

WHAT IS IT?

Our What is it? series answers questions about some of the lesser known objects found on the construction site.

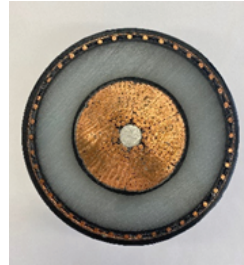
THE POWER EFFECT

What is it? A section of high-voltage electrical transmission cabling.

What is the cabling used for? The cabling is used to transmit electrical power between the Greater Toronto Area and Windsor-Essex and on the international line which transmits power between Ontario and Michigan. As the site of the Canadian Port of Entry (POE) is adjacent to an electrical transformer station, several overhead high-voltage lines from the station needed to be relocated to make room for the bridge and the buildings being built at the POE. Many of these overhead lines were moved underground and some connected onto new structures or transmission towers built outside of the footprint of the Canadian POE.

What is the cabling made of? The cabling is comprised of a copper conductor which is wrapped in insulation made of plastic known as XLPE which has a high chemical and moisture resistance. The cables are wrapped in an outer jacket made of copper sheath with a plastic exterior.

Is there anything unique about this cabling? It also has imbedded fibre optic cables which allow the user to measure the temperature along the length of the cabling to ensure that it is operating efficiently.



Close up of the cable



The cabling being connected to a transmission tower



Cable being pulled from the spool

What are the dimensions of the cabling? The diameter of the cable is 133.4mm/5.25 inches. Approximately 7,500 metres/24,600 feet of cabling was used, weighing more than 84 tonnes/93 tons.

What is the voltage being carried by these cables? The cabling has the largest conductor size in North America and carries two voltage classes - 115,000 volts and 230,000 volts. By comparison, the typical voltage in a house is 115 volts.

Were any special machines used in the installation? There are two basic pieces of equipment used in the installation - a cable puller and a cable winch. The cabling is spooled on a reel which is attached to the winch and fed through the underground conduit. An 'eye' is attached to the end of the cable which is connected to the puller on the other side of the conduit. The alignment of the two pieces of equipment is important to minimize the tension on the cable.

How long did it take to do the cabling? The manufacture of the cabling took approximately six months to complete. Installation took place over 13 weeks.

What does this mean for the progress on the Canadian POE? Relocating the high voltage cables from overhead to underground clears the site from overhead obstacles making it possible to build the final stage of the Perimeter Access Road (PAR) and start the construction of the bridge.