Appendix (E)

TECHNICAL REQUIREMENTS

ELECTRICAL

1. Power transformer with secondary voltage 400/230 vac 60 Hz dry type for internal and oil type for external installations with power factor capacitor bank.
2. All building equipment to operate at 400/230/ vac 60 Hz.
3. All data, Tele etc sockets shapes similar to BS.
4. All lighting shall be energy saving option like sensor or latest centralized control system, and possible integration with BMS.
5. All Equipment shall have separate disconnect switch.
6. All lighting fixtures to be LED type.
7. Lighting control system shall be provided which can be integrated with BMS on BACnet Protocol.
8. All IP based low current systems such as Fire alarm, CCTV, CATV, Public address system, Master clock, Telephone, Data, Access control system, Digital signage system, multimedia audio visual (Auditoriums only), and other system shall be designed to be compatible with the KFUPM's existing systems, specification and requirements, and the international standards, which include TIA, EIA, TWCS, TAC, STC, CCITT, and CFR.
9. Step Down Transformer

KVA Rating:	According to the loads
Voltage:	13,800V/400V/230V
Phase:	3 Phases
Frequency:	60 Hz
Type:	According to the installation location(OIL TYPE/DRY TYPE).
Cooling method:	According to the installation location.

10. Ring Main Unit:

    SF6 (minimum 600 A)

11. Stand-By Emergency Generator

KVA Rating:	According to the loads
Voltage:	400V/230V
Phase:	3 Phases
Frequency:	60 Hz

12. Automatic Transfer Switch

Breaker Rating:	According to the loads
Voltage:	400V
Phase:	3 Phases
Enclosure:	NEMA 3R

13. Lighting Poles

25 feet RTA poles with 6 feet arms

14. Street Lighting Fixture

Light Emitting Diode (LED), high luminance chip with equivalent wattage ratingVoltage: 230V, 60Hz, P.F. 0.95, I.P. 66 rating, and U.L. listed chip and luminaire, color temperature (according to architecture), maximum operating temperature.

15. Wires and Cables

Low Voltage

- Rating: 600V/1000V Type
- Insulation: XLPE/PVC/PVC,SHEATED

Medium voltage

- Rating: 15 KV
- Insulation: AL,XLPE, STEEL TAPE ARMORED
  (Cu cable may also be used if justified)

16. Grounding

    Grounding rod with inspection pit
    Grounding rod without inspection pit
    Bare copper
    All the accessories

17. Lightning protection

    Air terminal copper with specified diameter and length
    Bare copper tape with specified dimension
    All the accessories

18. Receptacle Outlet

    BS Type 1363, SASO 2203, 250V, 3 Wires, with Grounding Slot, Switch Type with LED Indicator and compatible back boxes.

Note: It should be clear in the drawings and BOQ's that all the systems will be connected to the existing KFUPM Grid.