

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

MANURE TRANSFER (NUMBER)

Code 634

DEFINITION

A manure conveyance system using structures, conduits, or equipment.

PURPOSE

To transfer animal manure (bedding material, spilled feed, process and wash water, and other residues associated with animal production may be included) through a hopper or reception pit, a pump (if applicable), and a conduit to;

a manure storage/treatment facility,

- a loading area, and
- to agricultural land for final utilization. This includes application of manure to the utilization area.

CONDITION WHERE PRACTICE APPLIES

This practice applies where waste is generated by agricultural production or processing, a conveyance system is necessary to transfer waste from the source location to a storage/treatment facility and/or a loading area, and/or from storage/treatment to the location for final utilization.

This practice will be installed only when the essential components of the overall waste management system have been planned.

CONSIDERATIONS

Considerations will be given to the following in planning waste transfer systems:

- Take advantage of site topography to utilize available head to reduce pumping requirements;
- Economics, overall waste management system plans, and health and safety factors; Possible contamination of surface and ground water;
- Loading and unloading of equipment;
- Appropriate federal, state, and local regulations;
- Subsurface conditions, i.e., depth to bedrock, water table;
- When applicable, use of irrigation system to achieve desired waste transfer results;
- Pipe strength, corrosion resistance, bedding requirements.

DESIGN CRITERIA

Structures. All structures, including those, which provide a work area around pumps, will be designed to withstand the anticipated static and dynamic loadings. The structure must withstand earth and hydrostatic loading in accordance with Conservation Practice Standard, Waste Storage Facility, (313).

The minimum thickness of component elements of concrete structures shall be 5 inches. When needed, covers will be designed to support the anticipated dead and live loads.

Hydraulic design of structures will be in accordance with Conservation Practice Standard, Structure for Water Control,

(587).

When manure is scraped with a front-end loader or an alley scraper system, a grate to provide the necessary opening for manure flow into the structure will be a minimum of 9 square feet with at least one dimension no smaller than 4 feet. Waste Transfer Interim IA-999-2 NRCS-IOWA, January 1997.

The grate will be designed to support the anticipated loads. When curbs are needed in conjunction with structures, they must be constructed of either concrete or wood. Curbs must be high enough to insure total manure flow into the structure and be adequately anchored.

Pipeline. The minimum capacity of pipelines from collection facilities to storage/treatment facilities will be the maximum flow anticipated on a daily basis. Gravity pipelines will be designed to have a minimum velocity of 2.0 feet per second and a maximum velocity of 6.0 feet per second except for large diameter (approximately 24-inch diameter) pipelines for solids transfer. The minimum capacity of pipelines from storage/treatment facilities to an area of final utilization will be such that storage/treatment facilities can be emptied within the time limits of the management plan for the utilization of manure.

Pipe materials shall be corrosion resistant and the pipe joints shall be water tight.

Pipes shall have adequate strength to support the anticipated installation and service loads.

Cleanout manholes will be provided for gravity pipelines at intervals that available cleanout equipment can reach but it is recommended that they not be greater than 200 feet for lines carrying nonbedded manure or 150 feet for lines carrying bedded manure.

Gravity pipelines shall not have curves or bends except minor deflections (less than 10 degrees) in the pipe joints.

Other Conduits. Concrete lined ditches will be considered a special design and will be approved by the State Conservation Engineer in accordance with Conservation Practice Standard, Irrigation Water Conveyance-Nonreinforced Concrete Ditch and Canal Lining, (428A). A minimum design velocity of 1.5 feet per second will be used. Consideration in design will be given to clean out of deposition in the ditch.

Pumps. Pumps will be sized to transfer waste at required system head and volume. Type of pump will be based on the consistency of waste. Design consideration for pump installation will be based on manufacturer's recommendations.

Safety. The system will consider the safety of humans and animals during construction and operation. Open structures will be provided with covers or barriers such as gates, fences, etc. Ventilation and warning signs must be provided for waste transfer systems as necessary to prevent explosion, poisoning, or asphyxiation. Pipelines from enclosed building will be provided with a water-sealed trap and vent or similar devices where necessary to control gas entry into buildings.

PLANS AND SPECIFICATIONS

The following list of Construction Specifications is intended as a guide to selecting the appropriate specifications for a specific project. The list includes most but may not contain all of the specifications that are needed for a specific project:

IA-1 Site Preparation

IA-3 Structural Removal

IA-5 Pollution Control

IA-6 Seeding and Mulching for
Protective Cover

IA-11 Removal of Water

IA-21 Excavation

IA-23 Earthfill

IA-24 Drainfill

IA-26 Salvaging and Spreading Topsoil

IA-27 Diversions

IA-31 Concrete

IA-32 Concrete for Nonstructural Slabs

IA-45 Plastic (PVC, PE) Pipe

IA-81 Metal Fabrication and Installation

IA-83 Timber Fabrication and
Installation

IA-92 Fences

Plans and specifications for installing waste transfer systems will be in accordance with this standard and will describe the requirements for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

Operation and maintenance will be in accordance with the requirements specified in the overall waste management system plan.