

4.2-k DECK ARMOR

Alternative Names: Armor Under Elevated Structures, Gravel Armor

DESCRIPTION

Bare soil underneath raised structures (e.g. decks and stairs) should be armored with a layer of gravel or rock riprap. The armor permits the stormwater runoff to infiltrate into the soil, protects the soil from water and wind erosion and provides fire defensible space near structures.

APPLICABILITY

Appropriate under raised decks and stairs that drain onto pervious surfaces.

Advantages

- Facilitates stormwater infiltration into the soil.
- Provides protective inorganic mulch on the soil, preventing wind and water erosion.
- Provides fire defensible space under the raised structure.

Disadvantages

- Requires frequent maintenance to function properly.



This deck has 3 inches of gravel underneath and is bordered with lumber that is treated to be fire resistant.

BMP DESIGN APPROACH	
<input checked="" type="checkbox"/>	Pollutant Source Control
<input 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
TYPE OF APPLICATION	
<input type="checkbox"/>	Temporary
<input checked="" type="checkbox"/>	Permanent



The surface under the raised deck shows signs of rill erosion. The flammable vegetation and stored lumber are both fire hazards.

DESIGN CONSIDERATIONS

- Design with $\frac{3}{4}$ to $1\frac{1}{2}$ inches clean angular gravel (i.e. drain rock) or rock riprap.
- 3 inches of drain rock or a layer of rock riprap under the elevated structure should be sufficient to protect the soil and facilitate infiltration; however, if an impervious surface is contributing runoff to the raised surface (e.g. roof draining onto a raised deck) the capacity may need to be increased. Increase the capacity by installing an infiltration trench under the roof dripline portion in addition to the armor under the rest of the raised surface. The BMP calculation spreadsheet will help size the BMP in this scenario.

INSTALLATION CONSIDERATIONS

- Install armor as far back under the elevated structure as possible. Distance depends on accessibility and the height of the elevated structure.
- Extend armor 12 inches past the edge of the elevated structure.
- The finish grade of the armor shall be at least 6 inches below the wood siding of a structure to maintain earth and wood separation required by local building codes.
- Install a noncombustible border (e.g. cobble-sized rock) around the edge of the armor to keep it in place.
- Install non-flammable baffles if the slope under the raised structure exceeds 2 percent.

INSPECTION AND MAINTENANCE

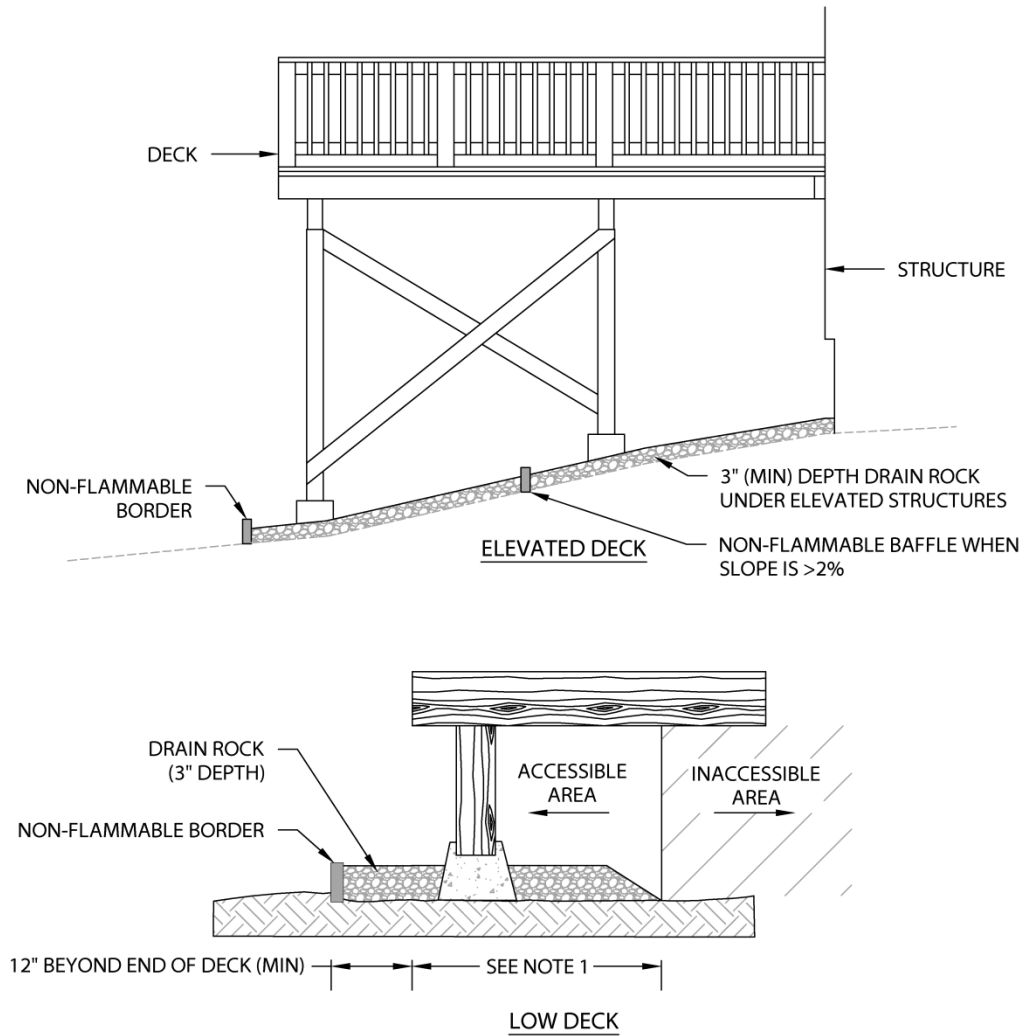
- Inspect bi-annually, in the spring after snowmelt and in the fall. Visually inspect to make sure the area is free of pine needles, sediment, and debris.

- Keep area clear of flammable materials such as firewood and lumber.
- Rake pine needles and remove accumulated debris from the surface of the gravel armor.
- If sediment accumulates, the drain rock or rock riprap should be cleaned by removing the rock, washing or sifting through it and replacing once clean.

EFFECTIVENESS CONSIDERATIONS

Effective if designed and installed correctly and frequently maintained.

Rock Armor – Elevated Structure Figure



NOTES:

1. FOR THE RETROFIT OF EXISTING DECKS, DRAIN ROCK SHOULD BE INSTALLED AS FAR BACK UNDER THE LOW ELEVATED STRUCTURE AS POSSIBLE. DISTANCE DEPENDS ON ACCESSIBILITY UNDER THE STRUCTURE.
2. USE WASHED, CLEAN 3/4" TO 1-1/2" DRAIN ROCK. NATIVE ROCK MAY BE SUBSTITUTED IF AVAILABLE.
3. FOLLOW FIRE DEFENSIBLE SPACE GUIDELINES. SEE "LIVING WITH FIRE" AT WWW.LIVINGWITHFIRE.INFO.

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