



# Conduit Spacers

ISSUING DIVISION: Electric Engineering  
SVP SPONSOR: Orville Plum, Manager

Signed by Orville Plum  
Date Signed 09-17-13

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## SECTION: Substructures

UG 0340

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## Scope of Standard

The UG 1000 Document includes information regarding the installation of new electric underground substructures, including electric conduit systems.. This document is intended to provide guidance and direction to installers of SVP electric conduit systems about the conduit support requirements for electric trenches, acceptable conduit spacing methods, and related material specifications.

## Purpose of Revision

This is a new document in the Substructures section of the Underground Construction Manual. There is no revision at this time.

## References

- Allied Tube and Conduit [http://www.alliedeg.us/index.php?P=PVC\\_duct\\_spacers](http://www.alliedeg.us/index.php?P=PVC_duct_spacers)
- Formex Manufacturing, <http://www.formex.com/>
- SVP Standard Document UG 1000 Revision 5, "Installation of Underground Substructures by Developers"
- Western Underground Committee Guide 3.4 "Plastic Conduit and Fittings Placing Instruction"

## Rescissions

None – This is an original document that has not been previously issued by the SVP Electric Engineering Division.

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## Definition of Terms

- **Building Inspector:** City of Santa Clara Building Dept. Inspector, responsible for verifying proper installation and repair of all private building facilities. This includes the electric service entrance and meter service panel.
  
- **Developer:** A developer is any person who causes land to be divided into two or more parcels for himself or others; or is engaged in the development of property, in whole or in part, by the placing of any improvements thereon, whether the property was previously developed in whole, in part, or at all.
  
- **Conduit Spacer:** an item used with conduits in order to maintain the proper placement and clearances of the conduit during backfilling and ground settlement.
  
- **Contractor:** The person or persons, firm, partnership, corporation or combination thereof, who has entered into a contract with the City of Santa Clara, as a party or parties of the second part of his or their legal representative.
  
- **City:** City of Santa Clara or the City Council of the City of Santa Clara.
  
- **City Engineer:** City Engineer of the City of Santa Clara.
  
- **Public Works Inspector:** City of Santa Clara Public Works Dept. Inspector, responsible for verifying proper installation and repair of all facilities within City right of ways and easements.
  
- **Silicon Valley Power (SVP):** Municipal Electric Department of the City of Santa Clara.
  
- **SVP Inspector:** Silicon Valley Power designated person responsible for verifying proper installation of electric substructures installed for the use of SVP.

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## Spacer Design

Conduit Spacers shall be designed in such a way that the following conditions are met.

- Spacers need to be modular with the binding of the modules designed in such a way that conduits may be removed and adjusted without the destruction of the spacer or disrupting the rest of the conduit run
- The spacer modules must interlock together to insure that no shifting between segments both vertically and horizontally occurs
- Spacers are to be made of polypropylene or other nonconductive plastic and be sturdy enough to not buckle when backfill is poured around them
- Spacers must be able to support the weight of a full rack of empty conduits without transferring any of the weight onto the conduit as well as avoiding the weight to deform the conduits or change the spacing between the conduits.
- Spacers may not act as a thermal or mechanical barrier. Any spacer that prevents the uniform compaction of the surrounding soil in accordance with UG 1000 may not be used.
- Spacers should be bound to the ground through staking to prevent the spacer from shifting. Non-metallic stakes are the preferred material to be used for this purpose. Metal stakes may be used for this purpose only if the stakes do not wrap around the conduits or create a metallic path around the conduits.
- If it is impractical or impossible to stake the spacers to the ground then Base Spacers with the base measuring at least 3 inches in depth are to be used to ensure that the spacer will remain upright.
- Spacers must be able to hold the conduits securely in place without damaging the conduit or applying any deforming pressure.
- If binding of conduits to spacers is required, binding material is to be plastic and approved by the SVP Inspector

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## Spacer Placement

In order to maintain the proper clearances between conduits spacers shall be installed in a trench using the following guidelines:

- Spacers are to be placed every 5 feet along straight runs of conduit
- Spacers may need to be placed closer than 5feet together in order to maintain the required 3inches separation between outside edges of adjacent conduits
- Spacers are to be vertically aligned to a 90 degree angle made to the flat horizontal
- Spacers shall create and maintain a minimum separation of 3inches between the outside edges of the conduits at all times.
- Spacers must be installed a minimum of 12 inches away from any conduit coupling or joint.
- Spacers are not to be located at the center of a radius bend
  1. On fabricated, or factory bends, locate the spacer in the tangent free of the coupling.
  2. On trench formed radius bends, place the spacer midway between the tangent and the center of the bend.
  3. If a factory bend is a long bend that would result in more than 5 feet between spacers, then spacers are to be located in accordance with item 2.
- Spacers must be a minimum of 10 feet from a pull box, manhole, or vault knockout opening.

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## Approved Spacers

Below is a list of manufactures that produce approved utility conduit spacers. This is not an exhaustive list. However, non-listed conduit spacers must be pre-approved by the SVP Inspector prior to use.

Manufacturer	Product name	Website
Underground Devices	EASYWAY grid Spacer	<a href="http://www.udevices.com">http://www.udevices.com</a>
Carlton	Snap-Loc Spacers	<a href="http://www.carlonsales.com">http://www.carlonsales.com</a>
Allied	Plastic Duct Spacers	<a href="http://www.alliedeg.us">http://www.alliedeg.us</a>
CalAm Manufacturing	Duct Spacers	<a href="http://calammfg.com">http://calammfg.com</a>
CanTex	Utility Duct Spacers	<a href="http://www.cantexinc.com">http://www.cantexinc.com</a>
Ridgeline	Utility Duct Spacers	<a href="http://www.ridgelinepipe.com">http://www.ridgelinepipe.com</a>
JMEagle	Utility Duct Spacers	<a href="http://www.jmeagleinc.com">http://www.jmeagleinc.com</a>

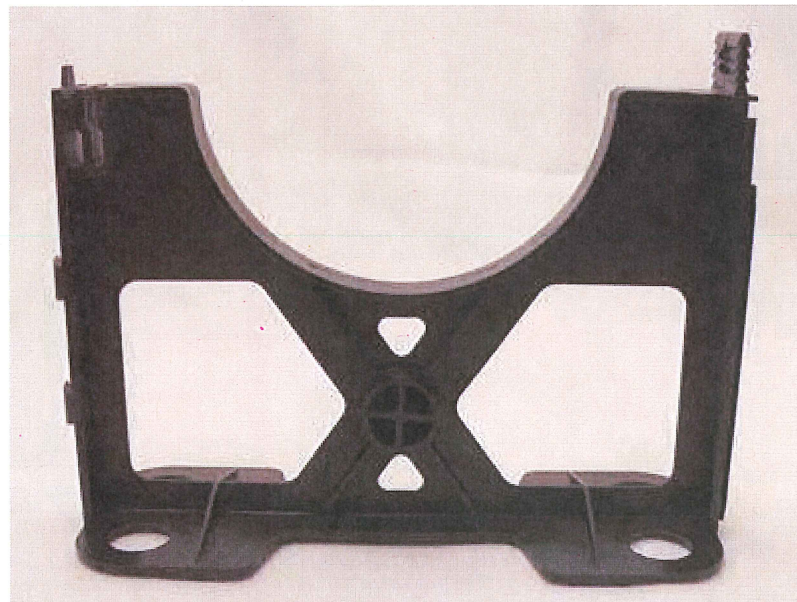


Figure 1: Example of a CanTex Base Spacer Module

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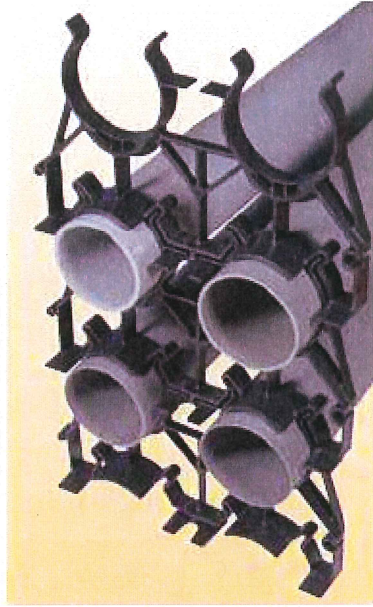


Figure 2: Example of a Carlon Spacer assembly

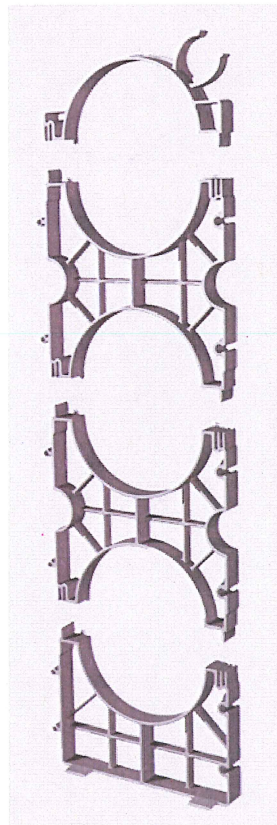


Figure 3: Example of an Underground Construction EASYWAY Spacer

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The following conduit spacers are not allowed in SVP trenches since they do not meet SVP requirements.

1. Prefabricated one piece duct spacers as shown in figure 4

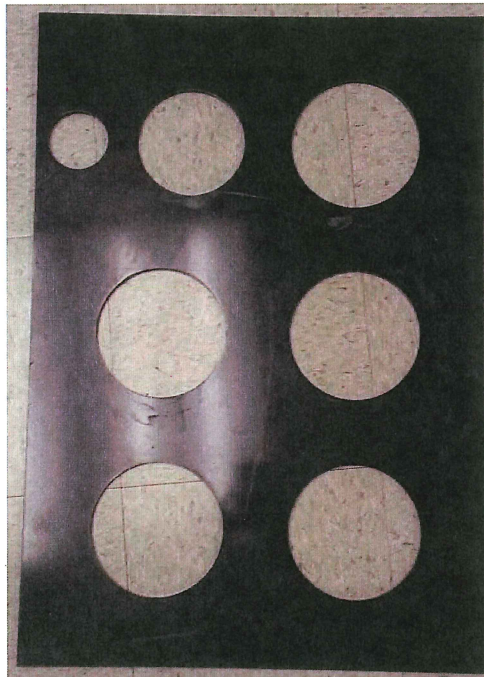


Figure 4: Example of a prefabricated one piece duct spacer

2. Donut type Spacers as shown in figure 5

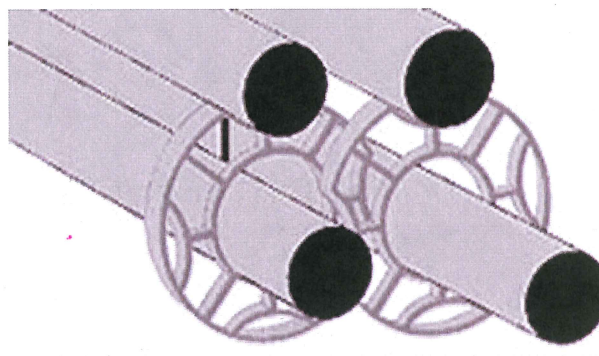


Figure 5: Example of a Donut Spacer

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