

CITY OF PALO ALTO


UTILITIES DEPARTMENT

SPECIFICATION FOR NON-CONCRETE ENCLOSURES

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1. SCOPE

This specification covers requirements for non-concrete enclosures intended for below ground installation suitable for incidental vehicular traffic. Enclosures refer to cover, box, extension(s) where required, and base. It includes standard sizes, design criteria, appearance, and performance tests.

2. STANDARDS

Each enclosure shall meet the applicable requirements of ANSI/SCTE 77 2007 (or latest edition) – Specification for Underground Enclosure Integrity, in so far as such standard does not conflict with the requirements of this specification. In case of conflict, the latter shall govern.

3. DEFINITIONS

Any area, any damage – That area or edge where load is most critical.

Base – Floor section for closing bottom opening of handhole. May also be used to increase depth.

Box – Upper main section of handhole containing a recess to receive the cover.

Cover – top surface section of handhole for closing top opening of box section.

Extension – Lower section that may be used to increase depth of handhole.

Handhole – Refers to the complete box, cover, and if provided, extension and base.

Incidental Traffic – installation in light commercial and residential sidewalks and behind curbs where no deliberate vehicular traffic is planned.

Key to concrete – Method of interlocking top edge of box to surrounding concrete place for sidewalk.

Knockout – Portion of extension or base with reduced thickness or notched outline accommodating removal for entrance of cable or conduit.

Pre-Load – Pre-Load shall be 5 percent of test load and shall be applied for a duration of 1-minute $\pm 1/4$, unloading in 1-minute $\pm 1/4$, and waiting 1-minute $\pm 1/4$ at zero load before proceeding with test.

4. GENERAL

- a. Unless otherwise requested by City of Palo Alto Utilities (“CPAU”), enclosures shall be designed and tested for TIER 15, at minimum, applications as defined in ANSI/SCTE 77.
- b. Enclosures shall be designed and suitable for installation and use through a temperature range of -40°C to +90°C.
- c. The enclosure shall be concrete gray color.
- d. The words “CPA ELECTRIC”, “CPA SL”, “CPA TS”, or “CPA COMM”, shall be cast or inscribed in the surface of all covers, depending on the application.
- e. Cover shall conform to dimensions shown in Figures 1 to 4 and be interchangeable with all other boxes of the same size manufactured to this specification.

- f. Covers shall be provided with a means to be fastened to the box such that a tool shall be required for their opening and removal. Such devices shall be located in diagonally opposite corners of the cover, shall be recessed in the cover, made of non-corrosive material, and shall withstand minimum torque and pullout strengths as specified in Section 6.b.
- g. Boxes and extensions shall be stackable to accommodate increased depths
- h. Boxes and extensions shall have straight sides.
- i. Boxes and extensions shall have adequate soil bearing surface to prevent settling in any soil.
- j. CPAU shall specify solid or open bottoms for boxes or extensions at the time of order.
- k. Knockouts shall be notched to provide a smooth edge upon removal for cable or conduit entry, see Section 5 for minimum knockout size.
- l. Top outer circumference of the box shall be provided with a method of keying the installed box to surrounding concrete that it may be placed in.
- m. Enclosure shall be suitable for installation, either direct buried in native soil, embedded in concrete, or embedded in asphalt surfacing.
- n. When covers are fastened in place, the enclosure shall be secure, preventing entry of any foreign probes that might result in electrical contact with conductors, connectors, or other equipment.

5. DIMENSIONS

Enclosures shall be available in the following nominal inside dimensions:

Length	Width	Depth	Knockout Size	Extension Depth
17"	10"	12"	2"	10"
24"	13"	18"	2"	8"
30"	17"	18"	2"	8"
36"	24"	18"	4"	8"
48"	30"	18"	4"	8"

Extension shall fit at the box bottom and align with the body at the maximum allowable deflection.

6. STRUCTURAL REQUIREMENTS

Unless otherwise requested by CPAU, enclosures shall be designed and tested to meet Tier 15 requirements of ANSI/SCTE 77, at a minimum. A physical description of the testing methods shall be included with the test reports. Load versus deflection curves for both loading and unloading shall be provided.

- a. Boxes, covers, extensions, and bases shall be capable of withstanding normal shipping and installation practices without chipping, cracking, or structural damage.
- b. Fastening devices used to secure the cover to the box shall be capable of withstanding a minimum torque of 70 foot-pounds and with minimum straight pullout strength of 750 pounds. The torque test shall be performed on the box with the cover in place. The pullout test shall be performed on the box with the cover in place and the fastening devices torqued to the manufacturers recommended maximum value. Fastening devices, inserts, cover, and box shall not be damaged by the performance of these tests.
- c. The fastening device in the box shall be of a “floating nut” style, be easily replaced, and recessed such that it is flush with the top of the cover when secured.

7. MATERIALS

- a. General
 - i. Materials used to manufacture non-concrete enclosures shall be commercially available and of the highest quality consistent with their intended use.
 - ii. Testing of material used in the manufacture of non-concrete enclosures shall be performed on specimens taken from finished product samples.
- b. Acceptance Criteria

Materials for non-concrete enclosures shall be determined to be acceptable if all of the requirements set forth in ANSI/SCTE 77 are met.

End of Specification