Heavy Use Area Protection (Acre) 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

- 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

Heavy use area protection shall be planned, designed, and installed to meet all federal, state, local, and tribal laws and regulations.

Measures shall be taken to limit the generation of dust.

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 4,000 lbs (1,800 kg). A five-inch thick slab of 3,000-psi (21,000 kPa) concrete over a four-inch thick sand or gravel base will meet this requirement.

Covers over heavy use areas shall meet the requirements of NRCS conservation practice standard Waste Facility Cover (367).

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.

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 materials 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 Michigan 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. Where coal combustion by-products are used, consult the Michigan Department of Environmental Quality regarding conditions for use and/or permits required.

Aggregate. A fine or coarse aggregate surface shall be a minimum of 2 inches (50 mm) 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 (50 mm).

Structures. All structures shall be designed according to appropriate NRCS conservation practice standards or NRCS National 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 areas. All treatment areas shall be shaped to prevent ponding of water.

Vegetation. Vegetation will be applied to cut or fill slopes or other disturbed areas adjacent to heavy use area protection measures. If vegetation is not appropriate, other measures shall be used to accomplish the intended purpose.

Use vegetation adapted to the site that will accomplish the desired purpose. Preference shall be given to native species in order to reduce the introduction of invasive plant species; provide management of existing invasive species; and minimize the economic, ecological, and human health impacts that invasive species may cause. If native plant materials are not adaptable or proven effective for the planned use, then non-native species may be used. Refer to the Field Office Technical Guide, Section II, Invasive Plant Species, for plant materials identified as invasive species.

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), or Use Exclusion (472) shall be used as companion practices, when needed, to meet the intended purpose(s) 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 the Comprehensive Nutrient Management Plan, where applicable.

Bituminous pavement is not an acceptable surface treatment for areas utilized by livestock.

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.

NRCS conservation practice standards Recreation Area Improvement (562), Recreation Land Grading and Shaping (566), or Recreation Trail and Walkway (568) shall be used as companion practices, when needed, to meet the intended purpose of the heavy use area protection.

CONSIDERATIONS

Consider the potential effects of installation and operation of heavy use area protection on the cultural, archeological, historic, and economic resources.

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 dust 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 measures such as NRCS conservation practice standards

Windbreak/Shelterbelt Establishment (380) or Herbaceous Wind Barriers (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 surface water quality, consider locating the heavy use area 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 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 (3 sq m) per animal in partial-confinement to 400 square feet (37 sq m) per animal in total confinement to 4,000 or more square feet (370 sq m) 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.

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

PLANS AND SPECIFICATIONS

Plans and specifications shall be prepared in accordance with the criteria of this standard and shall describe the requirements for applying the practice to achieve its intended use.

Support data documentation requirements are as follows:

- Inventory and evaluation records
  - Assistance notes or special report
- Survey notes, where applicable
  - Design survey
  - Construction layout survey
  - Construction check survey
- Design records
  - Physical data, functional requirements, and site constraints, where applicable
  - Soils/subsurface investigation report, where applicable
- Design and quantity calculations
- Construction drawings/specifications with:
  - Location map
  - "Designed by" and "Checked by" names or initials
  - Approval signature
  - Job class designation
  - Initials from preconstruction conference
  - As-built notes
- Construction inspection records
  - Assistance notes or separate inspection records
  - Construction approval signature
- Record of any variances approved, where applicable

OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) plan shall be developed for this practice. The O&M plan shall be consistent with the purposes of the practice, its intended life, safety requirements, and the criteria for the design.

REFERENCES

Natural Resources Conservation Service (NRCS), National Engineering Handbook (NEH), Parts 642 and 643 (formerly NEH, Section 20); AASHTO M-288 (latest edition); and MI-165 Geotextiles Provide Guidance in Quality Specification and Geotextile Selection.