

# NEBRASKA PRACTICE DOCUMENTATION REQUIREMENTS

## UNDERGROUND OUTLET (620)

### 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, Chapters 2, 3, and 8
4. Conservation plan for the unit
5. Computer software – NRCS OHIO Engineering programs, Missouri Terrace program, Nebraska Terrace program, and EFH2
6. Local supplemental criteria

### II. RESOURCE INVENTORY AND SURVEYS

#### A. Design Investigations

1. Determination of outlet location and stability considering erosion, sedimentation, and drainage laws
2. Number of underground outlets (UGO) needed
3. Location of underground utilities, if applicable

#### B. Design Surveys: The design surveys can be combined with the layout surveys, dependent on the judgment and experience of the responsible designer.

1. Profile ground surface from inlet to outlet for each UGO. Include elevation at the location of the projected ridge to compute allowable fill height over the UGO.
2. Benchmarks elevations, descriptions, and locations.
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 Practice Documentation Requirements Manual.

### III. DESIGN

- A. Design data -- record on form NE-ENG-68 and provide printout from software as applicable. Such data to include the following:
  - 1. Hydrologic data
  - 2. Runoff and sediment storage data
  - 3. System drawdown time
  - 4. Orifice size and supporting design information
  - 5. Inlet size, as well as number and type of perforations in inlet
  - 6. Conduit design to include: type, diameter, grade, velocity, capacity, minimum cover, and maximum fill height over top of conduit
  - 7. Profile of underground outlet system
  - 8. Class of underground outlet
  - 9. Legal description
  - 10. Signature and date of person(s) approving and checking design
- B. Permits
  - 1. 404 permit (if applicable) -- document if individual permit was obtained, nationwide permit applies, or if practice is exempt.
  - 2. County road ditch discharge permits, if applicable.

### IV. PLANS AND SPECIFICATIONS

- A. Plans
  - 1. Use form NE-ENG-306 or appropriate "D" or "B" sized sheets.
  - 2. Plan view -- may be superimposed on location map. Include map orientation.
  - 3. Profile -- centerline of underground outlet system. Show channel elevation, orifice elevation, flowline of conduit at each inlet, significant grade changes, and outlet elevations.
  - 4. Table of quantities and quality requirements -- inlet, offset if applicable, mainline, and outlet section.
  - 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. NRCS Engineering Job Class from NE-ENG-14.
  - 7. Location map with legal description.
- 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 Underground Outlet (620) Standard in Nebraska FOTG
- D. Plans, Specifications, O&M Plans Delivery
  - 1. Case folder
  - 2. Transmittal letter copy

## V. LAYOUT

- A. Layout Surveys
  - 1. Record in field notebook and summarize on computer printouts or NE-ENG-306
  - 2. Flags or stakes along the main line of the tile, the outlet, and at each inlet or at consistent intervals
- B. Quantity Computations
  - 1. Final quantities are based on staked lines and grades or approved changes

## VI. COMPLIANCE CHECKING

- A. Record in field notes or on NE-ENG-306 and 49
  - 1. Channel elevation at inlet, orifice elevation, mainline slope, and outlet elevation.
  - 2. Type, size, and quantity of materials installed.
  - 3. Statement of compliance - statement that construction is complete according to plans and specifications, signed and dated by the person certifying completion.
- 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<sup>1</sup> design changes.
    - b. Significant<sup>1</sup> 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.

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<sup>1</sup> 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.