United States Department of Agriculture

Natural Resources Conservation Service

Concrete Heavy Use Area Protection

Alabama Job Sheet No. AL561B

Definition

The concrete protective treatment of areas that are frequently used by cattle or farm equipment.

General Information

Concrete heavy use area protection is generally used:

- around cattle watering troughs or tanks,
- around locations such as hay rings, feeding troughs, or mineral boxes, or
- areas around the farmstead used frequently by farm equipment.

NRCS considers the use of geotextile and stone as the best type of heavy use area protection (see NRCS Alabama Job Sheet AL561, Geotextile and Stone Heavy Use Area Protection); however, concrete must be used in some situations.

Concrete shall have a minimum compressive strength of 3,000 psi at 28 days, and slabs are generally at least 4 inches thick. Heavy use area protection around watering troughs or tanks, hay rings, feeding troughs, or mineral boxes should gently slope away from the facility and extend at least 10 feet out from the facility (6 feet for small ruminants). Construction requires excavation so that the finished surface of the concrete is flush with normal or constructed ground.

Installation

Areas to receive heavy use area protection should have all mud, manure, and other debris removed. The foundation for concrete placement must be well compacted and moist (no ponded water). When crushed aggregate is needed in the foundation, it must be approved by the engineer.

All formwork must be secure, and located at the proper dimensions and elevations. Formwork should be constructed so that no concrete or concrete mortar escapes during concrete placement.

If welded wire fabric or steel reinforcement are required, it should be properly located and secured so that it will not move during placement of concrete. Placement of steel shall not occur during concrete placement. Chairs supporting steel reinforcement shall either be non-metal, have plastic tips on the feet, or be made of concrete that meets or exceeds the strength of the design mix.

No concrete shall be placed when the daily minimum atmospheric temperature is less than 40°F. Placement shall be in one continuous slab with concrete being directed "into" previously placed concrete. Concrete shall be placed and worked into the corners of the forms and around reinforcement and embedded items. Immediately after placing, the concrete shall be consolidated by spading, hand tamping, or preferably by vibration as necessary to provide a smooth surface and dense concrete. A vibratory screed provides the best concrete slab by consolidating the concrete and removing entrapped air. The surface smoothness shall be appropriate for the intended use. Surfaces intended for use by livestock shall have a broomed "roughened" finish.

Formed or sawn contraction joints shall be placed at maximum intervals of 10 feet. Contraction joints shall have a minimum depth of ¾ inch. Sawing of joints cannot be delayed and shall occur as soon as the concrete has taken its set.

Concrete shall be prevented from drying for a curing period of at least 7 days after pouring. Exposed surfaces shall be kept moist, continuously during the curing period or they may be coated with curing compound as soon as free water has disappeared from the surface. The compound shall be applied uniformly at a rate of 1 gallon per 175 square feet of surface.

Operation and Maintenance

Concrete heavy use areas will occasionally need to be scraped to properly dispose of manure accumulations.

References

NRCS AL Conservation Practice Standard

Code - 561, Heavy Use Area Protection
Code - 614, Watering Facility

AL NRCS Guide Sheet

AL614, Watering Facility for Livestock

Concrete Heavy Use Area Protection Worksheet

Land User: _____ County: _____ Date: _____

Farm No.: _____ Tract No. : _____ Assisted by: _____

Practice which heavy use area is being applied: _____

Type of traffic (vehicular, animal): _____

Crushed aggregate foundation needed (yes or no) _____

Type and estimated quantity: _____

Dimensions of heavy use area: Length _____ ft

Width: _____ ft

Thickness of concrete: _____ in.

Steel reinforcement: Welded Wire (gauge and dimension) _____;

Steel Rebars (size and spacing) _____

Type Finish: _____

Fiber added (Y or N): _____