

## **WATER DISTRIBUTION SYSTEMS – UNL LINCOLN CAMPUS**

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**City Campus:** The majority of City Campus are fed directly from the City of Lincoln distribution system. Typically, each building is served by a separate meter and backflow preventer installed per City of Lincoln Standards and Guidelines. As opportunities arise to re-feed any City building on a UNL service by the City of Lincoln service, these should be pursued when cost effective. It is a goal of the University to eventually serve all City Campus facilities from the Lincoln City Water distribution system.

**East Campus;**

UNL owns, operates and maintains the underground water distribution system that serves the majority of East campus facilities. This system provides treated potable water for domestic water systems, fire protection systems, irrigation systems, HVAC systems and non-potable water systems (for laboratory use). Typically, each building is served by a separate meter and backflow preventer installed per City of Lincoln Standards and Guidelines

**Outstate Facilities;**

Outstate facilities need to be addressed on a case by case basis and shall be coordinated with the local authority having jurisdiction. Wherever the City of Lincoln is references in this narrative, substitute “the local authority having jurisdiction.”

**Water Quality / Chemistry:** Water quality is monitored by Lincoln Water System (LWS). See the LWS website for information pertaining to water quality and chemistry.

**Compliance:** The design and construction of all water distribution systems on campus shall be in complete compliance with the current revision of the City of Lincoln design standards.

**Distribution Piping:** Extensions to the campus water distribution system should be designed to provide a grid type system where all points of usage can be fed from two or more directions. The number of dead ends in the distribution system shall be kept to a minimum to avoid the reduced water quality that typically accompanies them. A means for flushing the system (e.g. a fire hydrant) shall be provided at each unavoidable dead end. All distribution piping shall be sized and configured appropriately to serve the ultimate future need for water in the geographical area being served. The direct-buried distribution system shall be constructed of piping that with a minimum 48” depth of cover.

Pipe connecting buildings shall originate from a loop that provides two directions in order to provide the building reliability and optimal water quality. Three isolation valves shall be installed at each branch connection to the main piping in order to maximize reliability and operational flexibility. Valves shall be installed beneath grass areas and/or parkways where possible. Location beneath streets, or other high traffic paved areas shall be avoided. Branch valves shall be located as near the mains as practical.

**Hydrants:** Fire hydrants shall be installed at locations throughout the water distribution grid across campus as required by City of Lincoln standards. Coordinate locations with Lincoln Fire and Rescue.

**Building Services:** Each building shall be provided with separate domestic water and fire protection water services per City of Lincoln requirements.

**Backflow Prevention:** The domestic water service must incorporate back flow devices (per city of Lincoln standards) at the building service entrance within the building being served. The fire protection service must incorporate a double check backflow prevention assembly at the building service entrance within the building being served. Installation of meters and/or backflow preventers in outdoor pits is not permitted.

**Water Meters:** These are required at all buildings. See *Utility Metering* within these Design Guidelines for details.

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**Irrigation Systems:** Each permanently installed irrigation system shall be fed directly from the water distribution system and shall be metered separately. A City of Lincoln approved backflow prevention device shall be installed.

**Temporary Systems:** When it is necessary to use water from a fire hydrant for a temporary purpose, such as irrigation or filling an outdoor piping system, the temporary water supply system shall incorporate a portable meter and appropriate backflow prevention device. Those involved in installing and using a temporary water supply system must check with the City of Lincoln for direction, rates, and assistance. It is against the law in Nebraska to tamper with or utilize a fire protection hydrant without permission of the owner of the water system.

**Specific Design Information:** The actual pressure within the distribution system at a specific building/site at any given time depends upon that building's location within the distribution system, its elevation, and the usage of water throughout the system. The system pressure that should be used for design purposes at a specific building/site should be obtained from FMP engineering. Hydrant flow tests are provided upon request by the City of Lincoln and FMP. Information regarding pipe size/location/configuration, hydrant location and valve location/configuration should be obtained in the same manner. Clarifications and additional information are available from FMP via the FMP Project Manager.