These methods are designed to protect the utility from induced traffic loading including construction equipment loads. The Consultant should check that the depth of existing utilities is sufficiently below the subgrade level to accommodate the protection device.

804.03 UTILITY RELOCATION

Utility relocation will generally be determined by the individual utility agency and is subject to approval by the Municipality. Each agency will supply their relocation design drawings for inclusion in the Project documents. These drawings will then be reviewed by the Municipality to obtain their approval prior to inclusion in the Tender Documents. No utilities other than lighting, underground cables, and irrigation pipes shall be installed along the central median parallel to the roadway. These lighting cables and irrigation lines in the median shall be as close as possible to the curb to avoid disturbance to the greenery. Quantities, except for relocation work designed by a designated utility consultant, shall be calculated by the primary Consultant. WED(E) and ETISILAT will supply respective relocation quantities.

Supply of all the materials required for the relocation works for electrical shall be included in each contract. Removed and salvaged LV, 11 KV and 33 KV cables excluding joints from site can be reused for the relocation works if approved by the WED. Quantities for the supply and salvage items shall be as estimated by the WED for each project. All 132 KV cables required for the relocation work shall be new and shall be supplied under each contract.

804.04 CONTINGENCY DUCTS

Contingency ducts are required at roadway crossings for future services to be located in service reserves and at other specific locations established by the utility authority. Ducts are installed where pavements with asphalt or non-removable pavers cross over the service reserve.

These ducts may be designed to accommodate existing or proposed service facilities with spare or reserve capacity for future (contingency) installations. Existing facilities such as cables or conduits may be placed in split ducts and concrete encased.

Duct bank ends are terminated outside the permanent pavement in a reinforced concrete end wall structure that allows access to the duct ends without damaging the integrity of the structural pavement section. These are required at all multiple duct service reserve crossings. The end wall design and details are included in the Standard Drawings.

All duct crossing locations are to be marked in the field with permanent markers as shown in the Standard Drawings. These markers are placed at the end of the duct or set in the top of the duct end wall concrete.

804.05 UTILITY LOCATIONS

With the exception of lighting cable and irrigation distribution lines, there shall be no construction of utility lines such as power distribution lines, water lines, sewer lines, storm waterlines or any other lines in the central median of primary roads. Utilities of all kinds shall not be constructed under main roadway asphalt pavement. Utility lines can be installed in service reserves under sector roads or parking areas where asphalt pavement is reduced in thickness.

804.06 NON-DISRUPTIVE ROAD CROSSINGS

Utility crossings of completed permanent works, especially Main Roads, Expressways and Freeways are to be avoided. Contingency ducts or alternate routes should be used to accommodate the service requirements whenever possible. When the crossing of primary roadways is unavoidable, Department policy requires the design to specify non-disruptive methods(pipe jacking) or tunneling to cross the facility. This should be a performance based specification to offer the Contractor flexibility in selecting the equipment and methods.