Pouring Quality Concrete

Greg Brenneman
Iowa State University Extension
Field Specialist/Ag Engineering

Will you be pouring any concrete this summer? Here are a few simple ways to ensure your concrete is long lasting and as strong as you specified from the ready mix plant.

Before any concrete is poured, a uniform subgrade is needed. A concrete slab requires no special soil, but it must have uniform support. Hard or soft spots will cause uneven settlement and cracking of the concrete. Also, when a concrete slab is being poured, moisten the subgrade to prevent the dry soil or sand from drawing moisture away from the concrete.

The two biggest problems that result in weak concrete are too much water in the concrete and too little water while it cures. The more water added per bag of Portland cement in a concrete mix, the weaker the concrete will be. Adding only one-half gallon per bag of cement (about three gallons per cubic yard of concrete) lowers the strength more than 10 percent (500 pounds per square inch). If you order a certain strength of concrete, and then add water at the job site, the final strength of the concrete will be reduced. The simple rule for quality ready mix concrete is "don't add water."

While it is important not to use too much water in the concrete mix, it is even more important to keep the concrete moist after it's in place.

Concrete does NOT dry. Rather, it cures or hardens by a reaction between the cement and water. For proper curing, you must keep the water in the concrete. If concrete is allowed to air dry, it can lose up to 50 percent of its strength compared to properly cured concrete. The result is weak concrete with a soft, non-durable surface.

Start the curing process as soon as the surface is hard enough to prevent damage (firm, but still damp to the touch). Allow the concrete to cure at least seven days for optimum strength. Commonly used methods for curing concrete include:

- Covering the concrete with a plastic sheet.
- Spraying a curing compound (water-tight coating) on the concrete.
- Continuously wetting the concrete with a soaker hose.

Following these few simple steps will give you a high quality concrete product. The keys to success are "don't add water" and "keep it wet."

Control of Muskrat Damage in Ponds

In the Midwest, most muskrats live in streams. In spring or fall, some of the muskrats move. In their spring travels, they are hunting food and safe places to rear young; in fall, they are hunting food and safe winter quarters. These traveling muskrats usually stay in their summer locations until fall and in their winter homes until spring. They may stay in either location permanently if the food and denning facilities are good enough. When they travel, they may go several miles, even across dry uplands, in their search for better places to live.

It is on these travels that muskrats find farm ponds and it is usually during spring that they locate in them. If the pond is large and contains abundant food, they may stay. But ponds seldom contain enough aquatic vegetation to hold muskrats past the fall season, especially if they can find better homes.

Pond muskrats dig burrows, and may also build homes of mud and vegetation in shallow water. It is the digging that most pond owners object to, especially when holes are dug into the dam. In digging and working around the shallows, muskrats stir up mud that may keep these areas or the whole pond cloudy. This is objectionable in a pond where clear water is wanted for swimming, livestock use and fish production.

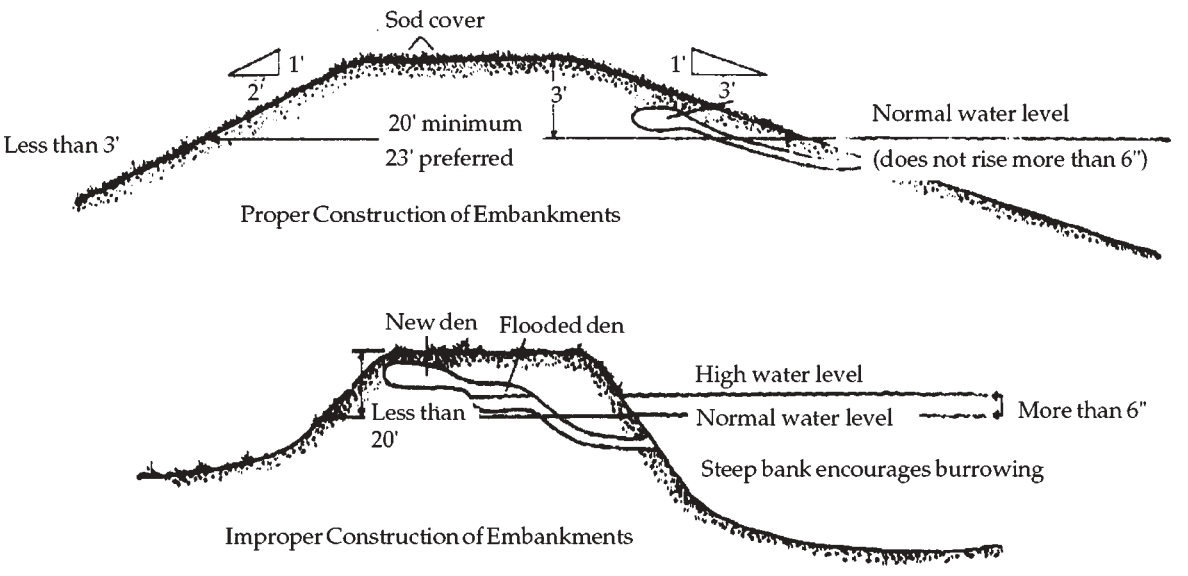
When muskrats dig into dams, it is to make homes. The burrows start under water, then rise to a chamber hollowed out above water level, with one to two feet of solid earth and sod above. The muskrats don't tunnel through the dam unless the water rises high enough to make them dig a new chamber, higher up. That is one reason for specifying high freeboard and a wide spillway: these keep the water from coming up high enough to force the muskrats to dig new higher chambers dangerously close to the surface. Also, one reason for keeping livestock off a pond area is to avoid the chance of putting a hoof through the roof of the den and starting a wash.

Old or abandoned muskrat dens may cave in. Then it is usually a simple job, if done at once, to fill in the cavity and reseed to prevent washing.

Since muskrats are especially attracted to ponds containing large amounts of muskrat food plants, eliminating these plants is good muskrat control. Plants most favored by muskrats are the starchy ones—cattail, arrowhead, and the like. These plants should never be planted in fish ponds, because they interfere with fish production. Plant control is also good muskrat control.

If muskrats can't find a better place, they will sometimes live in ponds even when food supply is limited. The only sure way to keep them out is by fencing the entire pond and spillway with fur-farm fence. This ordinarily is too expensive, and the only other recourse, if the animals are definitely a nuisance, is to remove them.

Trapping with pinch-type lethal traps is the most efficient way of removing muskrats. Various chemicals have been tried to keep muskrats out of ponds, or to drive them out. The same is true of other repellents. Still the most effective removal is by trapping. (DJ)



"Private Drinking Water Systems" is July Rural Living Clinic

The University of Nebraska Cooperative Extension is presenting a series of seminars entitled "Acreage Insights — Rural Living Clinics" to help acreage owners manage their rural living environment. "Private Drinking Water Systems" is the seventh in the series, to be held July 24 from 9 to 11 a.m. at the Lancaster Extension Education Center, 444 Cherrycreek Road.

A properly designed, installed, and maintained private drinking water system should meet your needs by providing an adequate supply of safe and aesthetically acceptable water. This program will help homeowners manage drinking water systems to meet their needs.

Topics that will be addressed include the interrelationship between ground and surface water, point and non-point source pollution, basic drinking water well design and installation, as well as water quantity and quality needs, protection of the water supply, monitoring recommendations, and treatment options.

Speaker Sharon Skipton, University of Nebraska Cooperative Extension, has helped develop several publications and programs to help people manage private drinking water systems. Skipton has provided education for homeowners across the state.

Pre-registration is $10 per person and must be received three working-days before the program. Late registration is $15 per person. For more information, visit the Acreage & Small Farm Insights Web site at acreage.unl.edu or contact Skipton at (402) 472-3662.

WATERWHEEL

Drinking Water Bacteria

Note: This is part of a series of articles related to rural water issues.

The presence of bacteria is a concern when considering the safety of drinking water. Intestinal infections, dysentery, hepatitis, typhoid fever, cholera and other illnesses can be caused by specific disease-causing bacteria.

Bacterial contamination can result from a number of sources. Human and animal wastes are a primary source of bacteria in water. Additional sources include seepage or discharge from septic tanks and sewage treatment facilities; insects, rodents or animals entering a well; or flood water or surface runoff entering a well.

The environmental protection agency (EPA) requires all public water suppliers test for coliform bacteria and deliver water that meets the EPA standard that no coliform bacteria be present. Owners of private water supplies are responsible for having their water supply tested to ensure it is safe from bacterial contamination.

If a private water supply contains bacteria, both well location and construction should be evaluated in an attempt to identify and eliminate the source of contamination. A contaminated water supply can be disinfected with appropriate methods.

More on Flooding

Flood waters commonly contain high levels of bacteria. Whenever a well is inundated by flood waters or surface runoff, bacterial contamination is likely. Shallow wells and wells that do not have water-tight casings can be contaminated by bacteria infiltrating with the water through the soil near the well, especially in coarse-textured soils.

Testing for bacterial contamination and nitrate should be considered after flooding. (DJ)

Cooperative Extension has extensive resources on drinking water and private well systems. Stop by the extension office, go to lancaster.unl.edu or attend the upcoming Rural Living Clinic on "Private Drinking Water Systems" (see related article).