



GROUNDING NOTES

IT IS THE RESPONSIBILITY OF THE INSTALLER TO CONNECT ALL ELECTRONIC IRRIGATION EQUIPMENT FOR WHICH THEY ARE RESPONSIBLE TO EARTH GROUND IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE (NEC.) GROUNDING COMPONENTS WILL INCLUDE THE ITEMS DESCRIBED IN THE FOLLOWING PARAGRAPHS, AT A MINIMUM

USE GROUND ELECTRODES THAT ARE UL LISTED OR MANUFACTURED TO MEET THE MINIMUM REQUIREMENTS OF ARTICLE 250-52 OF THE 1999 NEC. AT THE VERY MINIMUM, THE GROUND CIRCUIT WILL INCLUDE A COPPER CLAD STEEL GROUND ROD, A SOLID COPPER GROUND PLATE AND 100 POUNDS OF WEATHERMATIC GEM GROUND ENHANCEMENT MATERIAL, AS DEFINED BELOW AND PER THE FOLLOWING DETAIL.

GROUND RODS ARE TO HAVE A MINIMUM DIAMETER OF 5/8" AND A MIN. LENGTH OF 8'-0". THESE ARE TO BE DRIVEN INTO THE GROUND IN A VERTICAL POSITION OR AN OBLIQUE ANGLE NOT TO EXCEED 45 DEGREES AT A LOCATION 8'-0" FROM THE ELECTRONIC EQUIPMENT, THE GROUND PLATE, OR THE WIRES AND CABLES CONNECTED TO SAID EQUIPMENT, AS SHOWN IN THE DETAIL ABOVE. THE ROD IS TO BE STAMPED WITH THE UL LOGO. A 6 AWG POLY INSULATED SOLID COPPER WIRE SHALL BE

CONNECTED TO THE GROUND ROD BY THE INSTALLER USING A CADWELD "ONE-SHOT" WELDING KIT. THIS WIRE SHALL BE CONNECTED TO THE ELECTRONIC EQUIPMENT GROUND LUG AS SHOWN IN THE DETAIL ABOVE.

THE COPPER GROUNDING PLATE ASSEMBLIES (WEATHERMATIC SL-GND-PLATE) MUST MEET MINIMUM REQUIREMENTS OF ARTICLE 250-52(D) OF THE 1999 NEC. THEY ARE TO BE MADE OF COPPER ALLOY INTENDED FOR GROUNDING APPLICATIONS AND WILL HAVE MINIMUM DIMENSIONS OF 4"x96"x0.0625" (CONTROLLER) OR 4" X 48" X 0.0625" (DECODER). A 10'-0" CONTINUOUS LENGTH (NO SPLICES ALLOWED UNLESS USING EXOTHERMIC WELDING PROCESS) OF 6 AWG POLY INSULATED SOLID COPPER WIRE IS TO BE ATTACHED TO THE PLATE BY THE MANUFACTURER USING AN APPROVED WELDING PROCESS. THIS WIRE IS TO BE CONNECTED TO THE ELECTRONIC

EQUIPMENT GROUND LUG AS SHOWN IN THE GROUNDING DETAILS. THE GROUND PLATE IS TO BE INSTALLED TO A MINIMUM DEPTH OF 30" OR BELOW THE FROST LINE IF IT IS LOWER THAN 30", AT A LOCATION 8'-0" FROM THE ELECTRONIC EQUIPMENT AND UNDERGROUND WIRES AND CABLES. TWO 50-POUND BAGS OF SL-GEM GROUNDING ENHANCEMENT MATERIAL MUST BE SPREAD SO THAT IT SURROUNDS THE COPPER PLATE VENTILY ALONG ITS LENGTH WITHIN A 6" WIDE TRENCH. SALTS, FERTILIZERS, BENTONITE CLAY, CEMENT, COKE, CARBON, AND OTHER CHEMICALS ARE NOT TO BE USED TO IMPROVE SOIL CONDUCTIVITY BECAUSE THESE MATERIALS ARE CORROSIVE AND WILL CAUSE THE COPPER ELECTRODES TO ERODE AND BECOME LESS EFFECTIVE WITH TIME.

INSTALL ALL GROUND CIRCUIT COMPONENTS IN STRAIGHT LINES. WHEN NECESSARY TO MAKE BENDS, DO NOT MAKE SHARP TURNS. TO

PREVENT THE ELECTRODE-DISCHARGED ENERGY FROM RE-ENTERING THE UNDERGROUND WIRES AND CABLES, ALL ELECTRODES SHALL BE INSTALLED AWAY FROM SAID WIRES AND CABLES. THE SPACING BETWEEN ANY TWO ELECTRODES SHALL BE AS SHOWN IN THE GROUNDING DETAILS, SO THAT THEY DONT COMPETE FOR THE SAME SOIL.

THE EARTH-TO-GROUND RESISTANCE OF THIS CIRCUIT IS TO BE MEASURED USING A MEGGER, OR OTHER SIMILAR INSTRUMENT, AND THE READING IS TO BE NO MORE THAN 1.0 OHMS. IF THE RESISTANCE IS MORE THAN 1.0 OHMS, ADDITIONAL GROUND PLATES AND SL-GEM ARE TO BE INSTALLED IN THE DIRECTION OF AN IRRIGATED AREA AT A DISTANCE OF 10', 12', 14', ETC. IT IS REQUIRED THAT THE SOIL SURROUNDING THE COPPER ELECTRODES BE KEPT AT A MINIMUM MOISTURE LEVEL OF 15% AT ALL TIMES BY DECODING AN IRRIGATION STATION AT EACH CONTROLLER LOCATION. THE IRRIGATED AREA SHOULD INCLUDE A CIRCLE WITH AN

8' RADIUS AROUND THE GROUND ROD AND A RECTANGLE MEASURING 1' X 24' AROUND THE PLATE.

ALL UNDERGROUND CIRCUIT CONNECTIONS ARE TO BE MADE USING AN EXOTHERMIC WELDING PROCESS BY UTILIZING PRODUCTS SUCH AS THE CADWELD "ONE-SHOT" KITS. SOLDER SHALL NOT BE ALLOWED TO MAKE CONNECTIONS. IN ORDER TO ENSURE PROPER IGNITION OF THE "ONE-SHOT" THE CADWELD T-320 IGNITER MUST BE UTILIZED. THE 6 AWG POLY INSULATED COPPER WIRES ARE TO BE INSTALLED IN A STRAIGHT LINE AS POSSIBLE, AND IF IT IS NECESSARY TO MAKE A TURN OR A BEND, IT SHALL BE DONE IN A SWEEPING CURVE WITH A MINIMUM RADIUS OF 8' AND A MINIMUM INCLUDED ANGLE OF 90 DEGREES. MECHANICAL CLAMPS SHALL BE PERMITTED TEMPORARILY DURING THE RESISTANCE TESTING PROCESS, BUT ARE TO BE REPLACED WITH CADWELD "ONE-SHOT" KITS IMMEDIATELY THEREAFTER.