

# Underground Cable Transition Project

### Challenge

Continuous expansion of a major downtown city necessitated an upgrade of the electrical service by the utility company. The utility was faced with replacing the old substation equipment with new switchgear and associated apparatus. This apparatus was located in a separate substation building fed by 50 year old, 138kV self-contained oil filled cable. To abide by their latest safety regulations and to simplify cable connection to the new equipment, the utility decided to eliminate all oil filled devices in the building including the cable. This necessitated changeout of the old oil filled cable to a cable utilizing an extruded dielectric insulation. Furthermore, the apparatus building was located directly adjacent to a major downtown intersection. Because of this, the utility was concerned about the amount of space and downtime required for construction work to splice the cable.

### Solution

The utility investigated cable accessory suppliers with reliable track records who offered a product for their application. G&W Electric was selected because their transition joint featured prefabricated components and perforated paper roll stress relief which minimized the installation time and required expertise of the installers. Another feature was G&W Electric's exclusive separable connection method which permitted deadending of each cable end. This offered the unique advantage of reusing the same joint for possible future changeout of the remaining oil filled cable. The compact construction of the joint also permitted separate joint enclosures to be installed for each leg of the three phase, oil filled cable. This permitted the enclosures to be placed either stacked above each other on a rack or parallel to each other thereby minimizing the space required. The rugged construction of the joint design allowed the utility crew to direct bury the units in a shallow opening. This helped minimize the time and cost in constructing an accessible vault. G&W Electric engineers worked with the utility to provide a custom solution for their specific requirements. The project installation was completed in record time with little disruption of the surrounding city streets resulting in considerable cost savings.



*Splicing each leg of the three phase cable permitted a low profile, shallower vault.*