UL 2996

Outline of Investigation for In-Ground Boxes

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Summary of Topics

The is the First Issue of the Outline of Investigation for In-Ground Boxes, UL 2996, for use in accordance with the National Electrical Code, ANSI/NFPA 70. In-Ground Boxes are intended to provide permanent power in open spaces. The need and desire to utilize commercial outdoor space for more than recreation is on the rise in Corporate, Educational and Hospitality sectors. Companies are creating spaces outdoors, allowing employees to Improve Working Environment, Increase Productivity and Stimulate Creativity. Universities regularly hold classes and other educational events outdoors. Hotels and Conference Centers are adapting outdoor spaces to increase revenue by offering Social Events and Business Meetings. Questions regarding interpretation of requirements should be directed to the responsible UL Staff.

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INTRODUCTION

1 Scope

1.1 This outline of investigation covers in-ground boxes with integral electrical enclosure(s) for housing wiring devices connected to a branch circuit. The unit is intended to be installed outdoors and in the ground. The unit provides access to one or more receptacle outlets and is intended to be installed in accordance with the National Electrical Code, NFPA 70, the NEC.

1.2 This outline does not cover in-ground boxes for use in hazardous locations as defined in the National Electrical Code, NFPA 70.

2 Normative References

2.1 Products covered by this outline shall comply with the reference installation codes and standard as appropriate for the country where the product is to be used. When the product is intended for use in more than one country, the product shall comply with the installation codes and standards for all countries where it is intended to be used.

2.2 Where reference is made to any Standard, such reference shall be considered to refer to the latest edition and revisions thereto available at the time of printing, unless otherwise specified.

2.3 ASTM C1028, ″Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method″

2.4 ASTM D543, ″Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents″

2.5 ASTM D570, ″Standard Test Method for Water Absorption of Plastics″

2.6 ASTM D635, ″Standard Test Method for Rate of Burning and/or Extent and Time of Burning Plastics in a Horizontal Position″

2.7 ASTM D2444, ″Standard Test Method for Determination of the Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight)″

2.8 ASTM G154, ″Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials″

2.9 US Dept. of Agriculture, Rural Utilities Service, RUS 7 CFR 1755.910, ″Specification for Outside Plant Housings and Serving Area Interface Systems″

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3 Glossary

3.1 IN-GROUND BOX – A vault intended to be buried outdoors which allows access to one or more power outlets.

3.2 ELECTRICAL ENCLOSURE – A compartment of an in-ground box relied upon to provide electrical or mechanical protection intended to house electrical connections, splices, wiring devices, etc.

Note: the term enclosure used in 6.4.1.2 and Figure 6.1, refer to the three sided test enclosure.

4 General Requirements

4.1 Except as indicated in 4.2, a component of a product covered by this outline shall comply with the requirement for that component. A component shall comply with the ANCE, CSA, or UL standards as appropriate for the country where the product is to be used.

4.2 A component is not required to comply with a specific requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this outline; or

b) Is superseded by a requirement in this outline.

4.3 A component shall be used in accordance with its rating established for the intended conditions of use.

4.4 The values given in SI (metric) units shall be normative. Any other values given shall be for information purposes only.

4.5 Each part of an in-ground box shall be so designed and constructed that, when mounted and installed as for normal use, the in-ground box ensures:

a) Adequate electrical and mechanical protection to the parts enclosed and minimizes danger to the user or surroundings;

b) Accessible outlets are protected when the box cover is closed; and

c) Ground water does not enter in to the wiring space.

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CONSTRUCTION

5 General

5.1 The electrical enclosure portions of in-ground boxes shall comply with all of the applicable construction requirements in the Standard for Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers, UL 514C.

5.2 In-ground boxes shall be designed such that outlets that are accessible when the enclosure cover is opened are suitably protected from ground water when the cover is closed.

5.3 All electrical enclosures and components intended to be submerged while this product is installed shall be rated Type 6 or Type 6P in accordance with the Standard for Enclosures for Electrical Equipment, Environmental Considerations, UL 50E.

5.4 An in-ground box shall have a means of securing the cover in the closed position both when in use and when not in use.

5.5 Receptacle types 5-15R, 5-20R, 6-15R and 6-20R provided with an in-ground box shall be rated Weather Resistance and shall be marked with the phrase ″Weather Resistant″ or the abbreviation “WR” that is visible after installation with the in-ground box as intended.

5.6 Surfaces exposed after installation of an area greater than 93.5 cm^2 (14.5 in^2) shall be coated with a slip resistant coating and comply with 7.3.

Note: Exposed surfaces of an area less than 93.5 cm^2 (14.5 in^2) are exempt from this requirement.

PERFORMANCE

6 Performance Electrical Enclosures

6.1 Volume verification test

6.1.1 Electrical enclosures of an in-ground box, their partitioned sections, raised cover, extension cover, or fitting shall hold a volume of water equal to or greater than the marked volume when tested in accordance with 6.1.2 – 6.1.5.

6.1.2 All separable cable clamps, associated screws, and fixture/luminaire studs are to be removed. Any projections that extend outside the plane of the open face of an electrical enclosure, such as ears for mounting a cover or a flush device, are to be ground flush with the face of the electrical enclosure.

6.1.3 All large openings are to be closed by flat, rigid plates sealed in place across the openings. One of the plates is to contain two small holes, one for the entrance of a measuring fluid, the other for venting air.

6.1.4 Using modeling clay, putty, glazing compound, or similar material:

a) A hole through the side or bottom of the sample and a hole between the sample and the plate mentioned in 6.1.3 are to be filled flush with the inside surface.

b) An internal hub, if tapped through, is to be filled flush with the end of the hub.

c) A bushed opening is to be filled flush with the conduit stop.

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