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**FAILURES OF PEDESTAL-TYPE (PIN  
AND CAP) INSULATORS**

# Failures of Pedestal-type (Pin and Cap) Insulators

The problem of failure of pedestal-type insulators first appeared on a 34.5-kV bus at a Reclamation substation in 1962. Since that time, similar failures have occurred on 12.47-kV, 34.5-kV, 41.8-kV, and 69-kV bus Installations at many other locations.

These failures, which are apparently due to cement growth causing the cap to separate from the porcelain, occur most often where the pedestal-type insulators are mounted in a horizontal position, either as bus supports or as supports for hook-stick-operated disconnect switches.

The only satisfactory solution to this problem has been to replace all pedestal-type insulators with post-type insulators, which not only have a much higher cantilever strength but also do not seem to be affected by cement growth.

During the late 1960's and early 1970's several projects carried out extensive insulator replacement programs involving 12.47-kV, 34.5-kV, 41.8-kV, and 69-kV bus installations. All of the replaced pedestal-type insulators were supplied under one specification when the power system was first constructed.

While the problem appears to be associated with moisture freeze-thaw cycling in the northern areas, we believe the problem may also exist at Reclamation facilities throughout southern portions of the United States. We therefore recommend that each project review its record of insulator failures and carefully examine pedestal insulators, particularly those mounted horizontally and used for hook-stick-operated switch supports. If the problem of defective insulators exists, a program should be developed for replacement with post-type insulators.