**Section 925.40 Pump Installation**

a) Upper Well Terminal. Well casing and pitless well adapters shall terminate not less than 8 inches above the finished ground surface or pump house floor and at least 24 inches above maximum high water level in areas where flooding is likely to occur. No casing shall be cut off or cut into below ground level except to install a pitless well adapter.

b) Well Pits

1) No new well pits shall be allowed.

2) Existing pits will be accepted if the following conditions exist:

A) The pit shall be structurally sound and watertight. The casing shall extend at least 12 inches above the pit or basement floor and have a well seal to prevent contaminants from entering the well.

B) A watertight manhole and cover must be provided for the pit.

3) No existing well pit shall be modified to comply with subsection (b)(2) of this Section. Existing pits which are not in compliance with subsection (b)(2) shall be eliminated and the floor or one wall of the pit shall be broken or removed and the pit shall be filled with compacted earth.

c) Pitless Well Adapter

1) Installation and Approval. No well casing shall be cut off or cut into below ground surface except to install a pitless well adapter below the frost level. Pitless well adapters or pitless units installed on plastic well casing shall be pressurized at the point of attachment with the well casing, unless the pitless unit is solvent welded onto the plastic well casing and the riser casing of the pitless unit is plastic. Pitless well adapters installed on steel well casing shall be pressurized at the point of attachment with the well casing, unless the pitless unit is threaded or welded onto the well casing. Pitless well adapters shall comply with the requirements of the NSF International Standard Number 56 entitled Pitless Well Adapters and shall be tested and approved as meeting this standard by Allied Laboratories, 716 North Iowa Avenue, Villa Park, Illinois and shall be listed by the Department as meeting this standard. A list of approved pitless well adapters will be periodically updated and a copy of this list may be obtained from the Department. The annular opening between the well casing and the well bore hole or any excavation made to install the pitless adapter shall be filled with earth to minimize settling and mounded to provide drainage away from the well. The contractor installing the pitless well adapter shall be responsible for the installation of the earth backfill.

2) Well Caps. There shall be no openings through the well cap except for a factory installed vent, air line and power supply wiring, unless a proposal is submitted to and approved by the Department. To be approved, the proposal must show that any entrance into the well cap is watertight and meet the following conditions:

A) Prevent surface water from entering the water supply.

B) Be secured in position.

C) Be removable with tools only.

D) Be resistant to weathering and corrosion.

d) Hand Pumps. Hand pumps shall be of the force type equipped with a packing gland around the pump rod, a delivery spout which is closed and downward directed, and a one-piece bell type base which is part of the pump stand or is attached to the pump column in a watertight manner. The bell base of the pump shall be securely attached to the casing or pipe sleeve.

e) Power Driven Pumps. The design and operating principles of each type of power driven pump determines where each may be located with respect to a well. The location selected for the pump determines what factors must be considered to make an acceptable installation.

1) Location Above Well. Any power driven pump located over a well shall be so mounted on the well casing, pipe sleeve, pump foundation or pump stand that a watertight closure is or can be made for the open end of the casing or sleeve. The pump base bolted with a neoprene or rubber gasket or equivalent watertight seal to a foundation or plate provides an acceptable seal. On large pump installations, the bolting may be omitted when the weight of pump and column is sufficient to make a watertight contact with the gasket. If the pump unit is not located over the casing or pipe sleeve, but the pump delivery or suction pipe emerges from the top of the well, a well seal or equivalent shall be installed between the well casing and pipe to provide a watertight closure.

2) Location in Well. This type of location is permissible for submersible pumps only. When the discharge line leaves the well at the top of the casing, the opening between the discharge line and casing or pipe sleeve shall be sealed watertight with a well seal or equivalent device. When an underground discharge is desired, a pitless well adapter shall be installed. A check valve shall not be permitted between the well and the inlet side of the pressure tank.

3) Offset From Well. Pumps offset from the well, if not located in an above ground pump house or other building, may be located in an approved basement provided the pump and all suction pipes are elevated at least 12 inches above the floor. All portions of suction lines buried below the ground surface between the well and the pump shall be enclosed in a pressure discharge line maintained at system pressure.

f) Vents. Vent piping shall be of adequate size to allow equalization of air pressure in the well and where wells are greater than four inches in diameter, the vent shall be not less than one-half inch in diameter. Vent openings shall be located in such a manner as to prevent contamination of the well. The vent opening shall be turned down, secured in position, reasonably tamper proof, and be screened with not less than 24-mesh durable screen or filtered in such a manner as to prevent the entry of insects and shall terminate at least 8 inches above finished ground surface. Particular attention shall be given to proper venting of wells in areas where toxic or inflammable gases are known to be a characteristic of the water. If determined that either of these types of gases are present, all vents when located in buildings shall be extended to discharge outside of the building at a height where they will not be a hazard. Venting is required on all wells except driven water wells or flowing water wells.

g) Pump Bearing Lubrication. Lubrication of bearings of power driven pumps shall be with water or oil which will not adversely affect the quality of the water to be pumped.

1) Water Lubrication. If a storage tank is required for lubrication water, it shall be designed to protect the water from contamination.

2) Oil Lubrication. The reservoir shall be designed to protect the oil from contamination. The oil shall not contain substances which will cause odor or taste to the water pumped.

h) Electrical Installations. All electrical installations shall be performed and maintained in accordance with the National Electrical Code 1996 edition.

i) Backflow Prevention For Chemical Injection Systems.

1) Non-Potable Water Wells. Where a chemical injection system is connected directly to a water well used for irrigation and which is not used as a potable water supply, a single check spring loaded backflow preventer shall be installed between the point of chemical injection on the pump discharge piping and the water well in accordance with the manufacturer's instructions. The backflow device (see Illustration A) shall be provided with the following:

A) Valving so that water can be drained from the system to prevent freezing.

B) A vacuum relief valve to prevent backsiphoning of chemicals into the well.

C) An automatic low pressure drain at least 3/4 inches in diameter, positioned so that when draining occurs liquid will run away from the well. At new installations, the low pressure drain shall be at least six inches above grade. The automatic low pressure drain shall quickly drain the check valve body of water when operation of the water well pump is discontinued.

D) A watertight seal around the check valve.

E) An inspection port four inches in diameter to allow inspection of the operation of the check valve.

F) The check valve shall withstand a minimum hydraulic pressure of 150 psi without leaking.

2) Existing chemical injection systems connected directly to a water well shall be brought into compliance with this Section by January 1, 1996. When modifications, reconstruction, or repairs to the chemical system are made or where removal of the pump takes place, the chemical system and well shall conform to this Section.

3) The water well pump and the chemical injection pump shall be electrically connected so that when the water well pump stops, the chemical pump will shut off automatically.

4) All backflow devices which meet the requirements of subsections (i)(l)(A) through (F) are approved for this purpose. The Department shall establish and make available a list of all such backflow devices.

j) Piping Material. All piping from the pitless adapter of a potable water well to the pressure tank shall be watertight and a minimum of 160 p.s.i. rating at 73.4~F (+ or - 3.6~F), and shall conform to the materials required for water service pipe as listed in Section 890.Appendix A, Table A Approved Materials for Water Service Pipe of the Illinois Plumbing Code (77 Ill. Adm. Code 890) or listed in Table A of this Part. All piping used in the chemical injection system shall be chemically compatible with the chemical product being applied.

k) Sampling Faucets. Provision shall be made for the collection of water samples by installing a down turned smooth nosed faucet, not less than 18 inches above the floor, in a convenient location between the water well and the pressure tank or as near to the well as possible.

l) Reports. When a water well pump has been installed in a new well or when a pump size is changed or the pump setting depth is changed in an existing well, the contractor shall submit a report of pump installation within 30 days to the Department, or approved local health department, on such forms as are prescribed and furnished by the Department.

(Source: Amended at 22 Ill. Reg. 4028, effective April 1, 1998)