










Hawaiian Electric Customer Installation Guide	
Underground Commercial Service Secondary Cable Termination	
Guide No.: CI-022022	Revision: 0
For General Guide	Effective Date: March 31, 2022
General Description & Background	<p>In general, an underground commercial service Secondary cables are the responsibility of the customer. Customer is required to install duct lines and cables from the service meter to Hawaiian Electric (HE) transformer.</p> <p>Customer's Electrical Consultant normally designs the secondary cable size based on the NEC demanded load. This often results in much large size cables than HE can terminate or accommodate at the transformer. HE transformer factored in the diversity factor as all the connected demands are not coincident resulting in the secondary cable termination terminals are smaller than the total connected demand</p>
Practice or Guide	<p>For single phase Pad mounted Transformers (HE standard stock transformer sizes), there are six service connection terminals per Secondary Termination Stud and 350 AL is the maximum size cable to terminate. Using one terminal for Neutral cable and saving one open terminal for emergency use, each HE single phase pad mounted transformer will only be allowed and can accommodate up to <b><u>Four Runs Maximum with a Maximum cable size up to 350 AL.</u></b></p> <p>For three phases Pad mounted Transformers (HE standard stock transformer sizes), there are twelve service connection terminals per secondary spades and multiple cable connector and 750 AL or CU is the maximum size cable to terminate. Using one terminal for Neutral and saving three open terminals for emergency use, each HE three phase pad mounted transformer will only be allowed and can accommodate up to <b><u>Eight Runs Maximum with a Maximum Cable size up to 750 AL or CU,</u></b></p> <p><b>Note:</b> Please keep in mind that transformer space and type may also <b><u>affect and limit the number of cables and size.</u></b></p> <p>Customer must clearly show the cables size and quantity to each specific building on the drawings. Customer's contractor must also label all cables clearly (cable size and the specific building its service) per the engineering drawings at the transformer</p>
Not Applicable	<ul style="list-style-type: none"> <li>• Dedicated transformer</li> <li>• Overhead transformer</li> <li>• 3 phase Transformers greater than 750KVA</li> <li>• None HE Standard stock pad mounted Transformers</li> </ul>

<b>Special Notes</b>	The use of secondary termination box at the transformer may be allowed. However, design must be reviewed and approved by HE.				
<b>Other Related References</b>	<ul style="list-style-type: none"> <li>➤ Guide CI-012022 Underground Commercial Secondary Cable Responsibility</li> <li>➤ HE Standard</li> <li>24-1007 Insulated secondary bus connectors instruction details</li> <li>24-1008 Multiple Cable Terminal for 1 phase Pad mount transformer</li> <li>24-1009 Terminations for Sec Cables 1 phase 600V</li> <li>24-1012 Multi-Cable Connector for 3 phase pad mounted transformer secondary terminal instruction details</li> <li>24-1013 Guide for the termination of secondary cable in 3 phase pad mounted transformer</li> <li>30-5020 Concrete box pad for 3 phase pad mounted transformer</li> <li>30-5024 Concrete box pad for 3 ph. Pad mounted transformer detail</li> </ul>				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" data-bbox="115 877 812 1325" style="width: 50%; vertical-align: top;"> <b>Approvers:</b>  <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> <u>Hawaiian Electric</u>            Anthony Hong   <u>Maui Electric</u>            Cyrus Ashrafi   <u>Hawaiian Electric Light</u>            Kandice Kubojiri         </div> <div style="width: 45%;">           Hong, Anthony             Ashrafi, Cyrus             Kubojiri, Kandice         </div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 10px;"> <div style="width: 45%; font-size: 0.8em;">   <small>Digitally signed by Hong, Anthony Date: 2022.03.29 10:28:23 -10'00'</small> </div> <div style="width: 45%; font-size: 0.8em;">   <small>Digitally signed by Ashrafi, Cyrus Date: 2022.04.04 12:28:17 -10'00'</small> </div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 10px;"> <div style="width: 45%; font-size: 0.8em;">   <small>Digitally signed by Kubojiri, Kandice Date: 2022.04.05 09:12:35 -10'00'</small> </div> <div style="width: 45%;"></div> </div> </td><td data-bbox="812 877 1511 1325" style="width: 50%; vertical-align: top;"> <b>Approvers' Title:</b>  <u>Hawaiian Electric</u>            Principal Engineer, T&amp;D Engineering   <u>Maui Electric</u>            Principal Engineer   <u>Hawaiian Electric Light</u>            Principal Engineer         </td></tr> </table>			<b>Approvers:</b> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 45%;"> <u>Hawaiian Electric</u>            Anthony Hong   <u>Maui Electric</u>            Cyrus Ashrafi   <u>Hawaiian Electric Light</u>            Kandice Kubojiri         </div> <div style="width: 45%;">           Hong, Anthony             Ashrafi, Cyrus             Kubojiri, Kandice         </div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 10px;"> <div style="width: 45%; font-size: 0.8em;">   <small>Digitally signed by Hong, Anthony Date: 2022.03.29 10:28:23 -10'00'</small> </div> <div style="width: 45%; font-size: 0.8em;">   <small>Digitally signed by Ashrafi, Cyrus Date: 2022.04.04 12:28:17 -10'00'</small> </div> </div> <div style="display: flex; justify-content: space-between; align-items: flex-start; margin-top: 10px;"> <div style="width: 45%; font-size: 0.8em;">   <small>Digitally signed by Kubojiri, Kandice Date: 2022.04.05 09:12:35 -10'00'</small> </div> <div style="width: 45%;"></div> </div>		<b>Approvers' Title:</b> <u>Hawaiian Electric</u> Principal Engineer, T&D Engineering  <u>Maui Electric</u> Principal Engineer  <u>Hawaiian Electric Light</u> Principal Engineer
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<b>Thank you to the people below for providing inputs to develop this guide</b>					
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