

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**HEAVY USE AREA PROTECTION**

(Ac.)  
CODE 561

**DEFINITION**

The stabilization of areas frequently and intensively used by people, animals or vehicles by establishing vegetative cover, by surfacing with suitable materials, and/or by installing needed structures.

**PURPOSE**

- Reduce soil erosion
- Improve water quantity and quality
- Improve air quality
- Improve aesthetics
- Improve livestock health

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to urban, agricultural, recreational or other frequently and intensively used areas requiring treatment to address one or more resource concerns.

**CRITERIA**

**General Criteria Applicable to All Purposes**

All planned work shall comply with Federal, state, and local laws and regulations.

Measures shall be taken to limit the generation of particulate matter.

Safety of the users shall be incorporated into the design of the heavy use area protection.

**Design Load.** The design load will be based on the type of traffic, (vehicular, animal, or human) anticipated on the heavy use area. The minimum design load for areas that support vehicular traffic will be a wheel load of 4000 lbs.

**Foundation.** All site foundations shall be evaluated for soil moisture, permeability,

texture and bearing strength in combination with the design load and anticipated frequency of use.

Frost action and shrink swell potential of the soils at the site shall be evaluated for any hard surface treatments.

A base course of gravel, crushed stone, other suitable material and/or geotextile shall be provided on all sites with a need for increased load bearing strength, drainage, separation of material and soil reinforcement. Natural Resources Conservation Service (NRCS), National Engineering Handbook (NEH), Parts 642 and 643 (formerly, NEH, Section 20) and AASHTO M-288 (latest edition) provide guidance in quality specification and geotextile selection.

An impervious barrier shall be provided on sites with a porous foundation (high permeability rate), where there is a need to protect ground water from contamination.

Foundation preparation shall consist of removal and disposal of soil and other material that are not adequate to support the design loads.

**Surface Treatment.** The surface treatment shall meet the following criteria:

**Bituminous Pavement.** The thickness of the pavement course, the kind and size of aggregate, the type of proportioning of bituminous materials, and the mixing and placing of these materials shall be in accordance with Department of Transportation criteria for the expected loading.

**Concrete.** The quality and thickness of concrete and the spacing and size of reinforcing steel shall be appropriate for the expected loading.

**Other Cementitious Materials.** Soil cement, roller compacted concrete, and coal

combustion by-products (flue gas desulphurization sludge and fly ash) may be used as surface material if designed and installed to withstand the anticipated loads and surface abrasion.

**Aggregate.** A fine or coarse aggregate surface shall be minimum 2-inches thick.

**Other.** Surfacing materials, such as cinders, tanbark, bark mulch, brick chips, shredded rubber and/or sawdust, shall have a minimum layer thickness of 2 inches.

**Structures.** All structures shall be designed according to appropriate NRCS standards and specifications or Engineering Handbook recommendations.

**Sprays and Artificial Mulches.** When utilizing sprays of asphalt, oil, plastic, manufactured mulches, and similar materials, the manufacturer's recommendations for application shall be incorporated into the design.

**Drainage and Erosion Control.** Provision shall be made for surface and subsurface drainage, as needed and for disposal of runoff without causing erosion or water quality impairment. Provision shall be made to exclude unpolluted run-on water from the treatment area. All treatment areas shall be shaped to prevent ponding of water.

**Vegetative Measures.** Vegetative measures shall only be used on areas where traffic can be managed to maintain vegetative cover. Vegetative material shall be grass species or other plant materials that are wear resistant, have fast recovery from heavy use, and are suitable to the site. Liming, fertilizing, soil preparation, seeding, mulching, sodding and vegetation management shall be according to the planned use and appropriate conservation practice standard in the local technical guide. If vegetation is not appropriate, other measures shall be used to accomplish the intended purpose.

**Additional Criteria for Areas Utilized by Livestock**

The treated area shall extend an appropriate distance from facilities such as portable hay rings, water troughs, feeding troughs, mineral boxes and other facilities where livestock concentrations cause resource concerns.

NRCS conservation practice standards Critical Area Planting (342); Fencing (382); Prescribed Grazing (528a); Filter Strip (393); Vegetative Treatment Area (635); Waste Storage Facility (313); Windbreak/Shelterbelt Establishment (380) or Use Exclusion (472) shall be used as companion practices, when needed to meet the intended purpose of the heavy use area protection.

Clean water shall be excluded from livestock pens and concentrated waste stockpile or storage areas to the fullest extent practical. This shall be accomplished by installation of diversions, berms, ditches, and/or gutters.

Locate livestock pens, manure stockpiles and waste treatment vegetative filter strips above the 25 year – 24 hour flood plain elevation and away from surface water sources and well heads. If site restrictions require location within a floodplain, they shall be protected from inundation or damage from a 25-year flood event, or larger as required by the Wyoming Department of Environmental Quality.

Polluted runoff and seepage from concentrated waste areas shall be intercepted and directed to storage or treatment facilities for future disposal or be directly applied to land in an acceptable manner in accordance with Waste Storage Facility (313) and Vegetative Treatment Area (635).

Polluted runoff from concentrated waste area must never be directed towards potential sources of groundwater contamination such as wells and springs. Livestock pens and other concentrated waste areas shall be located a minimum lateral distance away from wells as determined by the Wyoming State Engineer's Office Rules and Regulations Part III Water Well Minimum Construction Standards, Location of Wells, Relation to Source of Pollution or a minimum of 100 feet. All abandoned wells within 100 feet of a livestock pens and concentrated waste area must be sealed in accordance with the Wyoming State Engineer's Standards.

Waste water directly applied to the land shall be applied at a flow rate which will minimize runoff and deep percolation.

All buildings within livestock enclosures will include practices to address runoff from roof tops.

Adequate erosion control and other soil and water management practices shall be incorporated to prevent system-related problems.

All facilities with silage shall address silage leachate control, runoff storage, or runoff treatment.

Appropriate waste handling equipment for the collection, transport, and spreading of the waste shall be available or planned for effective operation of the system.

Provisions shall be made to collect, store, utilize and/or treat manure accumulations and contaminated runoff in accordance with other NRCS conservation practice standards.

#### **Additional Criteria for Fabricated Shelters for Livestock**

Fabricated shelters shall be located in areas where the herd is likely to congregate during typical storms. The site should be accessible by vehicle. The site shall be located in an upland area away from riparian areas. Locate shelters at least five times the shelter width up wind from buildings; cattle yard areas, feed storage, etc. to avoid snow accumulation. Design of the shelters shall be in accordance with Wyoming Engineering Technical Note 24. For designs outside the parameters of Technical Note 24, the design shall be based on sound engineering principles. The wind loading shall be in accordance with ASCE Standard 7-05, Minimum Design Loads for Buildings and Other Structures. The post foundation design shall be in accordance with ASAE EP486.1, Shallow Post Foundation Design.

#### **Additional Criteria for Areas Utilized for Recreation**

The treated area shall be conducive to the overall recreation area and aesthetically blend with the general landscape and surroundings.

Plants, landscaping timbers, traffic control measures, wooden walkways, etc. shall be evaluated for effectiveness, aesthetics and accessibility as covered by the Americans with Disabilities Act.

### **CONSIDERATIONS**

In instances where sage-grouse are a consideration, it is generally discouraged to

apply this practice within 0.25 miles of a sage-grouse lek. Construction activities associated with this practice should not be conducted during the breeding and nesting period, March 15 through June 30.

Monitor disturbed soil areas to enable early detection and control of invasive plants.

When stabilizing heavily used areas consider adjoining land uses and the proximity to residences, utilities, cultural resource areas, wetlands or other sensitive areas, and areas of special scenic value.

For heavy use areas conducive to protection by vegetation, consideration must be given to the effect(s) of treading and/or miring. The vegetative species selected should tolerate and persist under heavy use conditions. If practicable, consider increasing the size of the area and/or establishing a rest/non-use period to allow plant recovery and increase vigor.

Heavy use area protection effects on the water budget, especially on volumes and rates of runoff, infiltration, and transpiration due to the installation of less pervious surfaces should be considered in the selection of surfacing materials.

The transport of sediments, nutrients, bacteria, organic matter from animal manures; oils, chemicals and particulate matter associated with vehicular traffic; and soluble and sediment-attached substances carried by runoff should be considered in selection of companion conservation practices.

Consider using additional air quality conservation practices such as Windbreak/Shelterbelt Establishment (code 380) or Herbaceous Wind Barriers (code 603) to impede transport of particulate matter between the source (i.e., heavy use area) and nearby sensitive areas.

If the purpose of the heavy use area protection is improvement of water quality, the heavy use area should be relocated as far away from the water body or watercourse as possible. Any work in and/or discharges near streams, wetlands or water bodies may require a permit from the US Army Corps of Engineers, state water quality (permitting) authority, or local authority.

The size of heavy use areas utilized by livestock is dependent on the landowner's operation including type and number of animal, confinement periods, and/or the intended use. The size of treatment areas can range from 30 square feet per animal in partial-confinement to 400 square feet per animal in total confinement to 4000 or more square feet for animal exercise areas. Heavy use protection areas should be kept as small as practicable.

When surface treatments such as bark mulch, wood-fiber or other non-durable materials are used for short-term livestock containment areas, consideration should be given to vegetation of the affected area with a cover crop.

For areas with aggregate surfaces that will be frequently scraped, consideration should be given to the use of concrete or cementitious materials to lessen the recurring cost of aggregate replacement.

To reduce pavement damage due to frost action, consider the following:

- Stronger, thicker sections
- Lowering water table by use of sub-drains or ditches
- Using layers of coarse sands in the sub-grade or waterproof sheets to reduce capillary action
- Remove and replace frost susceptible materials down through the zone of frost penetration.

Consideration should be given to site drainage. In areas lacking adequate natural drainage, constructed drains may be required.

Supporting practices should be considered where water erosion, nutrient runoff, and/or runoff from melting snow may be a hazard.

Consider the effects of increased wind velocities (10-20 percent) on buildings or other structures located adjacent to fabricated windbreaks.

## PLANS AND SPECIFICATIONS

Plans and specifications for heavy use area protection shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. Plans and specifications shall

include construction plans, drawings, job sheets or other similar documents. These documents shall specify the requirements for installing the practice, including the kind, amount and quality of materials to be used.

## OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) plan shall be prepared for and reviewed with the landowner or operator. The plan shall specify that the treated areas and associated practices are inspected annually and after significant storm events to identify repair and maintenance needs.

The O&M plan shall detail the level of repairs needed to maintain the effectiveness and useful life of the practice.

For livestock operations, the O&M plan for heavy use areas may be included as a part of the overall waste management plan. Periodic removal and management of manure accumulations will be addressed in the O&M plan.

Conservation practices should be implemented that limit particulate matter emission into long-term maintenance plans.

## REFERENCES

American Society for Testing and Materials (ASTM) D 698

American Association of Highway Transportation Officials (AASHTO) M-288 (latest edition)

Jairell, R. L. and R. A. Schmidt. 1991. Taming Blizzards for Animal Protection, Drift Control, and Stock Water. Proceedings, The Range Beef Cow Symposium XII, Dec. 3-5, 1991, Fort Collins, CO, 11 pages.

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Jones, D. D. and W. H. Friday. Wind and Snow Control for the Farmstead. Emergency Management in Agriculture AE-102, Purdue University Cooperative Extension Service. 11 pages

Meiman, P. 1993. Cost Analysis of Wind Protection Structures for Range Beef Cattle.

Range Livestock Problem, University of Wyoming RGMG 4540-03. 15 pages.

NRCS National Engineering Handbook Part 642 Specifications.