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## Technical Bulletin: #16 Electrical Bonding and Grounding

In accordance with NFPA 70 National Electrical Code (NEC), proper bonding and grounding of gas-piping systems in a structure and the structure's electrical system is required by a qualified electrician. The requirement provides an effective electrically continuous path in an effort to conduct stray voltage/current safely to ground. The NEC also states that it is good practice to bond all metallic systems and objects. In accordance with these requirements, WARDFLEX® requires the gas-piping system to be bonded to the electrical earth grounding system of the structure through the use of a bonding clamp and wire.

- The bonding point must be in as close proximity to the electrical panel as practical; close proximity of the bonding point to the gas meter is also desirable.
- The wire gauge for this bond must be sized, at a minimum, for the full amperage available through the electric service.
- Further minimizing impedance over the bonding assembly is desirable. The NEC should be referred to for additional requirements and specific techniques for bonding and grounding.

For attachment to the WARDFLEX® gas piping system, bonding clamps must be attached to the WARDFLEX® brass fitting, to a steel manifold, or to a rigid pipe component connected to a WARDFLEX® fitting. The corrugated stainless steel portion of the gas piping system shall not be used as the bonding attachment point under any circumstance.

The WARDFLEX® flexible gas piping or other gas system components shall not be used as a grounding electrode or as the grounding path for appliances or electrical systems.

Bonding and grounding requirements are also contained in NFPA 54 National Fuel Gas Code. NFPA 54 specifically requires:

*"...each above ground portion of a gas piping system which is likely to become energized shall be electrically continuous and bonded to a designed, permanent, low impedance effective ground fault current path."*

Proper grounding and bonding may reduce the risk of damage and fire from a lightning strike. Lightning is a highly destructive force. Even a nearby lightning strike that does not strike a structure directly can cause systems in the structure to become energized. If the systems are not properly bonded, the difference in potential between the systems may cause the charge to arc to another system. Arcing can cause damage to CSST. Bonding and grounding as set forth above should reduce the risk of arcing and related damage.

Depending upon conditions specific to the location of the structure in which the WARDFLEX® system is being installed, including but not limited to whether or not the area is prone to lightning, the owner of the structure should consider whether or not a lightning protection system is necessary or appropriate. Lightning protection systems are beyond the scope of this bulletin, but are covered by NFPA 780 which is the Standard for the Installation of Lightning Protection Systems, and other standards.

