1.1 **GENERAL**

1.2 **General Cable Plant Description**

.1 Provide complete cable plant at SFU campus building.

.2 The cable plant shall include:

- Communications Rooms with termination hardware.
- Voice/Data backbone as per Communications Riser diagram.
- Horizontal Cabling
- Patch cords and cross-connects
- Testing, Commissioning, Warranty

1.3 **Scope of Work**

.1 Unless otherwise noted, provide for all labour and material to constitute complete Structured Cabling system as described herein and on drawings.

.2 Cables and terminations shall be provided and located as shown and in the quantities indicated on the drawings and as specified (whichever is more).

1.4 **Application Standards**

.1 Furnish and install complete with all accessories an ANSI/TIA 4966-2014 Telecommunications Infrastructure Standard for Educational Facilities, Category 6A building Telecommunications Wiring Infrastructure (a.k.a. Cable Plant). The Cable Plant shall serve as a vehicle for transport of data, video and voice telephone signals throughout the building from designated demarcation points to telecommunication outlets located at various desk, workstation and other locations as indicated on the contract drawings and described herein. Applications standards supported should include, but not be limited to, IEEE Standard 802.3an – 10GBASE-T, 10GBASE-LR/LW.

1.5 **Reference Standards for Structured Cabling**

.1 All materials, workmanship and/or installation practices and activity shall meet or exceed the following reference standards:

- ANSI/TIA-568.1-D Commercial Building Telecommunications Cabling Standard
- ANSI/TIA 568C.2-1 Transmission Performance Specifications for 4-Pair 100 Ω Category 6A Cabling.
- ANSI/TIA-569-D Commercial Building Standard for Telecommunications Pathways and Spaces.
- CAN/CSA T529CAN/CSA T530
- Best practices of BICSI-TDM
- Latest version of CSA C22.1-Canadian Electrical Code Part 1 including B.C. Amendment and Regulation.
- UL Cable Certification Program.
- NEMA.
- ASTM.
- IEEE
### 1.6 Qualifications

1. Pre-qualified contractors shall be as stipulated in Section 27 10 00 Clause 1.10.

2. Only contractors pre-qualified by SFU and authorized to provide installation services by the approved manufacturers are permitted to submit the bid.

3. Upon request, the contractor shall show proof of a contractual relationship with the manufacturer, and shall submit the manufacturer’s CSV certification to SFU NS.

### 1.7 Quality Assurance

1. A minimum of 50% of telecommunications installers shall have current manufacturer’s certification at all times while performing the installation.

2. Manufacturer refers to the company that manufactures the components and is responsible for the design and installation guidelines used by the contractor to complete this cabling system installation. The manufacturer along with the contractor is responsible for the final warranty and certification of the installation and application assurance.

3. Testing shall be performed by Telecommunications Technicians who are qualified to perform related tests as required by the manufacturer in accordance with the manufacturer’s methods.

4. The Contractor (including subcontractors if any) shall have a proven 7 years track record in projects of similar nature. This is requirement for pre-qualification.

### 1.8 Abbreviations Terminology

1. CATV - Cable T.V.

   CER - Communications Equipment Room

   CP - Consolidation Point

   EF - Entrance Facility

   FDC - Fibre Distribution Centre (fibre splice tray or termination tray)

   IDF - Intermediate Distribution Frame

   TGB - Telecommunications Ground Busbar

   TMGB - Telecommunications Main Ground Busbar

   SFU NS – SFU Network Services

   TO - Telecommunications Outlet

   TR - Telecommunications Room

   WA - Work Area
Other acronyms can be found in the ANSI/TIA Standards.

.2 Words “Tender” and “Bid” used in this contract documents shall mean the same and are interchangeable.

.3 Words “Tenderer” and “Bidder” used in this contract documents shall mean the same and are interchangeable.

.4 Words “Design Professional”, “Consultant” and “Engineer” used in this contract documents shall mean the same and are interchangeable.

.5 Words “Telecommunications Room” shall include Closets, Media, and Audio Visual Communications Rooms.

.6 Words “Data Outlet” and “Computer Outlet” used in this contract documents shall mean the same and are interchangeable.

1.9 Pre-approved Manufacturer

.1 All components (connectors, cabling, panels etc.) of the structured cabling systems for telecommunication system provisions shall be from a pre-approved manufacturer. The manufacturer shall provide a minimum 20-year legal assurance warranty for products and the applications listed herein.

1.10 Pre-approved Installation Companies

.1 Pre-approved installation companies are available through IT Services. Contact SFU’s IT Services for the list.

.2 Successful bidder must be a current Belden IBDN Certified System Vendor (CSV) and employ on this project Belden trained personnel.

1.11 Shop Drawings

.1 In addition to requirements of Section 27 00 01 Clause 2.11, the Contractor shall submit six (6) sets of the following shop drawings and construction documents to SFU:

.1 Plan view drawings illustrating the layout of all Mechanical, Electrical, and Communication components and equipment in each Telecommunications room.

.2 Elevation drawings of all walls of each Telecommunications room, clearly showing the proposed layout of all termination hardware, grounding & bonding components, equipment cabinets, communications equipment, power receptacles, lighting fixtures, cable tray, conduit, entry ducts, etc. NOTE that all final layouts of all racks shall be as later determined by SFU NS.

.3 Proposed rack and patch-bay elevation drawings

.4 Vertical and horizontal Backbone cable topology, riser duct, and horizontal cable count diagrams.

.5 System block diagrams depicting the interconnection between Telecommunications rooms, system components, sub-systems and equipment cabinet layouts.
.6 Communication Bonding & Grounding System.

.7 Fire-stop design, identifying all locations to be fire-stopped, complete with documentation, a list of all firestopping materials to be used, and fire-stop systems to be installed.

.2 Submit documentation minimum 40 business days prior to ordering material and the start of installation.

.3 Prior to installation contractor shall submit to SFU NS for review the following shop drawings comprising of but not limited to:

   .1 Complete parts number list.
   .2 Cable data list
   .3 Documentation proving the cabling systems compliance to the permanent link performance as specified by ANSI/TIA 568-C.2 (including all addenda and TSB), and other applicable standards for Category 6A performance.
   .4 A complete telecommunications cabling system layout, including cable routing, wiring closet (s) and telecommunications outlet connector cables designation. The layout shall detail locations of all equipment and indicate all wiring pathways. Use contract drawing as a base. The layout is subject to approval by SFU NS.
   .5 Manufacturer’s technical documentation on all devices used in cabling system.
   .6 Complete method of labeling.
   .7 Layout of Telecommunication Rooms (subject to approval by the Owner)

1.12 Wiring Record

   .1 Provide wiring record table indicating: outlet and cable identification, cable length, outlet floor location, termination location (i.e. patch panel), patch panel field and port number, workstation outlet identification. This information shall be provided to SFU prior to commissioning.

   .2 The Contractor shall maintain one (1) complete set of white prints to be used exclusively for purposes of recording changes, deviations and revisions from the original contract (pay particular attention to the size and location of conduits, back-boxes, splices etc.).

   .3 This drawing will be updated on site weekly by contractor; and available for reviewed by SFU representative.

***END OF SECTION***