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Solar Hot Water Heating Systems

The intent of this Bulletin is to provide clarification to engineers, designers, and installers as to the requirements in the Building By-law regarding the installation of solar hot water systems.

Typical solar hot water systems transfer the sun's energy from roof-mounted solar collectors to a hot water storage tank through an assembly of pipes, pumps, and heat exchangers. In most installations, either a food-grade glycol or tap water is used as the heat transfer medium. In all installations, the heat transfer medium is considered non-potable.

By-law Regulations

The City's Waterworks By-law (Section 14) requires that new or replacement heat exchangers must be double-walled with an integrated leak path, and be designed and tested for use with potable water systems in conformance with the International Association of Plumbing and Mechanical Officials (IAPMO) Material and Property Standard IAPMO PS 92-2008a.

The Building By-law (Part 7 in Division B) requires that pre-packaged solar hot water systems conform to CAN/CSA-F379.1-88, "Solar Domestic Hot Water Systems (Liquid to Liquid Heat Transfer)", and be installed in conformance with CAN/CSA-F383-87, "Installation Code for Solar Domestic Hot Water Systems". Non-packaged systems may be installed, but must be designed by a Professional Engineer.

Acceptable Solutions

Packaged systems certified to F379.1-88 that do not have a double-walled heat exchanger with an integrated leak path must be upgraded to include a double-walled heat exchanger with an integrated leak path. In both packaged and non-packaged (engineered) systems, the City will accept the use of heat exchangers that are not CSA-certified provided they are either: a) certified to IAPMO PS 92-2008a, or b) certified to UL(C) 207, where the unit is marked as suitable for installation in a potable water system.

Structural load and roof connection details will be required for the installation of any roof-mounted solar energy generation system.

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