

4.2-j BARE SOIL PROTECTION

Alternative Names: Organic and Inorganic Mulch, Bark, Pine Needle and Wood Chip Mulch, Rock, Cobble and Gravel Armoring

DESCRIPTION

Bare soil protection employs vegetative, wood, or rock material to secure the soil surface and prevent wind and water erosion. Materials include organic mulch (pine needles, wood chips, bark chips) and inorganic mulch (rock, gravel, cobble, pea gravel). These materials uniformly laid over exposed or disturbed soil stabilize and protect the soil surface from raindrop impact, prevent sediment mobilization and transport by stormwater, snowmelt, and wind, and allow energy dissipation of surface water flow. Organic and inorganic mulch also enhances vegetation establishment and preservation by providing favorable conditions for seed germination and vegetative growth. These conditions include moderating soil temperature, conserving soil moisture, preventing soil compaction, and decreasing surface runoff.



Organic and inorganic mulch.

APPLICABILITY

ORGANIC MULCH:

- Bare or disturbed soil areas where application is in accordance with fire defensible space requirements. Refer to Chapter 5 Soil and Vegetation Management, Section 5.3.2.5 Fire Defensible Space for more detail.
- Bare soil on construction sites needing stabilization, including winterization practices.

BMP DESIGN APPROACH	
<input checked="" type="checkbox"/>	Pollutant Source Control
<input checked="" type="checkbox"/>	Hydrologic Source Control
<input type="checkbox"/>	Stormwater Treatment
SCALE OF APPLICATION	
<input checked="" type="checkbox"/>	All SFR and MFR < 1 acre
<input checked="" type="checkbox"/>	MFR 1-5 Acre and CICU < 5 acres
<input checked="" type="checkbox"/>	MFR and CICU > 5 acres and all WQIPs
BMP TYPE	
<input checked="" type="checkbox"/>	Temporary
<input checked="" type="checkbox"/>	Permanent

INORGANIC MULCH:

- Areas where organic mulch is prohibited due to fire defensible space requirements, such as within the 5-foot wide noncombustible perimeter around structures.
- Armoring beneath elevated structures (decks, patios) and roof driplines. Refer to Section 4.2-k for more details regarding Deck Armor.



Noncombustible mulch serving as both dripline protection and fire defensible space.



Rock mulch providing soil protection that blends well into landscaping.

Advantages

- Prevents transport of dust by wind and sediment by stormwater runoff from disturbed soil surfaces into roadways, drainage ways, and surface waters.
- Improves vegetation growth and establishment by stabilizing soil and regulating soil moisture and temperature.
- Organic mulch can be used as a soil amendment to improve soil structure, help prevent future soil compaction, retain soil moisture, and add nutrients to the soil when it decomposes.
- Low in cost when organic mulching materials can be found on-site or when provided free by local tree removal services.
- Rock mulch reduces concentrated flow velocities and prevents erosion around discharge outlets.
- Suppresses weeds.

Disadvantages

- May increase construction and landscaping costs if materials are not found onsite.
- High flows of surface runoff may mobilize and transport organic mulch off-site.
- Organic mulches may affect soil pH through decomposition.
- Organic mulches can be a fuel source and can increase fire hazard if close to structures. It is not permitted within 5 feet of any structure.

DESIGN CONSIDERATIONS

- Follow Fire Defensible Space (FDS) requirements when selecting and applying appropriate bare soil protection materials.
 - 0-5 foot Noncombustible perimeter – No combustible materials are permitted within 5 feet of any structure. Use inorganic mulch to stabilize the soil and routinely remove organic materials, such as pine needles and woody vegetation, which accumulate into this zone.
 - 5-30 foot zone – Only discontinuous patches of organic mulch are permitted within 5-30 feet of a structure. Remove pine needles and vegetative litter to the duff layer annually by May 1 every spring and do not allow them to accumulate more than 1 inch in depth after May 1.
 - 30+ foot zone – Organic mulch and vegetative litter shall not accumulate in excess of 3 inches in depth in areas more than 30 feet from a structure.
- For construction sites where construction activities cease for a period of time, such as during winter months (winterization), use organic mulch sparingly on no more than 50 percent of the bare soil area. Apply mulch in discontinuous patches that do not create a direct line fire to any structure should they become ignited. Target areas with a higher risk of erosion for application. No organic mulch is permitted within 5 feet of all structures.
- Stockpile and use existing organic materials for on-site bare soil protection needs.

- For inorganic mulch, use washed clean coarse gravel ranging in size from 3/4 to 1 1/2 inches in diameter. Larger rock is also acceptable for situations with a dense overhead canopy to facilitate maintenance.
- Use organic mulch on steep slopes in conjunction with erosion control blanket systems to hold mulch in place. Refer to Section 4.5-s for more details regarding Erosion Control Blanket Systems.
- Straw mulch is not permitted for use in the Lake Tahoe Region because of the risk it poses for introducing invasive weeds.
- Do not use newspaper as organic mulch because of ink and chemical leaching.
- Contain inorganic mulch within a border to prevent migration of soil and mulch. Only borders made from noncombustible materials are permitted within the 5-foot noncombustible area around structures. Noncombustible materials include composite landscape edging, brick, metal, or large rock.



Use inorganic mulch around structures and contain within a noncombustible border.

INSTALLATION

- Install permeable geotextile fabric underneath mulch to minimize migration of soil and to suppress weed growth from below.
- Apply a minimum 3 inch deep layer for inorganic mulch armoring.
- Organic mulch shall not exceed 1 inch in depth in the 5-30 foot zone and 3 inches in depth in the 30+ foot zone.
- To avoid unnecessary cleanup, do not apply during high wind weather.
- Avoid compacting mulched areas by maintaining vehicle traffic barriers and fencing as necessary.

INSPECTION AND MAINTENANCE

- Inspect mulched areas annually in the spring and after precipitation events and periods of strong winds for degradation and signs of erosion. Replace mulch and remove weeds as needed.
- Routinely clean inorganic mulch of accumulated sediment and vegetative debris, particularly within the 5-foot noncombustible area around structures. Gravel may need to be removed, cleaned, and reset or replaced as needed.
- Maintain the layer of mulch above the geotextile fabric by removing accumulated dirt and debris. This prevents the establishment of weeds over time.

