



MINIMUM DESIGN STANDARDS

CODES

The purpose of the California Codes is to provide minimum standards to safeguard life or limb, health, property, and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all buildings and structures. The Town of Mammoth Lakes enforces the following Codes:

- California Building Code, 2016 Edition, based on the 2015 International Building Code
- California Residential Code, 2016 Edition, based on the 2015 International Residential Code.
- California Fire Code, 2016 Edition, based on the 2015 International Fire Code, as amended by the Mammoth Lakes Fire Protection District
- California Mechanical Code, 2016 Edition, based on the 2015 Uniform Mechanical Code
- California Plumbing Code, 2016 Edition, based on the 2015 Uniform Plumbing Code
- California Electrical Code, 2016 Edition, based on 2014 National Electrical Code
- California Energy Code, 2016 Edition, based on the 2016 Building Energy Efficiency Standards.
- California Green Building Standards Code, 2016 Edition.
- California Existing Building Code, 2016 Edition, based on the 2015 International Existing Building Code.
- California Historical Building Code, 2016 Edition.
- California Administrative Code, 2016 Edition.
- California Referenced Standards Code, 2016 Edition.

PLANS

With each application for a building permit, and when required by the Building Official for enforcement of any provisions of this Code, three (3) sets of plans, engineering calculations (if required), specifications, diagrams, and other necessary data shall be submitted. Each set of plans shall include a site plan, elevations, construction sections, and details. Site plan shall include location of all utilities. Elevations shall include a lot profile. Plans and specifications shall be drawn to scale on substantial paper and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in detail that it will conform to the provisions of this Code and all relevant laws, ordinances, rules, and regulations (1/4" = 1' scale, paper size of minimum 18" x 24" is desirable). "Red lined" or sketched plans are unacceptable. Plans shall detail all fire resistive assemblies and indicate treatment of penetrations in such assemblies. All plans, specifications, and/or calculations prepared by a licensed architect or engineer shall bear the stamp and signature of the author. For more complete information regarding plans and specifications, refer to the "Plan Submittal and Plan Check" handout available from the Mammoth Lakes Building Division.

LEGAL DESCRIPTION

The legal description of your lot or parcel is part of the application and can be found on your deed, property tax statement, title policy, escrow instructions, or contract of sale. You will need:

1. lot number
2. subdivision name
3. assessor's parcel number
4. street name and address

WIND DESIGN

The minimum ultimate design wind speeds, V_{ult} , are established for the following regions.

- A. Town of Mammoth Lakes:
- One and two family dwellings (R-3 occupancies): 110 miles per hour, three second gust.
 - Residential structures other than one and two family dwellings (R-3 occupancies) and non-residential structures (all are three second gust):
 - 100 miles per hour for risk category I buildings and other structures
 - 110 miles per hour for risk category II buildings and other structures
 - 115 miles per hour for risk category III and IV buildings and other structures

The wind design shall comply with exposure C requirements unless the architect or structural engineer in general charge can justify that the building site and surrounding terrain conform to other criteria.

SEISMIC

All structures within the boundaries of the Town shall be designed to the requirements of Seismic ground accelerations of $S_s = 1.68$ and $S_1 = 0.68$ as defined in the California Building Code or from the USGS seismic hazard web site maps. One-third (1/3) of the design snow load shall be added to the dead load for seismic design.

ENERGY DESIGN STANDARDS

The following shall be considered minimum design standards for calculations within the guidelines established by the California Energy Commission, Title 24, and State of California:

1. The Town shall be considered within Climatic Zone 16 as defined by the California Energy Commission;
2. Winter design temperature shall be minus two (-2) degrees Fahrenheit;
3. Summer design temperatures shall be seventy-four (74) degrees Fahrenheit;
4. Heating degree-days shall be eight thousand (8,000).

SNOW LOADS, SNOW SLIDING AND SHEDDING

- A. The Town shall be considered a snow area. All structures within the Town shall be designed to withstand snow loads and any additional effects created by snow.
- B. 1. Basic ground snow load (P_g) is established as follows:
- a) One hundred (100) pounds per square foot for Mammoth Lakes Airport;
 - b) Two hundred thirty (230) pounds for elevations eight thousand five hundred feet (8500') or less;
 - c) Three hundred (300) pounds for elevations greater than eight thousand five hundred feet (8500').
2. Roof snow load (P_f) shall be established as follows:
- $P_f = .7 C_e C_t I P_g$
 C_e = Snow exposure factor
 I = Snow design importance factor
 P_g = Basic ground snow load
 C_t = Thermal factor
3. The snow exposure factor (C_e) shall be determined as follows or as per ASCE 7.
- $C_e = 1.0$ partially exposed roofs
 $C_e = 0.90$ fully exposed roof on all sides with no shelter from terrain, trees or higher structures
 $C_e = 1.20$ tightly forested
4. The snow design importance factor (I) shall be determined as follows or as per ASCE 7.
- $I = 1.2$ essential facilities
 $I = 1.1$ assembly areas with occupancy greater than three-hundred (300) and daycare facilities with occupancy greater than (150)
 $I = 0.80$ agricultural buildings and similar structures
 $I = 1.00$ all other structures
5. The thermal factor (C_t) shall be determined as follows or as per ASCE 7.
- $C_t = 1.1$ for structures with ventilated roofs and insulation R greater than (25).
 $C_t = 1.2$ unheated structures
 $C_t = 1.0$ all other structures
- C. Snow load reductions for roof pitch (but not for slippery surfaces) will be permitted per ASCE 7, provided the roof design does not allow snow to accumulate from ground level to the roof eave. This shall be assumed to be a minimum ten feet (10') from eave to grade level. Design consideration shall be given to drifting snow and other accumulations on the roof, exposure, impact, effects on adjacent property, and other dynamic loading due to snow avalanching onto lower structural elements, against projections such as vents, and onto targets on the ground.

D. Setbacks to Property Lines

1. All eaves of sloped roofs (>2:12) shall maintain setbacks so that snow shed impact areas will occur on the property of the subject structure. The minimum impact area setback shall be ten feet (10') measured horizontally from a vertical line projecting from the roof eave to the property line.
2. The eave of a structure may encroach into the impact area setback a maximum three feet (3') provided an engineered snow slide restraint device, designed in accordance with the provisions of this Code, is incorporated into the roof design.
3. Property owners shall maintain snow shed impact areas to prevent snow from encroaching onto adjacent properties.

E. The roof and eaves of all structures shall be designed so that snow shed impact areas will not occur in or on entries/exits (required exits only for R-3 occupancies), vehicle parking areas, driveways, LPG storage tanks, walkways, and public areas.

1. The minimum snow shed impact area shall have a setback of ten feet (10') measured horizontally from a vertical line projecting from the roof eave to the aforementioned improvement.
2. The snow shed impact area may be eliminated provided an engineered snow restraint system, designed in accordance with this Code, is incorporated into the roof design and, in other than R-3 occupancies, an approved roof drainage system (e.g., heated gutter and downspout) is installed to prevent ice formation/accumulation at the grade or access level.
3. Property owners shall maintain snow shed impact areas to prevent snow from encroaching beyond the impact area boundaries.
4. Existing structures may use engineered snow slide restraint devices to reduce hazards associated with the existing roof design.

F. Projections such as plumbing vents, equipment vents, and similar elements, which penetrate the roof, shall terminate within thirty-six inches (36") of the ridge or uppermost portion of the roof area. Mechanical vents and air intakes installed horizontally on vertical surfaces shall terminate at least two feet (2') above the anticipated snow depth (ten feet). Horizontal terminations subjected to shedding roof snow shall increase the height of the termination by 50%.

G. Overhead electrical service weatherheads and similar utility connections shall not be located in any area subject to damage from sliding snow or ice. Weatherheads may project through the roof with a riser constructed of two-inch (2") minimum diameter rigid galvanized steel conduit, provided no alternative locations are available and the location has been approved by the Building Official and servicing utility.

H. A roof projection such as a fireplace chase, parapet or similar structure, which could be subjected to sliding snow or ice, shall be designed for these horizontal forces (Fs).

The resultant moment produced from Fs shall be applied to the midheight of the projection.

$$F_s = \frac{F_v(x)}{\sqrt{X^2 + Y^2}}$$

F_v (for roof projections) = L (0.5L + B) P_f

F_v (for snow retention devices) = L (B) P_f

F_s = Horizontal load against roof projection, pounds.

F_v = Snow weight against projection, pounds.

X = Vertical component of roof slope (rise), feet.

Y = Horizontal component of roof slope (run), feet.

L = Horizontal distance between projection and ridge, feet.

B = Width of projection, feet. Not to exceed six feet.

P_f = Minimum roof snow load, pounds per square foot (PSF).

- I. Projections shall be protected with an ice splitter or cricket. All ice splitters shall be constructed the full width of the projection base and shall terminate not lower than the midpoint height of the projection.
- J. Snow rails, roof cleats, and similar snow slide restricting devices shall be designed using the formula set forth in H. above, except calculations for F_v need only consider the tributary load area of the device. Snow slide restraint devices shall be installed within the first three feet (3') of the roof eave and spaced per the design of the system.
- K. Warm roofs that drain water over the eaves shall be capable of supporting 2.0 x P_f on the overhangs when they are unventilated with insulation R-value less than (30) or ventilated roofs with R-Values less than (20).

All roof systems shall consider the effects of ice dams and shall be designed to prevent water infiltration at the eaves. As a minimum, the underlayment at the eaves shall consist of two layers of Type 15 felt solid cemented together with an approved cementing material or other approved equivalent material. The ice dam protection shall extend from the eave to a line six feet (6') inside the exterior wall line of the building.

SOIL BEARING

No soil bearing pressure over 2,000 psf will be permitted without a soil report by a licensed engineer or geologist. Site examination may require a soil analysis.

RETAINING WALLS

A building permit shall be required for retaining walls exceeding four feet (4') in height or retaining walls supporting any surcharge or special loads. A professional engineer licensed in the state shall design such walls.

FROST LINE

Footings and foundations shall extend below the frost line. The frost line shall be considered a minimum of twenty-four inches (24") below grade.

FLOOD HAZARD AREAS

Design for structures within flood hazard areas shall be per the requirements established in the most recent adopted flood plain management ordinance.

LOADS ON DRIVEWAY BRIDGES

The condition of concentrated or uniform live load producing the greatest stresses shall govern.

1. Concentrated Load: Each load shall be 40% of the gross weight of the maximum-size vehicle to be accommodated. Minimum vehicle size shall be 28,000 pounds.
2. A concentrated wheel loads is assumed to be placed upon a 3.5 square foot area.
3. Concentrated wheel load are assumed to be spaced 8 (eight) feet on center.
4. Maximum driveway vehicle loads shall be posted on the building. (e.g. DRIVEWAY: Max. Vehicle Load 28,000 pounds”).

OTHER APPROVALS MAY BE REQUIRED

You may need to contact the following agencies for specific approval.

MAMMOTH LAKES FIRE PROTECTION DISTRICT; Post Office Box 5; Mammoth Lakes, CA 93546; (760) 934-2300. (Fees are paid directly to this agency.)

MAMMOTH COMMUNITY WATER DISTRICT; Post Office Box 597; Mammoth Lakes, CA 93546; (760) 934-2596. (Fees are paid directly to this agency.)

MAMMOTH UNIFIED SCHOOL DISTRICT; Post Office Box 3509; Mammoth Lakes, CA 93546; (760) 934-6802. (Fees are paid directly to the District.)

MAMMOTH LAKES COMMUNITY DEVELOPMENT DEPARTMENT, PLANNING DIVISION; Post Office Box 1609; Mammoth Lakes, CA 93546; (760) 934-8989, extension 224, to forward to the Planner of the day. (Planning, Zoning, Design Review Criteria.)

MAMMOTH LAKES PUBLIC WORKS DEVELOPMENT ENGINEERING DIVISION; Post Office Box 1609; Mammoth Lakes, CA 93546; (760) 934-8989, extension 254

SOUTH MONO COUNTY ENVIRONMENTAL HEALTH DEPARTMENT; Post Office Box 3329; Mammoth Lakes, CA 93546; (760) 924-1800.

SOUTHERN CALIFORNIA EDISON; Post Office Box 7329; Mammoth Lakes, CA 93546; (760) 934-8236.