

## DEPARTMENT OF COMMUNITY PLANNING AND DEVELOPMENT RULES GOVERNING GREEN ROOFS

---

### ARTICLE I. GENERAL PROVISIONS

#### Section 1.01 Authority.

These rules and regulations are adopted by the City and County of Denver's Executive Director of the Department of Community Planning and Development pursuant to Article II of Chapter 12 ("Community Planning and Development" or "CPD") of the Denver Revised Municipal Code of the City and County of Denver ("DRMC"). These rules and regulations are adopted for the purpose of administering and enforcing the provisions of the Denver Green Roofs Ordinance, codified at Article XIII, Chapter 10 (Buildings and Building Regulations) of the DRMC, and any other ordinances or laws relating to and affecting the issuance of permits for green roofs.

#### Section 1.02 Severability.

Should any section, clause, or provision of these regulations be declared by a court of competent jurisdiction to be invalid, such decision shall not affect the validity of the regulations as a whole, or any part thereof, other than the part declared to be invalid.

#### Section 1.03 Definitions.

Any terms or phrases stated but not defined herein are implied from, or deferred to, the Denver Green Roofs Ordinance. Terms or phrases specific to or introduced in this document are defined below and/or referenced to equivalent terms in the Denver Green Roofs Ordinance.

- (a) "*Applicant*" means the owner of a building or property who applies for a permit or any person authorized by the owner to apply for a permit on the owner's behalf.
- (b) "*Available roof space*" means the total roof area of a building or building addition excluding:
  - (i) Areas designated for renewable energy devices;
  - (ii) Private terraces no greater in area than the floor of the abutting residential unit at the roof level; and
  - (iii) In the case of a residential building or a building addition to a residential building, the outdoor amenity space.
- (c) "*Average grade*" means the average elevation of the ground surface measured at the street property line.
- (d) "*Commercial greenhouse*" means a structure or a thermally isolated area of a building that maintains a specialized sunlit environment exclusively used for, and essential to, the

cultivation, protection or maintenance of plants, that sells its commodities for a profit, or on behalf of a non-profit, and is constructed or planned to be constructed as either an F-1 occupancy or a U occupancy.

- (e) “*Complete site plan application*” means an application submitted to CPD for formal site development plan approval and includes the payment of all applicable fees and the submission of all supporting documentation as may be required.
- (f) “*Complete building permit application*” means an application submitted to CPD for an above grade building permit which complies with all technical requirements, and includes the payment of all applicable fees. This shall exclude those projects that have submitted a foundation only or shoring only permit application. The payment of all applicable fees shall mean the payment of all building plan review fees.
- (g) “*Coverage of available roof space*” means the area of available roof space that must contain either a green roof or green roof combination in accordance with the percentages in Table 1.
- (h) “*Grade*” means the finished ground level of the land upon which the building is located.
- (i) “*Green roof*” means an extension of an above grade roof, built on top of a human-made structure, that allows vegetation to grow in a growing medium and which is designed, constructed, and maintained in accordance with the Denver Green Roof Construction Standard, and the Denver Building and Fire Code.
- (j) “*Green roof combination*” means a combination of green roof and solar energy collection device that may fulfill the required percentage of coverage of available roof space for new or existing buildings or building additions so long as it meets the following:
  - (i) The combination green roof and solar energy collection devices are not less than 30% green roof; and
    1. the green roof retains or collects for re-use at least the first 0.25 inches from each rainfall falling on the roof through systems that incorporate roof surfaces; or
    2. the green roof retains or collects for re-use at least 50% of annual rainfall volume falling on the roof through systems that incorporate roof surfaces.
  - (ii) The applicant has received written approval from the state engineer in the Colorado Division of Water Resources to retain or collect the applicable rainfall for re-use on the subject property.
- (k) “*Gross floor area*” means the total area of each floor level of a building, above and below average grade, measured from the exterior of the main wall of each floor level, including voids at the level of each floor, such as an atrium, mezzanine, stairwell,

escalator, elevator, ventilation duct or utility shaft, but excluding areas used for the purpose of parking or loading.

- (l) “*Height*” means the vertical distance measured between a horizontal line drawn from the average grade to the highest point on the building, but shall not include the following elements located on the roof of the building:
- (i) Equipment used for the functional operation of the building, such as electrical, utility, mechanical and ventilation equipment;
  - (ii) Structures or parts of the building that are used for the functional operation of the building, such as enclosed stairwells, roof access, maintenance equipment storage, elevator shafts, chimneys, vents and water supply facilities;
  - (iii) Structures that enclose, screen or cover the elements listed in subsections (i) and (ii) above;
  - (iv) A flagpole;
  - (v) An antenna; and
  - (vi) A satellite dish

provided that no part of such element shall exceed a vertical distance of 80 feet measured from average grade, and further provided that in the case of the elements listed in subsections (i)-(iii) above, the total area of all of those elements together shall not cover more than 30 percent (30%) of the area of the roof.

- (m) “*Historic building*” means any building or structure that is one or more of the following:
- (i) listed, or certified as eligible by the State Historic Preservation Office in the State Register of Historic Properties or the Keeper of the National Register of Historic Places, in the National Register of Historic Places;
  - (ii) designated as historic under an applicable state or local law; or
  - (iii) certified as a contributing resource within a National Register-listed, state-designated, or locally-designated historic district.
- (n) “*Hotel*” means a commercial establishment offering temporary accommodations on a daily or weekly rate to the public, and where all rooms, suites, apartments or similar forms of accommodation are owned by a single owner or entity.
- (o) “*Industrial building*” means a building or a building addition exclusively used or designed or intended for use for or in connection exclusively with the manufacturing, producing or processing of goods, warehousing or bulk storage of goods, self-storage

facility, distribution center, truck terminal, research and development in connection with manufacturing, producing or processing of goods, and:

- (i) Includes office uses and the sale of commodities to the general public where such uses are accessory to and subordinate to an industrial use;
- (ii) Does not include:
  - 1. A building used exclusively for office or administrative purposes unless it is attached to an industrial building as defined above; or
  - 2. Warehouse clubs and retail warehouses, including commercial establishments which have as their principal use the sale of goods and merchandise in a warehouse format.
- (p) “*Major structural alterations*” means either:
  - (i) the alteration, strengthening, or addition of a load-bearing member that is part of the structural frame or a secondary roof framing member; or
  - (ii) When the additional weight of the green roof or green roof combination increases the demand-capacity ratio on any existing lateral load-carrying structural element either beyond its capacity or more than ten percent (10%).
- (q) “*Nursing home facility*” means a facility that provides skilled nursing home services or intermediate care nursing home services, and shall include nursing care facilities, whether proprietary or nonprofit, which are licensed under section 25-1.5-103(1)(a)(I), C.R.S., or pursuant to the rules for nursing homes promulgated by the Colorado Department of Public Health and Environment.
- (r) “*Private terrace*” means an outdoor amenity area on a roof that is available exclusively for use by the occupants of an abutting residential unit for recreational or social activities.
- (s) “*Required outdoor amenity space*” or “*outdoor amenity space*” means an area located on the roof of a building, intended for recreational use by the residents of the building.
- (t) “*Residential building*” means a building or building addition where more than 60 percent of the gross floor area of the building or building addition is used, designed or intended to be used for one or more dwelling units, including accessory uses naturally and normally incidental in purpose and exclusively devoted to the residential use, but does not include a nursing home facility, retirement home or lodge, or hotel.
- (u) “*Retirement home or lodge*” means a building or portion of a building which provides room and board accommodation for senior citizens.

- (v) “*Roof*” means the overhead structural component of a building or a part of a building supported by walls or columns and which functions primarily to shelter the interior of the building from the effects of weather and the infiltration of water.
- (w) “*Roof recover*” means installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering, and does not mean the reconstruction or renewal of any part of an existing roof for the purposes of its maintenance.
- (x) “*Roof repair*” means the reconstruction or renewal of less than or equal to 10% of the roof square footage or two roof squares of an existing roof for the purposes of its maintenance.
- (y) “*Roof replacement*” means the process of removing the existing roof covering for more than 10% of the roof square footage or two roof squares (whichever is smaller), repairing any damaged substrate and installing a new roof covering.
- (z) “*Variance*” means a reduction of the coverage of available roof space that is required to provide a green roof or green roof combination; however, “*variance*” does not mean a reduction of the coverage of available roof space necessary for a roof replacement when such reduction is necessary to prohibit major structural alterations.

## **ARTICLE II. APPLICABILITY OF THE DENVER GREEN ROOFS ORDINANCE**

### **Section 2.01 General.**

The requirement for a green roof or green roof combination as stated in Sec. 10-301 of the Denver Green Roofs Ordinance shall apply only to the following types of construction in this Article II. Any construction that falls under a specific exemption listed in this Article II, or any construction that cannot be classified in any of the sections listed in this Article II, shall not be required to provide a green roof or green roof combination.

### **Section 2.02 New Construction of Buildings Other than Industrial Buildings.**

When a building is newly constructed, and its gross floor area is equal to or greater than 25,000 square feet, then the building shall provide a green roof or green roof combination on the applicable percentage of coverage of available roof space in accordance with Table 1. See Section 2.05 below for new construction of industrial buildings.

### **Section 2.03 New Construction of Building Additions Other than Industrial Buildings.**

When new construction of a building addition causes an existing building’s gross floor area to become or exceed 25,000 square feet, then the building addition shall provide a green roof or green roof combination on the applicable percentage of coverage of available roof space in accordance with Table 1. The green roof or green roof combination shall apply to the building addition only. For example, if an existing building contains 24,500 square feet of gross floor area, and a building addition is added that contains 1,000 square feet of gross floor area, then the

building addition, and not the existing building, must provide 20%, or 200 square feet, of green roof or green roof combination.

**Section 2.04 Roof Replacements of Existing Buildings.**

When an existing building contains 25,000 square feet or greater of gross floor area, and an applicant applies to the City for a roof replacement, then the building is required to provide a green roof combination on the applicable percentage of coverage of available roof space in accordance with Table 1, unless an exemption applies (see Section 2.07).

**Section 2.05 New Construction of Industrial Buildings.**

When an industrial building is newly constructed, and is 25,000 square feet or greater of gross floor area, then it shall provide either of the following:

- (a) a green roof for the lesser of 25,000 square feet or 10% of the coverage of available roof space; or
- (b) a solar energy collection device for the entire coverage of available roof space in the following combination:
  - (i) 80% of coverage of available roof space shall provide solar energy collection devices; and
  - (ii) the entirety of the roof must
    - 1. retain or collect for re-use at least the first 0.25 inches from each rainfall falling on the roof through systems that incorporate roof surfaces; or
    - 2. retain or collect for re-use at least 50% of annual rainfall volume falling on the roof through systems that incorporate roof surfaces.
  - (iii) The applicant must receive written approval from the state engineer in the Colorado Division of Water Resources to retain or collect the applicable rainfall for re-use on the subject property.

**Section 2.06 New Construction of Additions to Industrial Buildings.**

When an addition of any size is constructed to an industrial building, and the existing industrial building is 25,000 square feet or greater of gross floor area, then the addition—and not the existing industrial building—shall provide either of the following:

- (a) a green roof for the lesser of 25,000 square feet or 10% of the coverage of available roof space for the addition only; or
- (b) a solar energy collection device for the entire coverage of available roof space for the addition only in the following combination:

- (i) 80% of coverage of available roof space of the addition only shall provide solar energy collection devices; and
- (ii) the entirety of the roof addition only must
  1. retain or collect for re-use at least the first 0.25 inches from each rainfall falling on the roof through systems that incorporate roof surfaces; or
  2. retain or collect for re-use at least 50% of annual rainfall volume falling on the roof through systems that incorporate roof surfaces.
- (iii) The applicant must receive written approval from the state engineer in the Colorado Division of Water Resources to retain or collect the applicable rainfall for re-use on the subject property.

**Section 2.07 Exemptions.**

Any building or building addition that meets any of the following exemptions shall not be required to provide a green roof or green roof combination. CPD shall review each request for an exemption to the requirement for a green roof or green roof combination. Exemptions under this section shall not be considered variances, and shall not require further approval by the Planning Board, or the payment of cash-in-lieu fees.

(a) Existing buildings.

- (i) Any addition, alteration, or roof repair (but not roof replacement) to an existing building when that existing building contains 25,000 square feet or greater of gross floor area shall be exempt from the Denver Green Roofs Ordinance, so long as that building is not an industrial building.
- (ii) Roof replacements of existing buildings that will result in major structural alterations shall be exempt from the Denver Green Roofs Ordinance in the following manner:
  1. When a building owner provides evidence that the required green roof combination on the applicable percentage of coverage of available roof space will result in major structural alterations, then the percentage of coverage of available roof space shall be reduced to the point where no major structural alterations will be needed.
  2. For example, if an existing building of 25,000 square feet of gross floor area requires roof replacement, then 20% of the roof shall contain a green roof combination. However, if the building owner provides evidence to the City that 95% of the existing roof will require major structural alterations if required to provide a green roof combination, then the building owner is only required to provide 5% of the existing roof for a green roof combination.

3. Such evidence of major structural alterations shall be provided by a structural analysis signed and stamped by a Colorado registered structural engineer documenting the following:
    - i. The determined load capacity of the existing roof structure;
    - ii. Anticipated load and characteristics of the green roof;
    - iii. A discussion on what major structural alteration would be required to support the load of the green roof; and
    - iv. The amount of applicable percentage of coverage of available roof space that can support a green roof without requiring major structural alteration.
      1. If this amount is zero, then the existing building is fully exempt from the green roof combination requirement.
      2. If this amount is not zero, then the existing building must provide only that amount of green roof combination that can be supported on the roof without major structural alteration, and shall submit all required documentation as noted in Section 3.03.
- (b) Residential buildings.
- (i) Any construction, addition, alteration, or repair to a residential building or addition to a residential building shall be exempt from the Denver Green Roofs Ordinance when the height of the residential building is less than or equal to four stories or 50 feet, whichever is greater.
- (c) Commercial greenhouses located at grade.
- (d) Temporary structures as permitted under Section 3103 of the International Building Code as referenced in the current addition of the Denver Building and Fire Code.
- (e) Air-supported structures as defined in the International Building Code as referenced in the current addition of the Denver Building and Fire Code.
- (f) Structures whose applicants submit modified drawings after January 1, 2018 for projects that were permitted in 2017 or earlier, whose permits have not yet received final inspection approval, and for which the scope does not result in any additional square footage.
- (g) Structures whose applicants are issued new permits due to a change in contractor after January 1, 2018 for projects that were permitted in 2017 or earlier, and whose prior permit(s) have not yet received final inspection approval.

- (h) Construction projects, where the scope of work included a new roof or roof replacement, that was permitted in 2017 or earlier, whose commercial construction or residential construction permit(s) have not yet received final inspection approval, and for which a roofing permit for that same building is issued on January 1, 2018 or later.
- (i) New construction or additions that made a complete building permit application prior to January 1, 2018.
- (j) New construction or additions that made a complete site plan application for a building(s) or building addition(s) prior to January 1, 2018.
  - (i) This exemption shall not apply to site development plans that revise the site development plan during the review process, or amend an approved site development plan, and that result in any of the following:
    1. An increase in overall project density, including any addition of buildings when multiple buildings are proposed on a single zone lot;
    2. An increase in the maximum height of any building by more than 5 feet or 5 percent, whichever is less;
    3. An addition of stories;
    4. An increase in the floor area ratio by greater than 10 percent as calculated on a total project basis;
    5. An increase in permitted building coverage; or
    6. Modifying any other element of a site development plan application being reviewed, or an approved site development plan, which would substantially change its character or impacts on surrounding property, as determined by the Manager of CPD.
  - (ii) When a site development plan involving phased development is unable to take advantage of the exemption above due to the revision or amendment to the site development plan with at least one of the factors listed in Section 2.07(j)(i), the requirements of the Denver Green Roofs Ordinance shall apply to all phases of the development that have not yet been constructed.
- (k) Structures that do not contain a roof, as defined in the Denver Green Roofs Ordinance.

### **ARTICLE III. APPLICATION REQUIREMENTS**

Buildings over 25,000 square feet, must log in the following documents for review when either constructing a new roof or a roof replacement.

**Section 3.01 Green Roof Declaration Form.**

An applicant subject to the applicability of the Green Roofs Ordinance in Article II above, shall submit to CPD a Green Roof Declaration Form. This form will be available on CPD's website.

**Section 3.02 Permits.**

- (a) Any new construction, additions, or roof replacement that includes a green roof or green roof combination, shall follow the procedures for permit issuance in the administrative section of the Building Code of the City and County of Denver.
- (b) Any new construction, additions, or roof replacement that includes a green roof must receive separate permits for the green roof or green roof combination, and the underlying roof of the building.
- (c) A Denver licensed green roof installer must sign the permit for the green roof or green roof combination.
- (d) Applicants are required to comply with all other applicable City regulations and permit requirements.

**Section 3.03 Submittal Requirements.**

The Building Official is delegated the authority to establish submittal requirements for a green roof, green roof combination, or request for an exemption from the Denver Green Roofs Ordinance. These requirements will be available for review on CPD's webpage and at CPD's offices.

**ARTICLE IV. VARIANCES**

**Section 4.01 Planning Board Powers.**

- (a) The Planning Board, as established and authorized under article II, Chapter 12 of the DRMC, shall have the power and duty to determine, upon application, variances. In the exercise of its powers, the Planning Board may affirm or deny, wholly or partly, a request for a variance.
- (b) Any variance granted by the Planning Board shall be subject to terms and conditions fixed by the Planning Board, where, owing to certain circumstances, an applicant would be unable to comply with the green roof coverage requirements of the Denver Green Roofs Ordinance found in DRMC Sec. 10-301. "Unable to comply" in the context of a variance shall mean that one at least one of the following conditions exist:
  - (i) That the slope of the roof or the limited access to the roof leaves a green roof unable to be adequately maintained;

- (ii) That the building or proposed building is used for seasonal purposes, and funds are not allocated for off season maintenance;
  - (iii) That the applicant for a variance owns a historic building, not exempt from compliance with the Green Roof Ordinance due to major structural alteration, and provides one of the following:
    - 1. A report signed by the owner and a registered design professional, demonstrating that compliance with the green roof ordinance would threaten, degrade or destroy the contributing historic character or features, or the historic form, materials or function of the building;
    - 2. A letter from the State Historic Preservation Office with a finding that compliance with the green roof ordinance would be in conflict with the Secretary of the Interior's Standards for Rehabilitation, outlining the specific provisions that are in conflict and how compliance would threaten, degrade, or destroy the contributing historic character or features, or the historic form, materials or function of the building; or
    - 3. Documentation from the staff of the Landmark Preservation Commission with a finding that compliance with the provisions of the Denver Green Roofs Ordinance would be in conflict with locally adopted historic preservation policies, standards, and guidelines, outlining the specific provisions that are in conflict and how compliance would threaten, degrade or destroy the historic character or features, or the historic form, materials or function of the building.
  - (iv) That the proposed roof of a non-residential structure contains an amount of area that is intended for recreational or social use by the occupants of the building, and results in the inability to comply with the requirements for a green roof or green roof combination.
  - (v) That the applicant presents other substantial evidence to the Board that shows it would be unable to provide the required coverage green roof or green roof combination.
- (c) Any variance shall not be personal to the applicant, but shall be transferable and shall run with the building.

**Section 4.02 Notice.**

Upon receipt of a request for a variance, the Planning Board shall set the date, time and location of a public hearing on the request. At least thirty (30) days prior to such hearing, the Planning Board shall cause notice of the date, time and location of such hearing to be sent to the applicant, city council, and all neighborhood organizations registered under article III of chapter 12 DRMC

whose boundaries encompass any portion of the property at issue. At least fifteen (15) days prior to such hearing, the Planning Board shall cause notice of the date, time and location of such hearing to be published in at least one (1) newspaper of general circulation. At least fifteen (15) days prior to such hearing, the Planning Board shall cause the property in question to be posted in a manner prescribed by the Planning Board with notice of the date, time and location of such hearing and any other information prescribed by the Planning Board.

**Section 4.03 Hearing Process.**

The Planning Board shall have the power to call and question witnesses, to issue subpoenas, to require the submission of documentary or other tangible evidence, to rule on evidentiary questions and witness qualifications, and to generally conduct the hearing in conformance with the procedures and requirements established by the Planning Board. The applicant may be represented by legal counsel and may present testimony and evidence under oath or affirmation. If detailed minutes are not kept, then the hearing shall be recorded. All tangible evidence presented will be retained until applicable appeal periods have lapsed.

Requests for variances which clearly meet any of the ‘unable to comply’ factors listed in Section 4.01(b) above may be placed on a consent agenda to be approved by block vote. Any Planning Board member, or member of the public, may request that an item be removed from the consent agenda for full Planning Board discussion, deliberation, and vote.

**Section 4.04 Limitations on Power.**

- (a) *Concurring vote required.* The concurring vote of at least eighty (80) percent of the members of the Planning Board present or the concurring vote of five (5) members, whichever number is higher, shall be necessary to affirm or deny a request for a variance.
- (b) *Findings of fact.* Every decision of the Planning Board shall be based upon findings of fact, and every finding of fact shall be supported in the record of its proceedings.
- (c) *Powers construed.* Nothing contained in this article shall be construed to empower the Planning Board to change the terms of the Denver Green Roofs Ordinance. The conditions required to exist on any matter upon which the Planning Board is authorized to act under this section shall be construed as limitations on the power of the Planning Board to act.

**Section 4.05 Judicial appeal.**

The decision of the Planning Board shall be in writing and provided to the applicant promptly following approval of the written form by the Planning Board. This decision shall be considered a final order subject to judicial review under Rule 106(a)(4) of the Colorado Rules of Civil Procedure upon the timely filing of an appeal to the Denver District Court.

**Section 4.06 Cash-in-lieu payment.**

If the Planning Board grants a variance to an applicant, that applicant shall pay a cash-in-lieu fee of \$25 per square foot for each square foot of coverage of available roof space that is no longer required to provide a green roof or green roof combination. This cash-in-lieu fee shall be paid to CPD prior to issuance of a roofing or commercial construction building permit for that project.

**ARTICLE V. GREEN ROOF TECHNICAL ADVISORY GROUP**

Meetings of the Green Roof Technical Advisory Group shall be open to the public, and an agenda of the meeting will be posted on a bulletin board on the 2<sup>nd</sup> floor of the Wellington Webb Municipal Building and on CPD's website at least 48 hours prior to the meeting.

DRAFT

**Table 1**

Gross Floor Area (Size of Building or Addition)	Coverage of Available Roof Space (Size of Green Roof)
25,000—49,999 square feet	20%
50,000—99,999 square feet	30%
100,000—149,999 square feet	40%
150,000—199,999 square feet	50%
200,000 square feet or greater	60%

DRAFT