NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

HEAVY USE AREA PROTECTION

(Acre)

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.

PURPOSES

This practice may be used as a part of a conservation management system to support one or more of the following purposes.

- 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.

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, 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 desulfurization 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 2-inches thick.

Other - Surfacing materials, such as cinders, 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.

Roof Rainfall Diversion Structures - Roof rainfall diversion structures shall be designed, by a registered Civil Engineer, licensed to practice in California, to meet all state, county and local building codes. The engineer shall also provide construction plans, specifications and Operation and Maintenance guidance for the roof rainfall diversion structure.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

The design shall consider all anticipated loads, including live loads, dead loads, wind, snow, ice and seismic loads, that will influence the performance of the structure, material properties and construction quality. Design assumptions and construction requirements shall be indicated on standard plan.

Fabricated structures shall be designed according to the criteria in the following references as appropriate:

- Steel: "Manual of steel construction", American Institute of Steel Construction.
- Timber: "National Design Specifications for Wood Construction", American Forest and Paper Association.
- Concrete: "Building Code Requirements for Reinforced Concrete, ACI 318", American Concrete Institute.
- Masonry: "Building Code Requirements for Masonry Structures, ACI 530", American Concrete Institute
- ASAE EP288.5, Agricultural Building Snow and Wind Loads
- ASAE EP 378.3, Floor and Suspended Loads on Agricultural Structures Due to Use

The plans, including the foundation work, shall be signed and sealed by a registered Civil Engineer.

Sprays, artificial mulches and mulches - Sprays of asphalt, oil, plastic, manufactured mulches, and similar materials shall be installed according to the manufacturer's recommendations. Application of other mulches will follow Mulching – Standard 484.

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

Plant Species: Preference should be given to native plants in most settings. However, in heavily used areas or where special characteristics are desirable non-native plants may better adapt to local situations. Plant hardiness and soil suitability are plant selection factors. Species recommendations for local use are contained in the Vegetative Guide of the Field Office Technical Guide.

Plant Spacing: Plants shall be spaced according to the planting plan or specifications. Spacing is determined by many factors including plant height, spread, habit, effect desired, etc.

Planting Methods, Time of Planting, etc., will follow Standard and Specification for Tree/Shrub Establishment – Standard 612 or Critical Area Treatment – Standard 342.

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, Code 342; Fencing, Code 382; Prescribed Grazing, Code 528A; Filter Strip, Code 393; Roof Runoff Structure, Code 558 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 NRCS's National Engineering Handbook (NEH) Part 651, Agricultural Waste Management Field Handbook.

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 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.

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.

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.

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.

If the purpose of the heavy use area protection is improvement of water quality, the heavy use area should be (re) located 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 transport of sediments, nutrients, bacteria, organic matter from animal manures, oils and chemicals associated with vehicular traffic, and soluble and sediment-attached substances carried by runoff should be considered in selection of companion conservation practices. Consider practices to collect and store rainfall away from manured areas.

Cultural Resources Considerations

Determine if installation of this practice with any others proposed will have any effect on any cultural resources. NRCS's objective is to avoid any effect to cultural resources and protect them in their original location. GM 420, Part 401, the California Environmental Handbook and the training for the

California Environmental Assessment Worksheet specify how the NRCS must account for cultural resources. The Field Office Technical Guide, Section II contains general information, with Web sites for additional information, about cultural resources. The Environmental Handbook is online at www.ca.nrcs.usda.gov/rts/rts.html.

Endangered Species Considerations

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the Fish and Wildlife Service, National Marine Fisheries Service and/or California Department of Fish and Game. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

Water Quantity

Paved areas installed for livestock use will increase organic, bacteria, and nutrient loading to surface waters. Changes in ground water quality will be minor. Nitrate nitrogen applied as fertilizer in excess of vegetation needs may move with infiltrating waters. The extent of the problem, if any, may depend on the actual amount of water percolating below the root zone.

More impervious protection may decrease or eliminate infiltration; the use of vegetation may increase infiltration. Where vegetation is used, transpiration may increase. Reduced infiltration may decrease potential for deep percolation and ground water recharge.

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.

Water Quality

Protection with materials such as asphalt and concrete may decrease the opportunity for infiltration and may result in increased runoff of essentially all of the precipitation. Protection by use of porous paving or cellular blocks will reduce these detrimental effects. Protection with vegetation may reduce runoff by increasing the opportunity time for infiltration.

Protection may result in a general improvement of surface water quality through the reduction of erosion and the resulting sedimentation. Some increase in

erosion may occur during and immediately after construction until the disturbed areas are fully stabilized.

Some increase in chemicals in surface water may occur due to the introduction of fertilizers for vegetated areas and oils and chemicals associated with paved areas. Fertilizers and pesticides used during operation and maintenance may be a source of water pollution.

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 others responsible for operating this practice.

The plan shall provide specific instructions for operating and maintaining the system to insure that it functions properly. It should also provide for periodic inspections and prompt repair or replacement of damage components.

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.

O&M guidance for roof runoff diversion structures will be provided by the engineer who designs this aspect of the project.