NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

MANURE TRANSFER

(no.)
CODE 634

DEFINITION

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

PURPOSE

To transfer plant and animal waste through a mechanical system or hauling equipment to:

A manure storage, treatment, or utilization facility;

A loading area; and/or

Agricultural land for final utilization.

CONDITIONS WHERE PRACTICE APPLIES

The manure transfer component is a part of a planned nutrient management or comprehensive nutrient management system.

Where plant and/or animal waste is generated by plant and/or animal production or processing and a conveyance system is necessary to transfer waste from the source to a storage/treatment/utilization facility and/or loading area, and/or from storage/treatment to an area for utilization.

This practice does not include land application or other use of manure. Criteria for land application of manure or other use are included in South Dakota (SD) Natural Resources Conservation Service (NRCS) conservation practice standard Nutrient Management (590), or Waste Utilization (633).

CRITERIA

Laws and Regulations. This practice must conform to all federal, state, and local laws and regulations. Laws and regulations of particular concern include those involving water rights, land use, zoning, waste storage, pollution control, property easements, wetlands, preservation of cultural resources, and endangered species.

Structures. All structures, including those that provide a work area around pumps, shall be designed to withstand the anticipated static and dynamic loading. Structures shall be designed to withstand earth, hydrostatic and other loading in accordance with practice standard Waste Storage Facility (313). Covers, when needed, shall be designed to support the anticipated dead and live loads.

Reception pits shall be sized to contain a minimum of one full day's manure production. For reception pits collecting runoff, the reception pit shall be sized to also contain at least the volume of runoff from the 25-year, 24-hour storm. Additional capacity shall be added as needed for freeboard and emergency storage.

Openings to structures to receive manure from alley scrape collection shall be a minimum of nine square feet with one dimension no smaller than four feet. The opening shall be equipped with a grate designed to support the anticipated loads.

When curbs are needed in conjunction with structures, they shall be constructed of either concrete, corrosion resistant metal, or pressure treated wood. Curbs shall be of sufficient height to ensure total waste flow into the structure and shall be adequately anchored.

Pipelines. Design of pipelines shall follow sound engineering principles considering the type of loads on the pipe, exposure, pressures, etc.

The minimum pipeline capacity from collection facilities to storage/treatment/utilization facilities shall be the maximum peak flow anticipated on a daily basis.

The minimum pipeline capacity from storage/treatment facilities to utilization areas shall ensure the storage/treatment facilities can

be emptied within the time limits stated in the management plan for manure utilization.

Pipelines used for transferring waste to an irrigation system shall meet the requirements of NRCS conservation practice standard, Irrigation Water Conveyance, Pipeline (430).

All pipes shall be designed based on the type of material and total solids content and shall convey the required flow without plugging. Flow velocities shall be sufficient to minimize settling of solids in the pipeline.

Clean-out access shall be provided for gravity pipelines at a maximum interval of 150 feet. Gravity pipelines shall not have horizontal curves or bends exceeding 10 degrees unless special design considerations are used.

Where slurry manure is transferred by gravity flow, a minimum of four feet of head is required on the pipe system.

Gravity discharge pipes used for emptying a storage/treatment facility shall have a minimum of two gates or valves, one of which shall be manually operated.

Pipelines shall be installed with appropriate connection devices to prevent contamination of private or public water supply systems, wetlands, Waters of the United States, and ground water.

Lined Ditches. Lined ditches shall be designed in accordance with NRCS conservation practice standard Lined Waterway or Outlet (468). A minimum design velocity of 1.5 feet per second shall be used.

Pumps. Pumps installed for manure transfer shall meet the requirements of NRCS conservation practice standard Pumping Plant (533). Pumps shall be sized to transfer the material at the required system head and volume. Pump type shall be based on the consistency of the material to be pumped. Requirements for pump installations shall be based on manufacturer's recommendations.

Safety. The system design shall consider the safety of humans and animals during construction and operation.

Open structures shall be provided with covers or barriers such as gates, fences, etc. Ventilation and warning signs shall be provided for manure transfer systems as necessary to warn of the danger of entry and to reduce the risk of explosion, poisoning, or asphyxiation.

Pipelines from enclosed buildings shall be provided with a water-sealed trap and vent or similar devices where necessary to control gas entry into buildings.

Barriers shall be placed on push-off ramps to prevent tractors or other equipment from slipping into waste collection, storage, treatment or other facilities.

Biosecurity. Manure from diseased animals and other disease contaminated materials shall be handled in accordance with the recommendations of the state veterinarian.

Equipment leaving the farm shall be sanitized as appropriate to prevent the spread of disease.

ADDITIONAL CRITERIA IN FOR WASTE APPLICATION ON AGRICULTURAL LAND

Waste application. Land application of wastes shall meet SD NRCS conservation practice standard Nutrient Management (590) or Waste Utilization (633), as appropriate.

Liquid or slurry waste shall be adequately agitated prior to transfer by pumping.

Hauling equipment. Equipment used for hauling waste from one geographical area to another area shall be capable of hauling the waste without spillage, leakage, or wind-blown losses.

Hauling equipment shall meet all applicable federal, state, and local laws and regulations (including weight limits) regarding use of public roads.

CONSIDERATIONS

General

Consider economics (including design life), nutrient management plans, and health and safety factors.

Biosecurity. Where the spread of disease is a concern, consider including a controlled temperature anaerobic digester to reduce pathogen content.

Consider the subsurface conditions, i.e., depth to bedrock, water table, etc., when locating and designing structures.

Flush pipelines with clean water after use.

When applicable and compatible, consider joint use of manure transfer pipelines with irrigation systems.

Plastic pipe pressure ratings may need adjustment based on temperature.

Consider corrosion resistance and water tightness in the selection of pipe material and joints.

Consider the potential for salt (struvite) deposits in smaller diameter pipes.

Consider the need for check valves, anti-siphon protection and open air breaks in all pipelines.

Provisions should be made for removing immobile solids from conveyance systems.

Off Farm Transfer/Transport

Consider route selection and timing of waste transfer to minimize nuisance odors.

Consider operating space requirements of loading and unloading equipment operating near the loading facilities.

PLANS AND SPECIFICATIONS

Plans and specifications for installing this practice shall meet this standard and shall describe requirements needed to achieve its purpose.

OPERATION AND MAINTENANCE (O&M)

An O&M plan must be prepared and reviewed with the landowner/operator. The O&M plan shall provide specific instructions for each component of this practice and shall detail repairs needed to maintain the effectiveness and useful life of the practice.

The O&M plan shall include actions to minimize flies and other insects.

For the hauling of waste from one geographical area to another, record keeping is required and may include such items as:

The type, nutrient content, and amount of waste transferred,

The solids percentage of the waste,

The date of the transfer,

The name and address of the source and destination of the waste, and

The condition of the manure as left at the destination (spread, stockpiled, and covered, etc.).