

NEBRASKA PRACTICE DOCUMENTATION REQUIREMENTS

PIPELINE (516)

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. National Engineering Handbook (NEH), Part 650, Chapter 3
4. NEM, Part 503
5. Montana Stockwater Pipeline Manual with Nebraska Supplements
6. Conservation plan for the unit
7. NDPIPE, other computer software
8. NE-ENG-35
9. Local supplemental criteria

II. RESOURCE INVENTORY AND SURVEYS

A. Design Investigations

1. Capacity determination, i.e. livestock served in each pasture, total livestock served by system, and seasons of use.
2. Soil and geologic investigation, as required -- determine routes considering soil depths and topography.
3. Source of water -- location, available flow rates and depth to water.
4. Pressure at source -- existing pump model number, pressure tank sizes and ratings, artesian pressures, etc.
5. Outlets -- planned location and type of outlets, including planned tank sizes.
6. Location of underground utilities.
7. Existing supplemental water sources -- ponds, dugouts, windmills, etc.

B. Design Surveys

1. Profile along centerline of pipeline adequate to determine pipeline control elevations and lengths. Use USGS quadrangles, GPS, or conventional survey methods, as appropriate.
2. Topographic map -- where required to aid in positioning the pipeline.
3. 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 Documentation Requirements Manual.

III. DESIGN

- A. Design Data
 - 1. Form NE-ENG-35, Data Sheet for Pipelines (for Livestock Water), or other worksheet or software as applicable.
 - a. Design flow based on livestock needs (gal/head/day), storage volumes (gallons), etc.
 - b. Hydraulic determinations to support pipeline sizes (in), pressure requirements (psi), valve types, sizes and locations, etc.
 - c. Pipeline sizes (in) and pressure ratings (psi) for each pipeline reach.
 - d. Quantity and cost estimates.
 - 2. Initials/signatures and dates by the person(s) responsible for the design, approval, and checking of the design.
- B. Permits
 - 1. 404 Permit -- document if individual permit obtained, nationwide permit applies, or if practice is exempt.
 - 2. State or local permits may be applicable if pipeline is for human consumption, livestock watering system in a dam, etc.

IV. PLANS AND SPECIFICATIONS

- A. Plans
 - 1. Use standard sized drawing sheets. Form NE-ENG-35 is adequate for pipelines of low complexity.
 - 2. Plan view -- show all pipelines, physical features such as roads, fences, public or private utilities, etc. Show pipeline identification, stationing, outlets, and appurtenance locations. Include map orientation, scale and appropriate dimensions.
 - 3. Profile along centerline of pipelines. Show original ground line, bury depths, outlets, appurtenances, pipe gradelines, hydraulic gradelines, static headline, changes in pipe sizes and ratings, etc. with appropriate stationing and dimensions.
 - 4. Appurtenance details -- show details of pipelines appurtenances such as water bars, manholes, stop and drain valves, air release valves, vacuum relief valves, regulators, etc.
 - 5. 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.
 - 6. Location map with legal description.
 - 7. Table of quantities.
 - 8. 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 Pipeline (516) Standard 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 stakes and/or flags.
 - 2. Offset stakes and/or flags as required.
 - 3. Location stakes and/or flags as needed to locate appurtenances, pipe changes, waterbars, etc.
 - 4. Use field notebook, forms, etc.
- B. Quantity Computations
- 1. Final quantities are based on staked lines or approved changes.

VI. COMPLIANCE CHECKING

- A. Record in field notebook or on form NE-ENG-35 as applicable.
- 1. Quantity of all pipe sizes installed.
 - 2. Quantity of appurtenances and outlets.
 - 3. Measured depth of lines (if checked during construction inspection).
 - 4. Materials certification -- record pipe markings. (All pipe shall be marked with size, type of plastic, SDR or PR, ASTM, and manufacturer's name.) NSF seal must be marked on pipe if pipeline is to be used for potable water. Pipe not marked with applicable markings will require a manufacturer's written certification.
 - 5. Construction inspection reports.
 - 6. Statement of compliance -- statement that construction is completed according to plans and specifications, signed and dated by the person certifying completion.
 - 7. Bills from the landowner and/or contractor for costs incurred in the construction of the project.

B. "As Built" Plans

1. Refer to NEM, 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 superimposed in a different color (usually red), or differentiated in some other manner (such as a drawing a box around the as-built value) on the official file copy and show:
 - a. Significant^{1/} design changes.
 - b. Significant^{1/} changes in linear measurement.
 - c. Final quantities -- measured quantities based on design route, layout, or other approved changes.
 - d. Identify as "As Built" on plans.

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