or similar protection).
- H. Snow and ice protection shall be installed for all mechanical boxes and swing arm operations, to include heat tape, heated mats, and rubber gaskets.
- I. Gates to be 2 feet wider than the road being served.
- J. Gates shall automatically open from the interior without special code or device. (Magnetic strip or pressure pad assemblies are acceptable.)
- K. All electric gates shall fail in the open position, i.e., loss of power, battery failure. All gates shall be equipped, at a minimum, with 12-hour battery back-up.
- L. Gate components shall be maintained in an operative condition at all times and replaced and repaired when defective.
- M. Vertical clearances shall be no less than 15 feet.

Fire Safety Inside & Out

REFERENCES

SMOKE & CO DETECTORS (CFC 907; CBC 907, CRC 314)

If one or more sleeping rooms are added to the existing structure, smoke detectors shall be interconnected.	314
All detectors are hardwired w/ battery back-up	907.2.10.2
All smoke detectors are interconnected (If one sounds, they all sound.)	907.2.10.3
There is a detector in every bedroom & corridor	907.2.10.1.2
There is at least 1 smoke detector on every floor	907.2.10.1.2
Wall mounted smoke detectors are installed no greater than 12" from the ceiling	
For pitched ceilings, smoke detectors are mounted between 4-12" from the apex	
Detector alarm sounds within 20 secs of smoke entering the chamber	AHJ
Alarm sounds over ambient noise (at least 85 dba at 10') (Visual notification required in rooms with hearing impaired.)	907.2.10.1.2.
CO detectors must be mounted outside each separate sleeping area	915.2.1

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There is at least 1 CO detector on every floor 915.2.1

A CO detector must be installed in a bedroom or bathroom if it has a fuel-burning appliance 915.2.1

Both new and existing single-family residences with an attached garage or a fossil fuel source must have CO detectors.

Multi-family residences with fossil fuel source or being rented or leased must have CO detectors

SECOND EGRESS (CBC 1006)

2nd egress required for >10 occupants in unsprinklered structure 1006.2.1

2nd egress required for >20 occupants in sprinklered structure. 1006.2.1

CHIMNEYS (CBC 2802; PRC 4291)

There is an approved spark arrestor with a nonflammable ½" (or smaller) mesh screen 2802 & 4291(f)

ROOFS (CRC 337; CBC 7A, NO 36-19)

Class A fire resistive roofing required for all structures 337.5, 7A

Re-roofing in excess of 50% of an existing structure within any one-year period will necessitate 39-22

that the entire roof is a Class A roof covering or assembly as a minimum. Class B or C fire retardant treated and/or non-treated wood shake or shingles are not approved as a roof covering material for Class A assembly. Refer to Northstar's fire code for local requirements.

GAS METERS (NO 39-22)

Above-ground gas meters, regulators and piping subject to damage shall be protected by a barrier complying with Section 312 or otherwise protected in an approved manner.

1. The meter assembly shall be installed on the gable end of the building or under an engineered deck, as close as practical to the building wall.
2. A protective cover, designed to be equal or greater than the building design load (determined by the building department), approved by the supplier, shall be installed over the meter assembly, securely supported by the ground or diagonally to the building wall. When supported by the ground, the footing for the supports shall be founded a minimum of six inches below finished grade.
3. Door covers prohibited.

KNOX BOX (NO 39-22)

Key boxes (3200 series residential and 4400 series commercial), key locks, key cabinets, and electric key switches shall be mounted and installed on all gates, fences, main entry doors or lobbies in an area approved by the Fire Chief. The Fire Chief shall determine the number and location of key boxes for each structure. The key box shall be of an approved type (Knox Box) and shall contain keys to gain necessary access as required by the Fire Chief. Key boxes are required in the following locations:

1. All new construction, residential and/or commercial structures.
2. Residential renovation projects that add more than 500 square feet of new enclosed inhabitable space.
3. Existing commercial structures.

ADDRESSING (CFC 505, 901; T14 1274; NO 39-22)

The address numbers are legible and visible from the road 505.1, 33-16

The address must be permanently affixed 1274.10(a)

Address numbers shall be a minimum of 6" high with a minimum stroke width of 0.5" 36-19

Address must be posted at the beginning of construction and shall be maintained thereafter 1274.10(a)

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DEFENSIBLE SPACE (CFC 1103; PRC 1429; NCSO 39-22)

Create a lean, clean and green zone; 30' circumference around structures	4291
Maintain a "buffer" zone of 5' from all combustible ground fuels around perimeter of any structure	26-09
Beyond the "buffer zone" and up to 100' of the property line (whichever is less), maintain an average pine Needle/forest duff depth of 1", and in no case exceed a maximum depth of 2"	26-09
Remove all dead trees, limbs and vegetation and create a reduced fuel zone 30' to 100' from structures	26-09
Remove any tree limbs that are within 10', horizontally or vertically, from a structure	26-09
Remove any portion of trees that extend within 10' of the outlet of a chimney or stovepipe	4291
Maintain any tree adjacent to or overhanging any structure free of dead or dying wood	4291
Maintain a roof structure free of leaves, needles and other dead vegetation	4291
Remove all lower tree limbs to a minimum of 8' high (for shorter trees, remove limbs on the bottom third of the tree). The distance shall be measured from the lowest hanging portion of the drip line to the ground	26-09
Remove the undergrowth from mature tree fields	4291
Remove all flammable vegetation within 10' of a structure:	1299, 26-09, 4291
Beyond the 10' zone, maintain shrubs on the entire property according to the minimum horizontal Spacing to the edge of the shrubs, based upon property slop, as follows:	
0-20% slope	2x the height of the shrub
21-40% slope	4x the height of the shrub
Slopes >40%	6x the height of the shrub
All trees that the District or state classifies as intermediate or co-dominate shall have the following spacing distances from the edge of one canopy to the next:	1299, 26-09, 4291
0-20% slope	10 feet canopy spacing
21-40% slope	20 feet canopy spacing
Slopes >40%	30 feet canopy spacing
All firewood and lumber shall be stacked at least 10' away from any structure	26-09

CONSTRUCTION (NO 39-22)

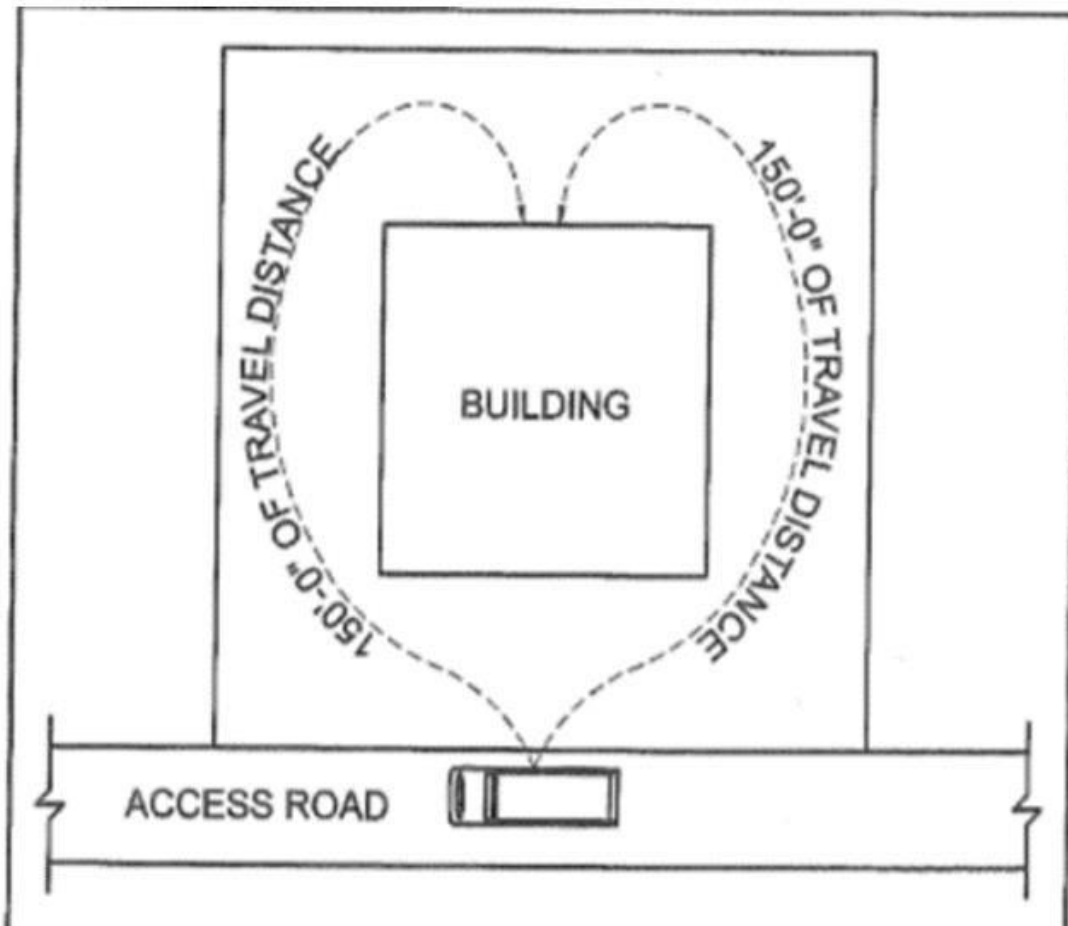
During construction building address shall be posted. Address numerals shall be a color contrasting to the background. Address shall be located so they are clearly visible and legible from the street or road fronting the property.

During construction, alteration and demolition fire department vehicle access shall be provided to all locations on the property.

Attachment A

Hose Pull Distance (Distance from Fire Engine to Building)

Hose Pull Distance (Distance from Fire Engine to Building): Represents the amount of fire hose that firefighters must pull from the engine to reach the structure. Hose pull may not exceed 150' from the engine to the most remote point of the perimeter of the structure (for sprinklered detached single-family homes and duplexes 300' to the front door.) *Hose pull is measured along the firefighter path of travel. Avoiding any obstacles, not as a "crow flies".* In the diagram below, firefighters would be able to reach the entire perimeter of the structure by pulling no more than 150' of hose from one or more fire engines staged at a preferred location.



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NORTHSTAR FIRE DEPARTMENT NOTES

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PLACE THE FOLLOWING NOTES VERBATIM ON THE PLANS:

1. NFD inspections area required. Schedule all inspections 2 days in advance. Contact NFD at (530) 562-1212 ext.1.
2. NCSU Utilities performs the open underground trench inspection while NFD performs the hydrostatic pressure test and flush inspection.
3. For new construction only, cost recovery fees cover 1 underground inspection, 1 aboveground fire sprinkler rough-in inspection, 1 aboveground fire sprinkler final inspection and 1 final fire inspection for C of O.
4. Defensible space compliance is required for all new construction, addition of square footage or remodel of decks. Weather must be accounted for in determining when to request a defensible space inspection. NFD will not perform defensible space inspections when there is snow on the ground. Contractors will typically not perform defensible space mitigation work when there is snow on the ground.
5. For new residential construction only, the following must be installed and inspected by NFD for Final Fire Inspection/Sign-off (Certificate of Occupancy):
 - Address (6" characters in contrasting color/background, visible from the street)
 - Knox Box
 - Well Plug at street riser
 - 3-hour timer on all gas valves for outdoor appliance
 - Bell or horn/strobes installed on exterior, street side facing
 - 20% of smoke/co detectors to be tested and sounded
 - Gas meter is covered with no door blocking access
 - Defensible space compliance
 - Fire pit meets local ordinance (if applicable)
 - Generator meets local ordinance (if applicable)
 - Battery back (if applicable)
6. This plan review or approval encompasses the building/site plans only. Fire sprinkler system(s), alarm system(s), underground fire lines, solar panels, generator, battery back-up, firepit and landscaping or any other fire protection system (or, required fire department permit(s)), requires a separate plan submittal and are not encompassed in this plan review or approval.
7. Fire sprinkler plans will be required for all commercial and residential structures (single and multi-family dwelling units). A separate permit is required by the Fire Department.
8. During construction a temporary building address shall be posted. Address numerals shall be a color contrasting to the background. Address shall be located so they are clearly visible and legible from the street or road fronting the property.
9. During construction, alteration and demolition fire department vehicle access shall be provided to all locations on the property