1.1 **GENERAL**

1.2 **Related SFU Technical Requirements**

   1. Section 01 78 39 Project Record Documents
   2. Section 01 78 23 Operation and Maintenance Data
   3. Divisions 26, 27, 28, 33

1.3 **Co-ordination Requirements**

   1. SFU Facilities
   2. SFU IT

1.4 **Description**

   1. General requirements for all Division 26.

2.1 **MATERIALS AND DESIGN REQUIREMENTS**

2.2 **General**

   1. The Electrical Consultant shall submit to SFU Facilities a design philosophy for the proposed building electrical, communication, and access systems. Major components of the philosophy must be accepted in principle by SFU Facilities before the project can proceed to construction. Consultants are expected to produce designs that meet User needs and allow SFU Facilities to continue to meet those needs in the future in a safe efficient manner.

   2. The contractor is responsible for and keeps one complete set of white prints, including revision drawings in the job site, office.

   3. **Construction Power**
      1. SFU provides construction power.
      2. The connection point and voltage for the construction power are the responsibility of SFU Facilities.
      3. The Contractor shall pay for all materials and installation of equipment for the provision of temporary construction power.
      4. Consumption costs are typically not billed. Only excessive consumption will be billed at cost.
      5. The Contractor must contact SFU IT for coordination and installation of temporary telecommunications cabling.
      6. Construction power provision complements the provision of temporary IT services in Division 27 as it is provided in much the same way.

   4. The electrical consultant will coordinate and meet needs of SFU.

2.3 **General Installation**

   1. The installation shall be installed in a manner that is conducive with quality workmanship. Exposed wiring that is visible in common areas shall be installed square and true to other areas and installations. Architectural considerations must be taken into account during the installation.

   2. All work shall be in strict adherence with the latest edition of the Canadian Electrical Code, National Building Code, their amendments, supplements, local bylaws and
conform to SFU standards.

.3 Do not employ inside wiremen on outdoor services where linemen would be normally employed.

.4 Employ at least one journeyman electrician or lineman on all underground services.

.5 All Electrical Rooms shall be designed and installed so that no equipment will be installed behind a door swing or above a door.

.6 Adequate unobstructed wall space shall be provided in all electrical rooms to permit the installation of new (future) equipment and shall not be less than 1 m x wall height (where possible).

.7 The designer shall coordinate with the architect to ensure that all electrical and life safety equipment that is installed shall be readily accessible for maintenance, replacement and repair without the use of tools to remove building finishes.

2.4 Public Safety

.1 The contractor shall install safety barriers over all panels and other equipment where covers have been removed and there exists a possibility of electrical shock to personnel.

.2 “Danger High Voltage” signs shall be displayed wherever there is a possible danger to personnel.

.3 All electrical equipment to be locked out and tagged according to W.C.B. regulations. Tags to have date, time, name (signed and printed) include company and 24 hour phone number. This applies to even low voltage breakers.

2.5 VFD Speed Drive Design and Installation

.1 Drives shall be industrial grade with bypass (AAB drive preferred).

.2 Drives will be installed with a load reactor assembly.

.3 Net Motors will be rated for use with a drive assembly.

.4 Motor overload protection will be provided from the VFD.

.5 Refer to SFU reference document Variable Speed Drive Installation Guidelines for details.

2.6 Identification of Equipment

.1 Apart from light switches, all switches and breakers shall be appropriately identified, notwithstanding, where lighting switches are grouped or arranged so that their function is not obvious, they shall be identified.

.2 All indicating devices, panelboards, starters, controllers, feeder switches etc., shall be identified.
.3 Panelboards shall be provided with the service location, load of each circuit and a circuit directory indicating the usage of each breaker.

.4 All switches, panelboard covers, motor starters, etc. shall be identified with nameplates following SFU Identification and Labeling Standard. Refer to Section 20 00 08.2.

.5 Nameplates for terminal cabinets and junction boxes to indicate system and voltage characteristics.

.6 Nameplates for receptacles and switches mounted on walls shall be mounted near the receptacle or switch, not on the equipment.

2.7 High Voltage Vaults

.1 All high voltage vaults shall have a floor drain and containment curbs.

2.8 Electrical Receptacles for Specific Purposes

.1 Provide duplex electrical receptacles for custodial use at each floor level and near the doorway in each stairwell.

.2 Provide at least one convenience duplex electrical receptacle in each mechanical room, connected to standby power if available. Additional receptacles to be provided in all larger utility rooms.

.3 Provide at least one convenience duplex electrical receptacle in each electrical room, connected to standby power if available. Additional receptacles to be provided in all larger utility rooms.

2.9 Project Record Drawing Requirements

.1 The contractor shall be responsible for and keep one complete set of white prints, including revision drawings at the job site.

.2 The contractor shall deliver to the consultant at "substantial performance" one complete set of white prints, showing by colored lines and suitable notation all work as installed, together with sizes and routes of electrical service lines installed, relocated or adapted under this project. The contractor shall maintain a current record, as the job progresses, of any deviations from contract drawings. Manholes, pulling pits, etc. shall be located at the center lines, by co-ordinates, on a grid system shown on the site plan. Locations and levels shown on plans must be accurate to within 12 mm.

.3 Approval for backfilling of underground services will not be given before SFU Facilities is satisfied that the exact location of the underground service has been surveyed and recorded. The contractor must employ a qualified surveyor to record the horizontal and vertical location of underground services. This survey information is to be shown on the project record drawings and must indicate the location of all buried services, as well as, those capped or exposed by the work of this contract.

.4 Project Record White prints shall be delivered to the consultant at "substantial performance" in accordance with Division 01 General Requirements.
.5 For final Record Drawing submission, refer to Section 01 78 39 Project Record Documents. The standard is 3 hard copies with electronic copy provided.

2.10 Electrical Operating and Maintenance Manuals

.1 For detailed requirements, refer to Section 01 78 23 Operation and Maintenance Data.

2.11 Demolition and Clean Up

.1 Remove all debris from the site as it occurs. Do not allow it to accumulate.

.2 The site shall be left in a clean and tidy condition to the satisfaction of the Engineer before a certificate of acceptance will be issued.

.3 All used and surplus electrical material shall be delivered to a storage area designated by the Engineer.

***END OF SECTION***