

NEBRASKA PRACTICE DOCUMENTATION REQUIREMENTS

WASTE STORAGE FACILITY (313) WASTE TREATMENT LAGOONS (359) MANURE TRANSFER (634)

I. GENERAL

Minimum documentation requirements for this practice are outlined below. Documentation for associated practices or system components shall follow the appropriate practice documentation requirements. Additional documentation requirements can be found in the General Documentation Requirements section of the Nebraska Practice Documentation Requirements Manual.

A. References

1. National Engineering Manual (NEM)
2. Nebraska Field Office Technical Guide (FOTG)
3. Current Title 130 Rules and Regulations Pertaining to Livestock Waste Control
4. NEH, Part 651 - Agricultural Waste Management Field Handbook.
5. NEH, Part 650 - EFH
6. Comprehensive Nutrient Management Plan for the system
7. Midwest Plan Service, TR-9 Circular Concrete Manure Tanks.
8. Midwest Plan Service, Livestock Waste Facilities Handbook (MWPS-18)
9. Midwest Plan Service, Concrete Manure Storage Handbook (MWPS-36)
10. Computer software
11. Local supplemental criteria

II. RESOURCE INVENTORY AND SURVEYS

A. Design Investigations

1. Factors to be considered include, but are not limited to:
 - a. Site topography
 - b. Existing facilities
 - c. Well locations
 - d. Septic systems
 - e. Geologic conditions – recorded on NE-ENG-11 or similar “log” form
 - 1) Ground surface elevation and location of test holes
 - 2) Depth to water table and estimate of seasonal high water level
 - 3) Unified Soil Classification System field classification of materials with depths
 - 4) Relative moisture
 - 5) Obtained soil samples
 - 6) Earthfill borrow sites, location and materials
 - f. Proximity of surface water – streams, floodplains, etc.
 - g. Contributing drainage other than lots
 - h. Cooperator’s plans and objectives
2. Design Investigations and Analysis
 - a. Geologic and Hydrogeologic

- 1) Drill an adequate number of test boring to ascertain site geologic and hydrogeologic conditions. All test borings will extend a minimum of eight feet below the plan bottom of the facility. All boring and geologic sections will be located on a site plan view that can be measured with a standard engineering scale.
 - 2) Descriptions of encountered materials and other information as follows will be recorded on NE-ENG-11 or similar "log" form.
 - a) Surveyed ground surface elevation of test hole.
 - b) Depth to stabilized ground water level, estimate of seasonal high water level.
 - c) Description will include:
 - (1) Unified Soil Classification System identification & symbol; i.e.– lean clay (CL) silty sand (SM), silt (ML), etc.
 - i. Geologic unit/origin – Peoria loess, alluvium, etc.
 - ii. Color
 - iii. Relative moisture – dry, damp, moist, wet
 - iv. Relative plasticity – non, low, medium, high
 - v. Any other descriptive features of materials – rusting, calcareous concretions, organic matter, etc.
 - 3) Geologic sections will be drafted to display the subsurface relationships of geologic units and materials from boring to boring.
 - 4) All potential borrow material for liner or embankment construction will be obtained (minimum 50 lbs. disturbed sample) and identified according to test boring or location and depth.
 - 5) Soil Mechanics Analysis - all potential borrow materials will be tested to determine their moisture/density relationships as per ASTM Standard Compaction Test D698. Additionally, all borrow materials to be used for a storage facility liner, will be remolded and undergo permeability testing as per ASTM D-5084.
3. Location of underground utilities
- B. Design Surveys
1. Topographic surveys – of sufficient extent to cover the facility and/or all anticipated development.
 2. Profiles -- along centerline of proposed pipelines, ditches, diversions, etc.
 3. Benchmark and control point descriptions, locations, and elevations.
 4. Field survey notes will conform to NEM Part 540 and follow standard field note documentation as illustrated in Technical Release 62 (TR-62) and/or Nebraska Standard Format for Engineering Notes Transmittal Sheets No. 3. Survey notes will be prepared such that they exhibit legible, logical, clear and concise data.
- C. Environmental Inventory
1. NEPA inventory of resources -- form NE-CPA-52 must be completed by NRCS during planning
 2. Wetland effects, if applicable.
 3. Archeological/Historical/Cultural Resources
 - a. Complete all continuing environmental requirements stemming from planning as expressed in the General Documentation Requirements section of the Nebraska Practice Documentation Requirements Manual.

III. DESIGN

- A. Design Data
 - 1. Hydrologic data.
 - 2. Manure production/volume calculations. Use hand calculations or design spreadsheets for storage computation and documentation.
 - 3. Hydraulic determinations – pipes, pipelines, transfer facilities, diversions, spillways, etc.
 - 4. Liner design computations, as appropriate.
 - 5. Structural design calculations.
 - 6. Seeding requirements and areas to be seeded.
 - 7. Quantities and cost estimate in sufficient detail to facilitate contracting and cost sharing, as appropriate.
 - 8. Design report required on all Livestock Waste Control Facilities
 - a. Narrative summary that is easily understood by project owners, other reviewing agencies and NRCS management personnel.
 - b. Convey essential information, in layman's terms, including but not limited to the following:
 - 1) Landowner information for permit responsibilities or any agree to items
 - 2) NRCS engineering job approval authority class
 - 3) Design basis, highlights and decisions
 - 4) Project background
 - 5) Permit requirements (NDEQ, NDNR, NPDES, etc.)
 - 6) Cost estimate and support for costs used
 - 7) Construction inspection requirements (reference to Construction Quality Assurance Plan)
 - 8) General Operation and Maintenance considerations (reference to Operation and Maintenance Plan)
 - 9. Construction Quality Assurance Plan
 - a. Items of construction, as appropriate
 - 1) Construction inspection plan
 - 2) Pre-construction meeting to review all components of construction
 - 1) Survey information
 - 2) Excavation requirements
 - 3) Earthfill requirements
 - 4) Liner compaction requirements
 - 5) Pipe trench excavation and backfill requirements
 - 6) Placement of reinforcement steel
 - 7) Concrete mix requirements, placement and the stripping of formwork
 - 8) Record keeping
 - b. Liner
 - 1) Testing of the liner material
 - 2) Post construction testing requirements
 - 10. Geology/Soil Mechanics Analysis and Report
 - a. Soil classification and description
 - b. Testing results; dispersion, permeability, compaction, moisture, etc.
 - c. Geologic profiles

B. Permits

1. Wetland Determination – document if a certified wetland determination has been made. A wetland determination is sometimes required to obtain a 404 permit.
2. 404 Permit – document if individual permit obtained, nationwide permit applies, or if practice is exempt.
3. Dam Safety and Water Rights – Nebraska DNR permit.
4. Easements – owner is responsible for obtaining all easements/agreements.
5. NDEQ Application including:
 - a. General information
 - b. Waste production
 - c. Waste storage volumes
 - d. Nutrient management plan
 - e. Ground water information
 - f. Construction assurance and liner information
 - g. Required site plans/drawings
 - h. Sludge management plan
 - i. Operational and maintenance plan
 - j. Facility closure plan
 - k. Emergency response plan
 - l. NPDES Permit, if applicable

IV. PLANS AND SPECIFICATIONS

Items are in accordance with planned decisions and specifications, sufficient to inform owner and contractor of construction requirements within Service standards.

A. Plans

1. Use standard sized drawing sheets.
2. Location or vicinity map -- legal location map showing location from nearest town, etc.
3. Plan view -- sufficient detail to show all structural alignment, sizes, stationing, elevations, reference points, cultural features, and other details of the facility so they can be located and staked out in the field. May be superimposed on site topography.
4. Profiles -- show intended grades, elevations, stationing of pipelines, diversions, and similar structures.
5. Cross-section -- as needed to show all pertinent details such as side slopes, pipe, berms, bottom widths, and elevation.
6. Structural details -- includes dimensional plan views; sectional views to clearly show all needed details for construction. Reinforced concrete requires separate sectional and detailing views on all but simple projects. Standard plans (pre-qualified materials and suppliers), such as those developed by Midwest Plan Service, should not require additional sectional and detailing views and schedule.
7. Table of quantities
8. Construction notes -- add notes to clarify a component and furnish directions for installations to supplement standard specifications as needed.
 - a. Construction plans shall include a statement requiring the contractor to notify the Nebraska One-Call System (Diggers Hotline) regarding utilities on the construction site. See the General Documentation Requirements section of the Nebraska Practice Documentation Requirements Manual for the recommended statement.

- b. Add notes as necessary to identify avoidance and, if needed, protection areas and boundaries associated with cultural resources, threatened or endangered species, or other resources needing temporary protection during installation.
9. NRCS Engineering Job Class from NE-ENG-14.

B. Specifications

1. Nebraska FOTG Conservation Practice specifications, component specifications from NEH Part 650, Engineering Field Handbook Appendix 1, or equivalent, modified as needed. Additional specifications may be written to provide full material and installation instructions.

C. O&M Plans

1. As specified in Waste Storage Facility (313), Waste Treatment Lagoons (359), or Manure Transfer (634) Standards in Nebraska FOTG.

D. Plans, Specifications, O&M Plans Delivery

1. Case folder
2. Transmittal letter copy

V. LAYOUT

A. Layout Surveys

1. Centerline alignment and reference stakes.
2. Grade and slope stakes.
3. All structural location alignment, offsets, and reference stakes.
4. Use field notebook, forms, etc.
5. If a significant change in an approved NDEQ application is required, the applicant shall obtain approval from NDEQ before proceeding.
6. Significant design changes must be approved by an individual with appropriate engineering job approval authority.

B. Quantity Computations

VI. COMPLIANCE CHECKING

A. Record in field notebook, on construction plans, etc.

1. Profiles and cross-sections -- at least two cross-sections taken perpendicular to each other for each structure.
2. Measured length of pipelines by sizes, kinds, and classes of pipe.
3. Materials certification statements.
4. Number, type, location of appurtenances (inlet structures, pipe supports, valves, stand pipes, etc).
5. Construction inspection reports.
6. Practice component certification statements -- as needed.
7. Results of required testing (concrete, pressure, soil proctor, compacted soil density, soil moisture, soil permeability, etc).
8. Statement of compliance -- statement that construction is complete according to plans and specifications, signed and dated by the person certifying the completion. Certification of compliance by technical advisor to NDEQ for permit (if applicable).

B. "As Built" Plans

1. Refer to NEM, Parts 512.51 and 512.52.
2. "As Built" plans are a record of constructed facilities. "As Built" plans are required when a significant change in design occurs during construction or when the job is designated Class V or higher. Changes are documented in a different color (usually red) or differentiated in some other manner (such as drawing a box around the as-built value) on the official file copy and show:
 - a. Significant¹ design changes.
 - b. Significant¹ changes in linear measurement.
 - c. Final quantities -- may be based on layout stake notes, if no changes were approved and work meets planned lines and grades.
 - d. Identify as "As Built" on plans.

¹ Determination of "significant" is a matter of judgment by the technician. As a general rule, changes which exceed normal measuring error allowances, normal construction tolerances, and methods of mathematical computation, should be considered as significant.