

PART 503 – SAFETY
SUBPART A – ENGINEERING ACTIVITIES AFFECTING UTILITIES

ND503.3 Investigations

- (1.) Subsurface investigation work completed by ND NRCS employees requires public utility location through the ND One Call Center in accordance with North Dakota Century Code Title 49- Public Utilities, Chapter 23- One Call Excavation Notice System. In these cases, NRCS employees are considered to be the “Excavator”. NRCS employees will also consult with the landowner regarding the location of privately owned utilities.
- (2.) Documentation of utility locations by NRCS employees shall be made on form ND-ENG-2 and filed in the design folder for the project, prior to the commencement of subsurface investigations.

ND503.4 Utility Notification

- (1.) Notification of public utilities at construction sites shall be made through the ND One Call Center in accordance with North Dakota Century Code Title 49- Public Utilities, Chapter 23- One Call Excavation Notice System.
- (2.) The excavator shall contact the ND One Call Center at least two full business days before excavation begins to ensure that all publicly owned unground utilities are marked. If excavation has not occurred within 21 days of obtaining a One-Call excavation ticket number, the One Call Center will be notified and the ticket updated. The excavator will be held responsible for damages to utility and property if such notice is not provided. The excavator is the person who actually performs the excavation work, and can be a contractor, landowner, or an operator. The landowner is responsible for marking private underground utilities affected by the project.
- (3.) The ND-ENG-1 Construction Specifications Cover Sheet shall be included with all engineering designs provided by NRCS employees. During pre-construction conferences, NRCS employees will make clear that the One Call ticket number procured by the excavator on the job must be provided to NRCS prior to commencement of the project. NRCS will record the One Call ticket number on the Field Office copy of the ND-ENG-1.
- (4.) The following statement will be included on the cover sheet of all construction drawings provided by NRCS employees: **“State law and NRCS policy require that the excavator contact the ND One Call Center at 811 or 1-800-795-0555 at least two full working days prior to any excavation work, to have all public utilities marked.”**
- (5.) The One Call ticket number is considered a locate confirmation. Documentation of this number reduces the operational risks of the State Conservationist in preventing employee injury and government property damage. NRCS employees should not be onsite at a construction job involving excavation without having obtained documentation of the ticket number.

SUBPART B – PUBLIC SAFETY AT STRUCTURE SITES

ND503.12 Recommended Safety Measures

(1.) Agricultural waste storage facilities

- a. Engineering designs shall follow industry standards for addressing safety issues associated with agricultural waste storage and handling facilities. These standards are maintained by the American Society of Agricultural and Biological Engineers as ASABE EP 470 “Manure Storage and Safety” and ASABE S607 “Ventilating Manure Storages to Reduce Entry Risk”.
- b. Engineering designs shall address (i) measures to prevent the migration of hazardous gases, (ii) physical deterrence to prevent unsafe access into confined spaces such as waste ponds, tanks, and manholes, (iii) high visibility and ergonomic features such as warning signs, fences, covers, locks, railings, and guards, (iv) and include specific and practical to implement safety requirements in the operation and maintenance plan. Safety measures required in the design shall be installed prior to technical certification of practices.

(2.) Confined spaces

NRCS provides engineering assistance on structures that are classified as “confined spaces” by the U.S. Department of Labor, Occupational Safety, and Health Administration (OSHA). OSHA regulations contain specific requirements that should be met before a person enters a confined space. Catch basins, manholes, sumps, waste storage tanks, water storage tanks, and well pits are considered confined spaces. Decomposing organic materials, or entrained gases released from groundwater or liquid manure during pumping operations, can produce toxic, explosive, and asphyxiating gas in structures. Hazardous conditions may develop quickly and may occur even during construction.

- a. The design of sump/pump stations or waste storage tanks shall include special provisions, such as guide rail assemblies or lift chains, to remove pumps for maintenance and eliminate the need for human entry.
- b. NRCS employees shall not enter a confined space for inspection or other purpose without proper preparation in accordance with OSHA regulations. Proper preparation for safe entry and emergency extraction may include, but is not limited to:
 - ✓ Partner supervision
 - ✓ Life lines- 100 ft of ½ inch nylon rope with 5400 lbs break strength
 - ✓ Block and tackle
 - ✓ Safety belts with lanyard
 - ✓ Emergency escape unit with 5-minute oxygen packs

- ✓ Non-explosive type lantern
 - ✓ Combustible gas/oxygen detector
 - ✓ U.S. Coast Guard approved life jacket or belt
- c. Engineering designs for confined spaces shall include fencing, covers, locking devices, warning signs, and/or other high visibility measures to prevent unauthorized entry. If below ground structures are not specifically designed for vehicle loads (direct or surcharge), traffic barriers shall be required. Safety measures required in the design shall be installed prior to technical certification of practices.
- d. Confined spaces require specific procedures and warning statements in the operation and maintenance plan.

(3.) Protection of domestic water supply

- a. The NRCS has a responsibility to protect domestic water supplies from contamination by avoidance, or by incorporating cross connection control features on livestock and irrigation systems. Note these are in addition to groundwater protection requirements at wells, as outlined in ND Century Code Chapter 33-18-01 Water Well Construction and Water Well Pump Installation and covered in individual ND Conservation Practice Standards. NRCS designers should specify the type of backflow prevention commensurate with the potential hazard and the population at risk.
- b. Backflow is water flow in reverse direction caused by back siphonage or back pressure. Back siphonage is caused by negative pressure in pipeline systems, which may allow undesirable substances to be drawn into a potable water supply. Negative pressure can be created by a water line repair or break that is lower than the water service point. It could also be caused by a lower water main pressure due to high water usage at an off-site location. Back pressure is caused by positive pressure in the piping system, allowing undesirable substances to be forced into a domestic water supply. Positive pressure can be created by booster pumps, chemical injectors, elevation differential, or heating elements.
- c. Professional judgement must be applied in the proper selection of cross-connection control features. The following chart, however, provides general guidance on proper specification of assemblies for various purposes:

<-----Control Feature Type----->

Protection Achieved	Reduced Pressure Principal Assembly	Double Check Valve Assembly	Pressure Vacuum Breaker Assembly	Air Gap
Continuous Pressure	X	X	X	
Possible Back Pressure	X	X		X
Possible Back Siphonage	X	X	X	X
Nontoxic	X	X	X	X
Toxic (chemicals and pathogens)	X		X	X

- d. The North Dakota Field Office Technical Guide provides additional, detailed requirements appropriate to backflow protection for individual ND Conservation Practice Standards.