MEDIUM VOLTAGE ELECTRICAL DISTRIBUTION

Scope

The Central Campus, and the Athletic Campus', primary distribution systems consist of a 13.2 kV looped system, and a 2.4 kV radial system. The 2.4 kV system is slowly being upgraded to 13.2 kV.

The North Campus primary distribution systems consist of a 4.8 kV looped system and a 13.2 kV looped system. The 4.8 kV systems will eventually be upgraded to a 13.2 kV system. All primary equipment shall be designed to accommodate the upgrade in voltage.

The Hospital's primary distribution system, in general, consists of a 13.8-kV looped system. The other Hospital buildings are fed from the Central Campus's primary distribution system, as noted above. (A 13.8- to 13.2 kV conversion is being investigated.)

In general, phase rotation shall be A-B-C.

The phasing of new installations shall be A-B-C (X-Y-Z) from top to bottom, front to back, and left to right when viewed from the front. The phasing of renovations to existing installations shall match the phasing of the existing distribution. The Contractor shall be instructed to contact the University Project Coordinator to obtain High Voltage Electric Shop assistance to determine the existing phasing. The Contractor shall correct at his own expense any problems associated with his failure to match the existing phasing.

The A/E shall perform calculations needed to insure that cable manufacturer recommendations, on pulling tensions and sidewall pressures, are not exceeded when the cables are pulled into the raceway system.

Additional information on the primary distribution system and on the primary system fault capability is available from the University Utilities and Plant Engineering Department through the University Project Coordinator.

Equipment Requirements

Primary cable shall be single conductor, stranded copper, with ethylene propylene rubber (EPR) insulation rated for 15 kV with a 133% insulation level. The cable shall be rated for 90 degrees C, have a 5 mil minimum thick tape shield with a minimum of 12 ½ percent overlap, and a Polyvinyl chloride jacket.

High voltage cable terminations shall be made with Raychem HVT heat shrink termination kits or 3M Company Quick Term cold shrink termination kits only. Provide adequate workspace in high voltage equipment for installation of the termination kits.

Lugs for terminations shall be of the two-hole, solderless, compression type.
High voltage cable splices shall be made with Raychem HVS heat shrink splice kits only.

**Installation Requirements**

Instruct the Contractor to identify the cable phases at all high voltage terminations. Phases shall be identified by 1-1/2 inch minimum high letters painted on the cable supports or potheads wherever possible. When painting is not possible, phases shall be identified by 1/2-inch minimum high letters on lead tags permanently attached to the cables.

Normally primary voltage cables shall not be pulled into raceways exceeding 500 feet. A/E and/or contractor shall provide calculations showing that the required cable pulls do not exceed the manufacturers' recommendations for pulling tensions, sidewall pressures, cable-bending radius, and (when absolutely necessary) pulls of greater than 500-feet.

The cables shall be supported appropriately by cable tray, conduit, or approved racking methods.

Cable tray shall be aluminum ladder type. All fittings and hardware shall be from the same manufacturer as the cable tray.

Conduit shall be galvanized rigid steel or intermediate metal conduit with cast or malleable iron threaded fittings and bushings. Except in substation rooms, and/or fire pump rooms, wherever the primary voltage conduits are run through a building, the conduits shall be encased with at least 2 inches of concrete.

Instruct the Contractor to perform testing in accordance with Section 16950, and to provide the University Project Coordinator with test reports.