1.1 GENERAL

1.2 Communications Horizontal Cabling General

.1 Provide a complete and operational horizontal wiring infrastructure as specified herein and on drawings.

.2 Horizontal wiring infrastructure consists of but is not limited to:
- Patch panels
- Horizontal cables
- Telecommunications outlets
- Code Blue emergency phones and strobes
- Security cabling to Code Blue emergency phones

.3 The SFU standard is to provide one (1) “Set Run” to every telecommunications wall outlet and/or floor outlet box. Unless specified otherwise, a Set Run is defined as two (2) 4-pair UTP cables from the outlet location to patch panel in Communications room, fully terminated, labeled and tested.

.4 In general, there is no distinction between voice & data for horizontal runs. Unless noted otherwise, all horizontal cables shall terminate on universal patch panel system, which will permit assignment from the data hardware or voice hardware by the use of different color-coded patch cords.

.5 Contractor shall allow in the Tender price for Wireless Access Point (WAP) locations in quantities as indicated on the drawings. Actual WAP locations shall be as determined by SFU at a later time. Allow for cable length of up to 90 meters per each WAP cable.

.6 Copper Horizontal Cabling shall meet or exceed all applicable ANSI/TIA standards (including all Addendums and Technical Service Bulletins) and IEEE Standards for Category 6A performance.

.7 Horizontal cables length shall not exceed 90 meters. Coordinate conduit routing to ensure cables are not too long.

2.1 PRODUCTS AND EXECUTION

2.2 Communications Copper Horizontal Cabling

.1 Horizontal cable shall be 24 AWG solid, 4-pair bonded UTP Cable jacket shall be small diameter and shall be rated FT-4 or FT-6 as required and be BLUE color. Cable shall exceed Category 6A requirements and support Belden 10GX System (with transmission speeds up to 10 Gb/s).

Pre-approved products: CMP / CMR cable Belden 10GXS33 D15 / 10GXS32 006

.2 Unless noted otherwise, homerun all horizontal 4-pair UTP cables to Telecommunications Rooms. Route cables to a Telecommunications Room on the same floor as the outlet floor. For outlets on floors without a telecom room, route cables as indicated on the riser diagram drawing.
.3 Unless noted otherwise, terminate all horizontal 4-pair UTP cables on 24-port Category 6A rack-mounted patch panels. Refer to Section 27 11 00 Clause 2.04.3 for patch panel details. Cables shall be terminated sequentially (by cable number). Exact rack layout shall be confirmed with SFU NS prior to termination.

.4 Terminate all 4-pair UTP Category 6A cable in T568A Wire Map configuration.

.5 Provide a 3-meter service loop for each cable in Communications room. Place service loop in cable tray.

2.3 Communications Optical Fiber Horizontal Cabling

.1 Not Applicable

2.4 Communications Faceplates and Connectors - Overview

.1 Category 6A UTP outlet connectors shall be 8-pin modular jacks terminated in T568A Wire Map configuration. The Jacks must accept RJ-45 or RJ-11 modular plugs without causing any damage or degradation to the connectors.

.2 For detailed configuration of various outlet types refer to drawings.

2.5 Typical Wall-mounted Data Outlet (REG)

.1 Typical copper office/workstation outlet shall be a 4-port, single-gang Belden MediaFlex Angled entry faceplate, AX106635, white color. Refer to detail REG for additional details.

.2 Typical port assignment shall be:

- Port “A” (upper left): Voice – Cat 6A Belden 10GX REVConnect module, RVAMJKUBK-S1, black color.
- Port “B” (upper right): Data – Cat 6A Belden 10GX REVConnect module, RVAMJKUBK-S1, black color.
- Port “C” (lower left): Spare - blank insert, Belden AX102262, white color.
- Port “D” (lower right): Spare - blank insert, Belden AX102262, white color.

If the drawings indicate 2 numbers (separated by a forward slash) for a copper outlet, the second number designates additional ports wired to a special separate patch panel at a local hub (NOT in the telecom room). The respective wall jacks shall be yellow color, Belden RVAMJKUYL-S1.

.3 All ports shall be labeled as “A”, “B”, “C”, “D”, ..., with small printed labels. This labeling applies to all outlet types.

2.6 Multi-User Outlet (MU)

.1 Typical multi-user outlet shall be a 8-port, double-gang Belden MediaFlex Angled entry faceplate, Belden AX106655, white color. Other parts are similar to REG outlet type. Refer to detail MU for additional details.
2.7 **Wall-mounted Telephone Outlet (WT)**

.1 Each outlet identified on drawings as “WT” (Wall-mounted Telephone) shall have stainless steel faceplate (Belden AX102005) with one black Category 6A VoIP port (Belden RVAMJKUBK-S1).

.2 Faceplate shall be mounted flush with the surface of the wall to accommodate installation of wall-phones. Refer to detail WT for additional details.

.3 Telephone is provided by SFU.

2.8 **Wireless Access Point (WAP)**

.1 Each outlet identified on drawings as Typical Wireless Access Point shall have a white MediaFlex Angled Faceplate Kit (Belden AX106635) with two black Category 6A data ports (Belden RVAMJKUBK-S1) installed in accessible ceiling space.

.2 Provide patch cord of suitable length to reach from outlet location to WAP device. Label patch cord end with cable number. Install WAP underside finished ceiling. Refer to detail WAP1 for additional details.

.3 In locations, where accessible ceiling space is not available, terminate each Category 6A cable with black Category 6A REVConnect data jack (Belden RVAMJKUBK-S1) in the back box. Provide 600mm long patch cord from data jack in outlet box to WAP device. Refer to detail WAP2 for additional details.

.4 WAP devices, including mounting hardware, will be supplied to the contractor by SFU.

.5 Provide a polycarbonate NEMA 4X rated weatherproof enclosure Oberon 1024-00 if WAP is installed outside. Cable jacks (Belden RVAMJKUBK-S1) shall be installed in white 2-port side entry box (Belden AX105353). Refer to details WAP3 for additional details.

2.9 **Security IP Camera Outlet (CAM)**

.1 Provide one Category 6A data drop to each CAM location.

.2 Typically, cameras are mounted to back boxes on fixed ceilings or walls. Terminate Category 6A cable with black Category 6A REVConnect data jack (Belden RVAMJKUBK-S1) in the camera back box. Refer to detail CAM1 for additional details.

.3 If camera is installed on a removable ceiling panel, Provide data outlet in accessible ceiling. Outlet shall have a white MediaFlex angled faceplate (Belden AX106635) with one black Category 6A data port (Belden RVAMJKUBK-S1). Refer to detail CAM 2 for additional details.

.4 Camera with a data cord is provided by *Division 28.*
2.10 **Projector Outlet (PJ)**

.1 Each outlet identified on drawings as “PJ” (Projector) shall have a white MediaFlex Angled Faceplate (Belden AX106635) with one black Category 6A data port (Belden RVAMJKUBK-S1). Refer to detail PJ for additional details.

.2 Projector with a data cord is provided by AV trade.

2.11 **Flat Screen Outlet (FS)**

.1 Each outlet identified on drawings as “FS” (Flat Screen) shall have a white MediaFlex Angled Faceplate (Belden AX106635) with one black Category 6A data port (Belden RVAMJKUBK-S1). Refer to detail FS for additional details. Refer to A/V elevation drawings for outlet location.

.2 Flat Screen with a data cord is provided by AV trade.

2.12 **Outlet for A/V Equipment (AV)**

.1 Outlet is identified on drawings as “AV” shall have a white MediaFlex Angled Faceplate (Belden AX106635) with black Category 6A data ports (Belden RVAMJKUBK-S1) in quantities indicated on floor plan drawings.

.2 This outlet is typically located at A/V equipment racks. Refer to detail AV for additional details. Refer to A/V drawings for outlet location.

.3 AV equipment with data cord is provided by AV trade.

2.13 **Data Outlet for AV Keypad (AK)**

.1 Each outlet identified on drawings as “AK” shall have one Category 6A data cable Terminated Category 6A cable with black Category 6A REVConnect data jack (Belden RVAMJKUBK-S1) in the keypad back box. Refer to detail AK for additional details.

.2 Keypad with a data cord is provided by AV trade.

2.14 **Floor Box Outlet (FB)**

.1 Each outlet identified on drawings as floor box shall have KeyConnect Decora style adapter. Decora adapter shall be typically 2-port type (Belden AX104112) with black Category 6A data ports (Belden RVAMJKUBK-S1). Locations requiring 3 or 4 cables shall utilize additional Decora style adapter (Belden AX104121) in a separate gang of the box. Refer to detail FB for additional details.
2.15 Poke-Thru Outlet (PT)

.1 Each outlet identified on drawings as poke-thru (PT) shall have KeyConnect Decora style adapter. Decora adapter shall be typically 2-port type (Belden AX104112) with black Category 6A data ports (Belden RVAMJKUBK-S1). Locations requiring 3 to 4 data ports shall utilize 4-port Decora style adapter (Belden AX102266). Locations requiring 5 to 6 data ports shall utilize 6-port Decora style adapter (Belden AX104118). Refer to detail PT for additional details.

2.16 Data Outlets on Surface Raceways (SR)

.1 Outlets shown on surface raceways shall have KeyConnect Decora style adapter. Decora adapter shall be typically 2-port type (Belden AX104112) with black Category 6A data ports (Belden RVAMJKUBK-S1). Locations requiring 3 or more cables shall utilize additional Decora style adapter (Belden AX104121) in a separate device cut-out of the surface raceway. Refer to detail SR for additional details.

2.17 Data Outlets on Pac-Pole (POL)

.1 Outlets shown on Pac-Poles shall have KeyConnect Decora style adapter. Decora adapter shall be typically 2-port type (Belden AX104112) with black Category 6A data ports (Belden RVAMJKUBK-S1). Locations requiring 3 - 4 cables shall utilize 4-port Decora style adapter (Belden AX102266). Locations requiring 5 or more cables shall utilize 6-port Decora style adapter (Belden AX104118) or additional Decora style adapters in a separate device cut-out of the Pac-Pole. Refer to detail POL for additional details.

2.18 Security Outlet (SEC)

.1 Each outlet identified on drawings as “SEC” (Security) shall have a white MediaFlex Angled Faceplate (Belden AX106635) with one to four black Category 6A data ports (Belden RVAMJKUBK-S1). SEC outlet box shall be surface mounted in Communications room on plywood below cable tray close to security panels. Coordinate exact location with Division 28 contractor. Refer to detail SEC for additional details.

.2 Security panel with a data cord is provided by Division 28.

2.19 Data outlet for Building Management (BMS)

.1 Each outlet identified on drawings as “BMS” (Security) shall have a white MediaFlex Angled Faceplate (Belden AX106635) with one to four black Category 6A data ports (Belden RVAMJKUBK-S1). BMS outlet box shall be surface mounted in a Utility room close to BMS panels. Coordinate exact location with mechanical trade. Refer to detail BMS for additional details.

.2 BMS panel with a data cord is provided by Division 25.
2.20 Code Blue Phone (CB)

.1 Provide hands-free emergency phones at locations indicated on floor plan drawings as "CB". Station shall have a single button to call for help.

Reference Product: Code Blue 501-d with dual call (HELP and INFO) buttons or an approved equivalent.

.2 Provide blue wall-mounted beacon/strobe light above the CB station. The beacon light shall be illuminated at all times. And the strobe light shall flash only when CB station is in use. Program strobe flash sequence as directed by SFU representative.

Reference product: Code Blue S-1000 light with Code blue 40075 wall mount bracket or approved equivalent.

.3 Refer to drawing detail CB for additional details.

.4 Provide one Category 6A cable, one 2c 16AWG 24V power cable and one 4c 22AWG control cable to each CB phone location. Terminated Category 6A cable with black Category 6A REVConnect data jack (Belden RVAMJKUBK-S1) in the station back box.

.5 Provide power supplies with backup batteries in telecom room.

.6 Wire as per drawing detail CBW. Note: Connections at security control panels by Division 28.

2.21 Door Intercom Station (IC)

.1 Provide one Category 6A data drop to each IC location. Terminate Category 6A cable with black Category 6A REVConnect data jack (Belden RVAMJKUBK-S1) in the door intercom back box. Provide 600mm long cord to intercom station. Refer to detail IC for additional details.

.2 Provide weather-proof hands-free IP intercom station with a single call button.

Reference product: Viking Electronics E-32-IP-EWP or approved equivalent.