

**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.

A base course of gravel, crushed stone, or other suitable material, and geotextile, as necessary, shall be provided on all sites with a need for increased load bearing strength, drainage, separation of material and/or soil reinforcement. Virginia Conservation Practice Specifications, 700 Series, shall be used for material selection and installation guidance.

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 Virginia 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. Concrete slabs shall have a minimum thickness of five inches.

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 a minimum of 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, Engineering Handbook recommendations, and sound engineering practices.

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. Liming, fertilizing, soil preparation, seeding, mulching, sodding and vegetation management shall be completed in accordance with Virginia Conservation Practice Standard *Critical Area Planting (Code 342)*. If vegetation is not appropriate, other measures, such as Virginia Conservation Practice Standard *Mulching (Code 484)*, shall be used to accomplish the intended purpose.

Fencing. Fencing shall be installed as necessary to control animal, pedestrian, and vehicle traffic. Fencing shall be built in accordance with Virginia Conservation Practice Standard *Fence (Code 382)*. Alternative fencing procedures which provide

permanent and positive control may be approved on a case-by-case basis.

Additional Criteria for Areas Utilized by Livestock

The treated area shall extend a minimum of 8 feet from facilities such as portable hay rings, water troughs, feeding troughs, mineral boxes and other facilities where livestock concentrations cause resource concerns.

Where disturbed exercise lots are improved for water quality purposes, the grass paddocks and sacrifice area are to be sized in accordance with Virginia Engineering Design Note #561- Heavy Use Area Protection.

Virginia Conservation Practice Standards *Critical Area Planting (Code 342)*, *Fence (Code 382)*, *Prescribed Grazing (Code 528a)*, *Filter Strip (Code 393)*, and/or *Use Exclusion (Code 472)* shall be used as companion practices when needed to meet the intended purpose of the heavy use area protection.

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 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

When stabilizing heavily used areas, consider adjoining land uses and the proximity to residences, utilities, cultural resource areas, wetlands or other environmentally 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 sediment, 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 Virginia Conservation Practice Standards *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 located as far away from the waterbody or watercourse as possible. Any work in and/or discharges near streams, wetlands or waterbodies 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.

PLANS AND SPECIFICATIONS

Plans and specifications for constructing 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.

Record all required information in an engineer field book, on a plan sheet or design computation sheet, or in another appropriate location.

DESIGN DATA

1. Completed Environmental Evaluation (Form VA-EE-1) and subsequent requirements.
2. Soils investigation.
3. Survey and plot data: profile, cross-sections, topography, as needed.
4. Design computations, including purpose of practice and references used. Include:
 - a. Type and number of animals, people, and/or vehicles the Heavy Use Area will serve.
 - b. Agricultural Waste Management System Plan describing type of treatment planned for waste storage and/or disposal if such a plan is necessary (see Criteria--Specific Criteria for Agricultural Areas).
 - c. Design of *Waste Storage Facility (Code 313)* and other components if required by Agricultural Waste Management System Plan.
 - d. Profiles of the area disturbed showing grades and thickness of the base course and surface treatment as appropriate.
 - e. Description of surface treatment (with material description). Include references to plans or components supplied by others.
 - f. Runoff treatment design.

5. Plan view of site with existing and planned features, including dimensions, distances, drainage structures, erosion control measures, etc.
6. Standard Cover Sheet (VA-SO-100A).
7. Materials and quantities needed. Identify borrow material and/or spoil area, as needed.
8. Vegetation and/or ground cover requirements.
9. Identification of needed Erosion & Sediment Control measures.
10. Supplemental practices required.
11. Virginia Conservation Practice Specifications (700 Series).
12. Operation and Maintenance Plan.

CHECK DATA

1. As-built survey.
2. As-built plans including dimensions, types and quantities of materials installed, and variations from design. Include justification for variations.
3. Locations of appurtenant practices.
4. Adequacy of vegetation and/or ground cover.
5. Complete as-built section of Cover Sheet.

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

Virginia NRCS FOTG, Section IV

Virginia Engineering Design Note #561 – Heavy Use Area Protection

Virginia Standard Drawings

ACI 360R-92 (Reapproved 1997) – Design of Slabs on Grade

Virginia 700 Series Construction Specifications

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