



www.nhwaterwell.com

Information: New Hampshire Water Well Association

Information in this document is provided in good faith to inform the public about groundwater and water wells. Well owners should ensure that their well contractor has obtained permits (if required) and has referred to local codes, rules, regulations and laws for site selection, construction, maintenance and operation of water wells and water system equipment.

WELL CASING AND WELL SCREENS

Well Casing

The selection of casing material and casing diameter for a water well is not something that can be left to consumer choice. The professionals responsible for the design and construction of a well make their decisions based on practical installation criteria, the type of equipment they will be using to construct the well, state and local code requirements and cost. The purpose of a well is to provide access to the aquifer. Once constructed, the well is the conduit for the pumping system that will bring water from the aquifer for use at the surface. Plastic well casing is not recommended for use in New Hampshire. Freezing conditions can make plastic brittle and there is potential danger from snow-plow impact.

Well casing provides support for the wall of the well so that loose rock fragments or unconsolidated sand and gravel through which the well has penetrated do not collapse into the well shaft. The casing protects the electrical wires, pull cable and water tubing/piping that are connected to the submersible pump. It also provides a vertical-cylindrical surface that in conjunction with the outer vertical wall of the drilled hole can facilitate the placement of an impermeable seal of cuttings or grout around the well casing. The seal in the annular space outside of the casing prevents surface water and potential contaminants (bacteria, fertilizers, pesticides etc.) from descending along the outside wall of the well down to the zones of stored ground water.

Many wells are drilled through unconsolidated rock materials before reaching solid bedrock. The process of “seating” the casing into bedrock is frequently accomplished with a drive-shoe that is tightly seated before drilling continues at a smaller diameter (without casing) through the bedrock. A driller, using proper care and technique, will seat steel casing into bedrock as is required by New Hampshire regulations.

Installation of well casing must avoid excessive bending or vertical (downward compressive or upward tensile stresses) that can deform or crack casing materials. Damaged casing can reduce the well's integrity and make it difficult or impossible to install pumping equipment. It may also be difficult to remove equipment for well maintenance or equipment repair if the well casing is not installed properly.

Well Screens

A well screen is an engineered device used in water wells where the zone containing the water for the well (the aquifer) is comprised of loose or unstable material. The screen prevents rock fragments from entering the well, helps support the wall of the well and allows water to enter. Keeping silt or sand particles out of a well is important to prevent abrasion and early failure of the well pump and/ or plugging of conditioning equipment.

In all wells, it is preferable to have water enter slowly. Turbulent flow can more easily transport particles and agitated water may release minerals and clog up the well. Selection of the right screen and the right length of screen can help improve a well's efficiency and productive life. A commonly used and effective screen type for water wells uses a continuous slot construction, made by wrapping and welding a continuous length of wire or plastic around vertical rods. Screens are also made by precision machine slotting (vertical or horizontal slots) or by making louver openings.. Screens are usually installed by fixing the screen to the end of the casing, which is then lowered down the well to the selected water-producing zone(s) of the aquifer.

Most New Hampshire wells in bedrock do not need a well screen. Well screens are not a “one size fits all” item, and if one is needed, well contractors know how to select a screen and choose the appropriate screen length.

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