

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, surfacing with suitable materials, and/or installing needed structures.

PURPOSES

- To provide a stable, non-eroding surface for areas frequently used by animals, people or vehicles
- To protect and improve water quality

CONDITIONS WHERE PRACTICE APPLIES

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

CRITERIA

Agricultural Areas

Drainage and erosion control. Provision shall be made for surface and subsurface drainage, as needed and for disposal of runoff without causing erosion. All treatment areas shall be shaped to prevent ponding of water. Ramp areas shall be shaped so as to prevent surface water from entering the ramp. All areas disturbed in construction shall be revegetated in accordance with Conservation Practice Standard - Critical Area Planting (342).

Foundation preparation. All loose, wet, organic, or other undesirable materials shall be removed to depths, widths, and lengths as required by the design. All waste materials shall be disposed of in designated areas.

Filter fabric. A non-woven geotextile fabric shall be installed under all treatment areas unless foundation is on rock. The geotextile should be placed with edges of fabric overlapping at least 12 to 18 inches. The fabric should be held in place with metal staples provided by the manufacturer. Staples are generally laced every 5 feet within the fabric surface and 3 feet along overlaps. Stone is then placed on the geotextile fabric. Construction equipment should not operate directly on the fabric surface.

REQUIREMENTS FOR
NON-WOVEN GEOTEXTILE

Property	Test Method	Minimum
Tensile Strength	Grab Test ASTM D 4632	120 lb.
Puncture Test	ASTM D 4833	60 lb.

Surface treatment. Surface materials for paddock areas shall be crusher run stone, or graded stone as conditions warrant, with a maximum size of 2 inches. All surface material shall be smoothed uniformly and compacted. Minimum depth of crusher run stone or gravel shall be 6 in. uncompacted. If graded stone is used, the depth shall be 5 in. of graded stone with a 1 in. topping of crusher run stone.

Size gradations of the crushed stone vary by supplier and by the name in which they are called. A gradation requirement with a common name for the aggregate is shown in Table 1. All of these materials are acceptable for heavy use areas and topping for stream crossings.

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

Treatment area. For areas such as watering troughs, portable hay rings, feeding troughs, or mineral boxes, the treatment area shall extend a minimum of 10 ft. outside the limits of the facility.

For walkways the minimum treatment width shall be 8 ft. (cattle only). A width of 15 ft. is generally used for cattle/vehicles type walkways. All walkways shall be fenced.

For loafing areas the following shall apply:

Animal area	Minimum treatment area per animal (ft. sq.)
Dairy Cattle	200
Beef Cattle	150
Horse	150
Sheep & Goats	10

Treatment areas for watering ramps shall have a minimum bottom width of 10 ft. and a maximum bottom width of 20 feet. Ramps shall have a slope of 5 to 1 or flatter toward the stream with side slopes of 2.5 to 1 or flatter. Protection for watering ramps shall extend into the pond or stream to protect the pond or stream bottom.

Fencing. Fencing shall be installed as necessary to control all animal traffic. Watering ramps shall be permanently fenced to prevent livestock access to the stream or pond except at the access ramps. Fencing shall be built in accordance with Conservation Practice Standard - Fence (382).

Additional Criteria for Recreation Areas

Heavy use protection in recreation areas that are accessible to the public must meet the requirements of the Americans with Disabilities Act.

Urban and Recreation Areas

Drainage and erosion control. Provision shall be made for surface and subsurface drainage, as needed, and for disposal of runoff without causing erosion. All areas disturbed in construction shall be revegetated in accordance with Conservation Practice Standard - Critical Area Planting (342).

Base course - All areas to be paved shall have a 6 in. base course of gravel, crushed stone, or other suitable materials. The material in place may be used if it is adequate.

Areas that support automotive traffic shall be designed for a wheel load of at least 4,000 pounds.

Surface treatment - The thickness of the asphalt course, kind and size of aggregate, proportioning of bituminous materials, and mixing and placing of these materials shall be in accordance with good highway design practice for expected loading.

The quality and thickness of concrete and the spacing and size of reinforcing steel shall be appropriate for the expected load and in accordance with sound engineering practice.

The minimum thickness for a gravel surface shall be 2 inches.

If other surfacing materials are used, such as cinders, tree bark, or sawdust, the minimum thickness shall be 4 inches.

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

Sprays and artificial mulches. Sprays of asphalt, oil, plastic, manufactured mulches, and similar materials shall be installed according to the manufacturer's recommendations.

Vegetative measures. Liming, fertilizing, seeding, and sodding shall be according to the planned use and local technical guide. If vegetation is not appropriate, other measures shall be used to prevent erosion.

CONSIDERATIONS

Heavy use areas can have a significant impact on adjoining land uses. These impacts can be environmental, visual and cultural. Care should be taken when selecting the type of treatment to ensure that it is compatible with adjoining areas. Consider such things as proximity to neighbors, utilities, cultural resources, environmentally sensitive areas and the land use where the stabilization will take place. Stabilization

techniques used in a cattle feeding area may not be appropriate for a recreation area.

Heavy use areas will be intensely used by animals, people or both. Consider the safety of the users both human and animal during the design. Avoid slippery surfaces, sharp corners or surfaces and structures that might entrap users. For heavy use areas used by livestock avoid the use of sharp aggregates that might injure livestock hooves.

Heavy use areas for livestock can vary widely in size depending on how the operator manages his livestock. Because heavy use areas can be expensive to construct and maintain, a significant consideration should be to reduce the size of the heavy use area as much as possible. This may require changes in how the livestock are managed but in the long run may result in less maintenance and a more efficient operation.

Water quantity

- Effects on the water budget, especially on volumes and rates of runoff, infiltration, and transpiration.

Water quality

- Excavation may be limited to one side of the stream at a time in order to facilitate diversion of the stream. It may be advantageous to divert the stream flows around the site using a pipe or ditch or to temporarily impound the stream during construction.
- Effects on the erosion and the movement of sediment, animal waste, and soluble and sediment-attached substances carried by runoff.
- Effects of changes in surface and groundwater caused by introduction of fertilizer for vegetated areas, and oils and chemicals associated with concrete and asphalt placement and other construction activities.
- Effects of changes in surface water caused by the surfacing of confined animal feeding areas.
- Consideration can be given for the use of concrete around troughs or tanks in lieu of gravel for agricultural applications.

To reduce the negative water quality impact of heavy use areas consider locating them as far as possible from waterbodies or water courses.

In some cases this may require relocating the heavily used area rather than just armoring an area that is already in use.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for Heavy Use Area Protection that describe the requirements for installing the practice according to this standard. As a minimum the plans and specifications shall include:

1. A plan view showing the location and extent of practice.
2. Where appropriate, cross-sections showing the type and required thickness of paving or stabilization materials.
3. Where appropriate, plans for required structural details.
4. Where appropriate, vegetation establishment requirements.
5. Construction specifications that describe in writing specific installation requirements for the heavy use area protection.

OPERATION AND MAINTENANCE

Prepare an operation and maintenance (O&M) plan for the operator. The minimum requirements to be addressed in the O&M plan are:

1. Periodic inspections, especially immediately following significant rainfall events.
2. Prompt repair or replacement of damaged components especially surfaces that are subjected to wear or erosion.
3. For livestock heavy use areas include requirements for the regular removal and management of manure.
4. Where vegetation is specified, periodic mowing, fertilization and control of vegetation.

REFERENCES

Mississippi NRCS Conservation Practice Standards:

Critical Area Planting – Code 342
Fence – Code 382

Table 1. COARSE AGGREGATE (CRUSHED STONE) GRADATIONS											
Aggregate	Percent Passing by Weight (mass), each Laboratory Sieve										
	2 in.	1.5 in.	1 in.	3/4 in.	1/2 in.	3/8 in.	#4	#8	#16	#50	#200
5		100	90-100	20-55	0-10	0-5					
56		100	90-100	40-85	10-40	0-15	0-5				
57		100	95-100		25-60		0-10	0-5			
6			100	90-100	20-55	0-15	0-5				
67			100	90-100		20-55	0-10	0-5			
68			100	90-100		30-65	5-25	0-10	0-5		
610			100	90-100		25-60		7-30		0-15	
Type "A" Crushed Aggregate Base			100	86-100			26-55	15-41		3-18	5-15
Type "B" Crushed Aggregate Base	100	90-100	75-98		55-80		40-70	28-54	19-42	9-32	7-18

Natural Resources Conservation Service Construction Specifications

HEAVY USE AREA PROTECTION

1. SCOPE

This item shall include all plans, specifications, construction operations, and vegetation required for the installation of heavy use areas. Construction operations shall be done in such a manner that soil erosion and air, water, and noise pollution will be minimized and held within legal limits as specified by state regulations.

2. CLEARING AND GRUBBING

All trees, stumps, roots, brush, weeds, and other objectionable material will be removed from the work area as required for proper installation of the planned and designed measure. Disposal shall be by burning, burying at approved locations, or removing from the site and stacking. All burning shall conform to state laws and regulations.

3. CONSTRUCTION

Where surface treatment of the area is required, prescribed construction procedures shall be followed.

If subgrade is required, it shall be brought to the required elevations by the removal of unsuitable material and by necessary

grading, filling, and leveling. The subgrade surface shall be compacted according to design specifications. All soft spots discovered during compaction operations will be removed and replaced with suitable material.

After subgrade preparation in urban and recreational areas, the base course will be laid, mixed as necessary to provide a pulverized, homogeneous mixture, and thoroughly compacted, first with a sheepsfoot roller and then with a rubber-tired or pneumatic-tired roller.

Geotextile will be non-woven type of the grade specified and installed according to manufacturer's or design specifications. Equipment will not be allowed to operate directly on top of the geotextile fabric without a cushion of gravel or stone.

4. PROTECTION

Vegetation or heavy use area treatment shall be applied as shown in the plans and specifications. Vegetation will include seedbed preparation, liming, fertilizing, seeding, and either mulching or netting when needed and specified.