

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD AND SPECIFICATION**

TROUGH OR TANK

(No.)
CODE 614

DEFINITION

A trough or tank, with needed devices for water control and waste water disposal, installed to provide drinking water for livestock.

PURPOSE

- Provide watering facilities for livestock at selected locations that will protect vegetative cover through proper distribution of grazing or through better grassland management for erosion control
- Reduce or eliminate the need for livestock to be in streams, which reduces livestock manure in watercourses

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where:

1. There is a need for new or improved watering places to permit the desired level of grassland management, to reduce health hazards for livestock, and to reduce livestock manure in streams.
2. All troughs or tanks installed to provide livestock watering facilities that are supplied by streams, springs, wells, ponds, or other sources.

DESIGN CRITERIA

General. The tank or trough and associated livestock watering system shall be designed in accordance with the Missouri Livestock Watering Systems Handbook (MLWSH).

The site should be well drained or if not, drainage measures will be provided. Areas adjacent to the trough or tank that will be trampled by livestock shall be graveled, paved,

or otherwise treated to provide firm footing and reduce erosion.

If concrete is used as the surface coating, the pad shall extend a minimum of two (2) feet from the exterior wall of the tank or trough, in all directions, and be a minimum of 5 inches thick. Use of steel reinforcement (1/2 inch diameter), in the concrete pad, at 12 inches center to center in both directions is desirable. Alternative concrete pad designs provided to NRCS may be approved after evaluation. If natural gravel or rock is used as the top coating, the pad shall extend a minimum of six (6) feet from the exterior wall of the tank (or trough) and be a minimum of 12 inches thick. The type and size of pad shall be according to manufacturer's recommendations for proper installation.

Design Capacity. The water system should be based on the anticipated herd size served by the system and deliver the water in a relatively short period of time each day. The design capacity will include the storage volume necessary to provide adequate water between periods of replenishment. Refer to MLWSH for further details.

Materials. The quality and durability of all materials shall be in keeping with the planned useful life of the installation.

Automatic water level control and overflow facilities shall be provided as appropriate. Valves or pipes shall be protected by shields or covers to prevent damage by livestock. Overflow shall be piped to a desirable point of release away from high traffic cattle areas - a stable outlet to minimize soil erosion damage. The trough and outlet pipes will be protected from freezing and ice damage if this is a potential problem. Freeze-proof troughs or electric heaters may be used at some sites. Manufacturer's recommendations for freeze

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| Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resource Conservation Service. |
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protection shall be followed. Roofs can be placed over the trough to provide shade and reduce loss of water by evaporation.

A trough or tank may be prefabricated materials or shall be constructed with a reinforced concrete bottom and reinforced concrete, concrete silo staves, or steel sidewalls. They are installed on normally dry land where overflow or standing water will not damage the structure. Precast (freeze proof) concrete tanks and factory fabricated fiberglass tanks may be used. Tanks may be built from used heavy equipment tires.

CONSIDERATIONS

Consider effects on erosion and movement of sediment, pathogens, and soluble and sediment-attached substances carried by runoff.

Consider effects on the visual quality of onsite and downstream water resources.

Consider effects on wetlands and water-related wildlife habitats.

A grazing system may include several sources of livestock water and thus reduce demand on one source of water and potential erosion problems.

All features and equipment shall provide adequate safety features to protect livestock, wildlife, workers, and the public against injury.

Drinking troughs and water storage tanks may be combined into one structure or may be kept separate.

PLANS AND SPECIFICATIONS

Plans and specifications for installing troughs and tanks shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

The Operation and Maintenance (O&M) plan shall specify that the treatment areas and associated practices be inspected monthly 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 tanks (or troughs) may be included as a part of an overall waste management system plan. Periodic removal of manure accumulations will be addressed in the O&M plan.

**NATURAL RESOURCES CONSERVATION SERVICE
MISSOURI OPERATION AND MAINTENANCE**

TANK OR TROUGH

The operation and maintenance plan for the system is the responsibility of the landowner. The tank or trough shall be checked frequently. Some of the items that need to be addressed are:

1. Check periodically to see if any type of debris has fallen into the trough which may restrict the inflow or outflow system.
2. Check tank for leaks or cracks and repair immediately if any cracks or wall separations are found.
3. Check the automatic water level device to insure that it is operating properly.
4. Inspect the outlet pipe to be sure it has a free outlet and is not causing any serious erosion problems.
5. If the trough has not been designed to prevent damage from freezing, it should be prepared for winter weather. This

may include a measure such as adding material in the storage area to take up expansion.

6. Algae and iron sludges sometimes are problems in watering facilities. Chemicals such as copper sulfate and chlorine have been used. Federal, state, and local rules and regulations are to be followed when recommending chemicals.
7. Check for vandalism and normal wear and deterioration. Repair any damage that would prevent the system from working properly.
8. Remove large accumulations of manure at or near the tank or trough.
9. Inspect the condition of the pad or surfaced area around the tank or trough for deteriorating condition and repair or replace materials, as needed.

Additional details: _____

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MISSOURI CONSTRUCTION SPECIFICATION

TANK OR TROUGH

General

Construction operations shall be carried out in a manner and sequence that erosion and air and water pollution are minimized and held within legal limits.

The completed job shall present a workmanlike appearance and shall conform to the line, grades, and elevations shown on the drawings or as staked in the field.

All operations shall be carried out in a safe and skillful manner. Safety and health regulations shall be observed and appropriate safety measures used. Contractor shall be assured that all state laws concerning buried utilities have been met.

All trees, stumps, roots, brush, weeds, and other objectionable materials shall be removed from designated work area.

Materials

Tanks shall be as shown on drawings. Tanks shall be durable enough to withstand forces exerted by water, soil, and livestock

and shall have a minimum design life of 10 years. Crushed rock or gravel shall be hard durable rock. Concrete for the pad or tank shall conform to Construction Specification 750, Reinforced Concrete. Geotextile shall conform to Construction Specification 753, Geotextile.

Placement

Tanks should be placed on suitable subgrade material and face south where possible.

Pads

The area adjacent to the tank (or trough) shall be protected from livestock traffic. Pads shall be constructed as shown on the drawings.

Vegetation

Topsoil shall be added, if needed, to establish vegetation on all disturbed areas. Refer to JS-AGRON-25 for seeding and mulching recommendations or equivalent.

Additional Details:
