

Roof Runoff Management (number)

DEFINITION

A facility for collecting and disposing of runoff water from roofs.

SCOPE

This standard establishes the minimally acceptable requirements for design, construction, and operation of roof management facilities. Such facilities include, but are not limited to, erosion-resistant channel or subsurface drains with rock-filled trenches along building foundations below eaves, roof gutters, downspouts, and appurtenances.

PURPOSE

To prevent roof runoff water from flowing across concentrated waste areas, barnyards, roads, and alleys, and to reduce pollution and erosion, improve water quality, prevent flooding, improve drainage, and protect the environment.

CONDITIONS WHERE PRACTICE APPLIES

The practice applies where: (1) a roof runoff management facility is included in an overall plan for a waste management system; (2) roof runoff water may come in contact with wastes or cause soil erosion; and (3) barnyard flood protection or improved drainage is needed.

PLANNING CONSIDERATIONS

Water Quantity

1. Effects on the components of the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
2. Effects on downstream flows or aquifers that would affect other water uses.
3. Potential use of water management to conserve water

Water Quality

1. Effects on erosion and the movement of sediment, pathogens, and soluble and sediment-attached substances carried by runoff.

2. The effects on wetland and water-related wildlife habitats associated with the practice.

Design Criteria

Capacity. Design of roof runoff management facilities shall be based on the runoff from a 10-year frequency, 5-minute rainfall except that a 25-year frequency, 5-minute rainfall shall be used to design such facilities for exclusion of roof runoff from waste treatment lagoons, waste storage ponds, or similar practices. Rainfall from Figures 1 and 2 or reliable local records may be used for design.

Materials. Roof gutters and downspouts may be made of aluminum, galvanized steel, wood, or plastic. Aluminum gutters and downspouts shall have a nominal thickness of at least 0.07 and 0.05 cm (0.027 and 0.020 in), respectively. Galvanized steel gutters and downspouts shall be at least 28 gage. Wood shall be clear and free of knots. A water repellent preservative shall be applied to the flow of areas of wood other than redwood, cedar, or cypress. Plastics shall contain ultraviolet stabilizers. Dissimilar metals shall not be in contact with each other.

Supports. Gutter supports shall have sufficient strength to withstand anticipated water, snow, and ice loads. They shall have a maximum spacing 120 cm (48 in) for galvanized steel and 81 cm (32 in) for aluminum or plastic. Wood gutters shall be mounted on fascia boards using furring blocks that are a maximum of 61 cm (24 in) apart. Downspouts shall be securely fastened at the top and bottom with intermediate supports that are a maximum of 3 m (10 ft) apart.

Outlets. The water from roof runoff management facilities may empty into surface drains or underground outlets, or onto the ground surface. When downspouts empty onto the ground surface, there shall be an elbow to direct water away from the building and splash

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blocks or other protection shall be provided to prevent erosion.

Protection. Roof runoff management facilities and outlets shall be protected from damage by livestock and equipment. Where appropriate, snow and ice guards may be installed on roofs to protect gutters and reduce the hazard to humans and animals below. Gutters may be installed

below the projection of the roof line to further reduce gutter damage from snow and ice.

PLANS AND SPECIFICATIONS

Plans and specifications for installing roof runoff management facilities shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

