**Section 920.60 Drilled Wells in Unconsolidated Formations**

a) General. Unconsolidated formations such as sand and gravel may extend to or near the ground surface. Generally, however, they lie below the ground surface at varying depths and are covered by an overburden of earth. The kind, nature and depth of the overburden are factors in determining how a well shall be constructed.

b) Unconsolidated Formations. When wells are constructed in unconsolidated formations, a casing shall be installed the entire depth of the formation. Wells constructed in unconsolidated formations shall have a minimum of 20 feet of permanent casing.

1) When an oversized drill hole is constructed for the installation of the casing, the diameter of the drill hole shall be a minimum of 3 inches greater than the outer diameter of the casing or coupling, whichever is greater. If plastic well casing is installed, it shall be installed as required in Section 920.90(g). After the well casing is installed, the annular space shall be grouted as provided in Section 920.90(h). The annular space is from within a maximum of 10 feet of the top of the screen to finished ground surface. The tremie pipe shall be installed to the bottom of the annular space. No device shall be installed to prevent the tremie pipe from being installed into the annular space or to prevent the grout from filling the annular space. Excessive development and washing shall not be used to induce collapse of the borehole wall or to reduce the amount of open annular space. (See Illustration A.)

2) When the casing is installed by mechanically driving the casing, an oversized hole shall be constructed to a depth of at least 10 but not more than 20 feet to allow removal of the drive nipple and installation of a joint of casing. While the casing is being driven, the bottom of the oversized hole shall be filled with granulated bentonite or natural clay mixture. After the casing is installed, either the open annular space that exists around the well casing shall be grouted as required in Section 920.90(h) or, when the diameter of the oversized hole is a minimum of 3 inches greater than the outer diameter of the casing or coupling, the open annular space that exists around the well casing can be filled with bentonite or natural clay. (See Illustration B.)

c) Gravel Pack Construction. When an oversized drill hole is constructed to permit the placement of a gravel pack around the well screen, the diameter of the drill hole shall be a minimum of 3 inches greater than the outer diameter of the casing or coupling, whichever is greater. The annular opening between the casing and drill hole shall be grouted in accordance with Section 920.90(h). If a permanent outer casing is installed, it shall extend to a depth of at least 20 feet and the annular opening between the drill hole and the outer casing shall be grouted in accordance with Section 920.90(h). The annular opening between inner and outer casings shall be sealed at the top of the casing. The seal shall be made in such a manner as to prevent water or contaminants from entering the annular space between the inner and outer casing. If plastic well casing is installed, it shall be installed as required in Section 920.90(g). (See Illustration C.)

1) All gravel placed in the well shall be clean and shall be washed and disinfected prior to placement, or provisions shall be made for disinfection in place.

2) Gravel refill pipes may be installed if they terminate above ground surface and are provided with watertight caps.

3) Wells designed for placement of an artificial gravel pack shall be provided with an adequate screen having openings sized on the basis of the grain size of the gravel. The well shall be developed to ensure free entry of water without sediment.

(Source: Amended at 37 Ill. Reg. 19676, effective November 25, 2013)