Technical Requirements and Conditions

SUPPLY, DELIVERY, INSTALLATION, TESTING AND COMMISSIONING OF STRUCTURED CABLING AND EQUIPMENT AT MAIN UNIVERSITY LIBRARY BUILDING

I. Introduction

These technical terms and conditions provide the description of the project, the technical specifications, terms and conditions as well as documentary requirements to support the procurement process for the structured cabling at the Main Library, La Trinidad, Campus.

II. Rationale

This project seeks to create a new structured local area network at the Main Library building that incorporates wired cabling flexible enough to adapt to future changes.

The network's slow response can be attributed, but not limited, to multiple cascading switches, and/or expanding a network using wireless equipment. Organizing these cable structures by installing wired connections where needed and providing a secure, controlled and seamless network will alleviate these problems.

III.   Scope of Work

The service provider shall:

    a. Provide and supply all necessary materials, labor and services

    b. Provide local technical support and maintenance service within next business day

    c. Conduct and provide a comprehensive report for each test and technical support service

    d. Provide maintenance within the warranty period

    e. Provide a single point of contact personnel

The University shall:

    a. provide installation plans identifying areas or locations for the cabling installations

    b. allow access of the service provider in the university premises during the installation of the cabling

    c. monitor the project's progress

IV. Qualification Requirements

The service provider:

a. must have at least five (5) years of experience in supply, delivery, installation, testing and commissioning of network equipment and structured cabling system

b. must have the capacity and ability to provide local maintenance services and technical support.

c. have implemented at least 3 similar projects in the deployment of a structured copper cabling

d. PhilGEPS registered

V. Technical Requirements

a. Comply with the installation design and plan at VIII

b. The service provider is reachable through phone or email for technical support. Response time should be at least within the next business day

c. Complete the delivery of the functional network in 50 calendar days

d. Upon installation, the network shall be tested for continuity and speed in consideration of conditions and parameters identified

e. Update the university of weekly progress

f. Service provider shall be responsible and accountable for the removal and proper disposal of debris, material and waste generated in the project

g. Fiber-optic cable must be ANSI/TIA568-B.3, EIA/TIA 492, RoHS Compliant.

h. Cabling Standards to Comply to:

   1. ISO/IEC 11801:2002: International Standard for generic cabling for customer premises

   2. EIA/TIA 568B: Commercial Building Telecommunications Cabling Standard (2002)

   3. EIA/TIA 568B.2-1: Commercial Building Telecommunication Cabling Standard (2002).

   4. IEEE 802.3af/at

i. 48U Data Cabinet have/be:

   j. IP20 rated

   k. 4 Exhaust fans or more

   l. Removable panels and door

   m. Sturdy door locks

   n. 15A horizontal power distribution units

   o. Load capacity: at least 100kgs

p. 12U Wall-mount Data Cabinet have/be:

   1. IP55 rated for the basement and IP20 rated for the 2nd floor annex

   2. 2 Exhaust fans or more

   3. Removable panels and door

      4. Sturdy door locks

      5. 15A horizontal power distribution units

      6. Load capacity: at least 100kgs

 q. Warranty is 1 year minimum on materials, workmanship 1 year

VI. Deliverables

a. The Service provider shall submit detailed scope of work for proposed solution in coordination with the ICT Office. This shall include all wiring diagrams, description of materials to be used to produce the structured cabling infrastructure and timeline for major tasks of the Work
b. Supply and install CAT6 UTP cable (full copper) that will be used for horizontal cabling from each wiring closet to each endpoint
c. Supply and install electrical cables which will be terminated from UPS in each wiring closet installed complete with circuit breaker
d. LC UPC fiber-optic patch panels installed in each data cabinet.
e. Centralize CAT6 outlets in a patch panel located in its respective floor.
f. CAT6 outlets at each endpoint.
g. Supply and install patch panels in data cabinets
h. Supply and install separation partitions, raceways, drilling and chiseling of walls for pulling cables, plastering and paintings of wall as necessary
i. Properly identify and label both ends of data cables/runs
j. Test and verify that each and every network point is working
k. Test and verify that each and every PoE network point is working
l. Submit detailed documentation of the installation, termination and labels of data cabling

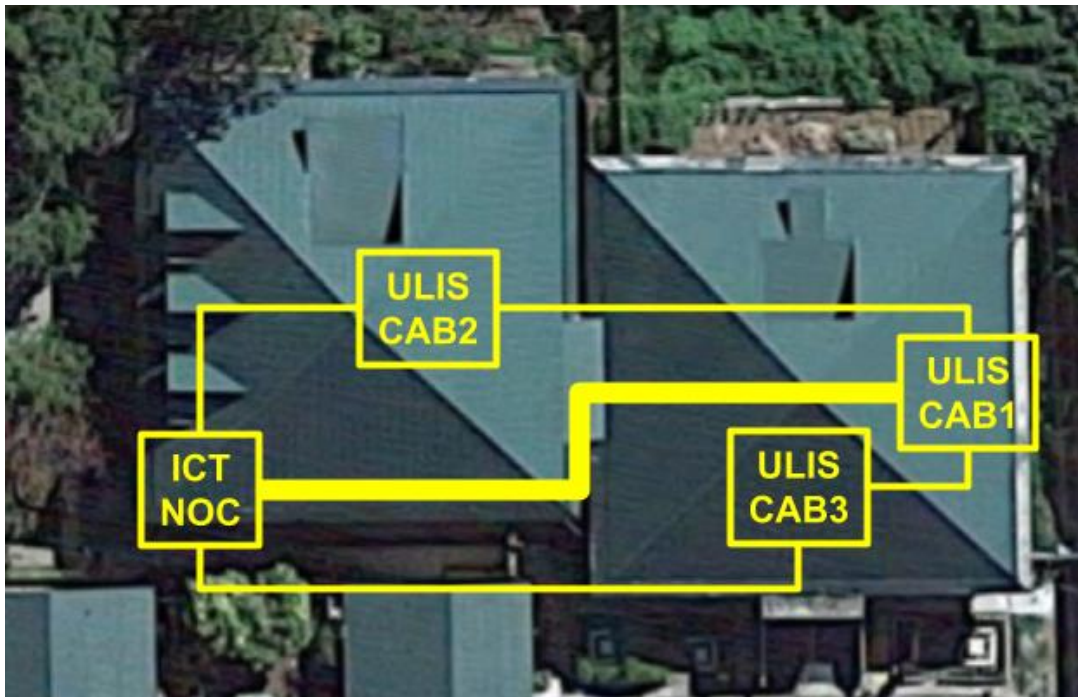## VII. Approved Budget for the Contract (ABC)
The total ABC for the project is Php 1,000,000.00 inclusive of all applicable government taxes and service charges.

VIII. Installation Diagram

FIBER-OPTIC CABLING LAYOUT
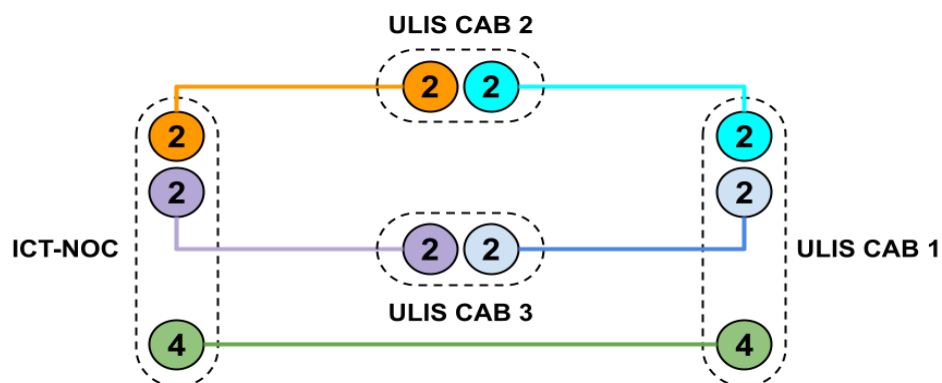
NETWORK MAP

PLAN DETAILS:

NOTE: The supplier will adhere to the following minimum requirements:
- 4-core, 850nm wavelength, multi mode, indoor fiber-optic cable for ICT-NOC to ULIS CAB 1 link.
- 2-core, 850nm wavelength, multi mode, indoor fiber-optic cable for the rest of the links.
- Support messenger wire must be grounded at both ends. Use proper grounding materials.
- Cables installations must comply with the Philippine Electronics code.
- LC UPC terminated fiber-optic patch panels will be used.
- 3 meter long LC-LC fiber-optic patch cords will be provided for every available fiber-optic pair of ICT-NOC
- 1 meter long LC-LC fiber-optic patch cords will be provided for every available fiber-optic pair of DATA CAB1, DATA CAB2 and DATA CAB3.
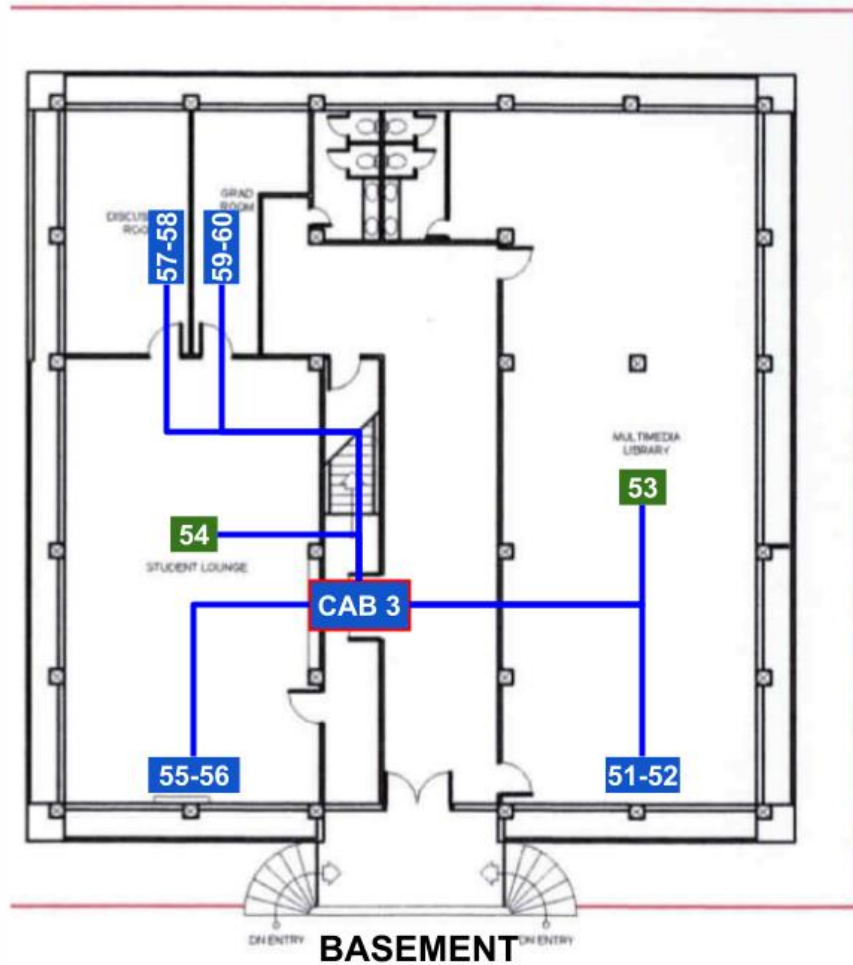- Warranty is 5 years minimum on materials, workmanship is 1 year.

COPPER CABLING LAYOUT MAIN BUILDING

MAIN FLOOR

MEZZANINE FLOOR

FIBER-OPTIC
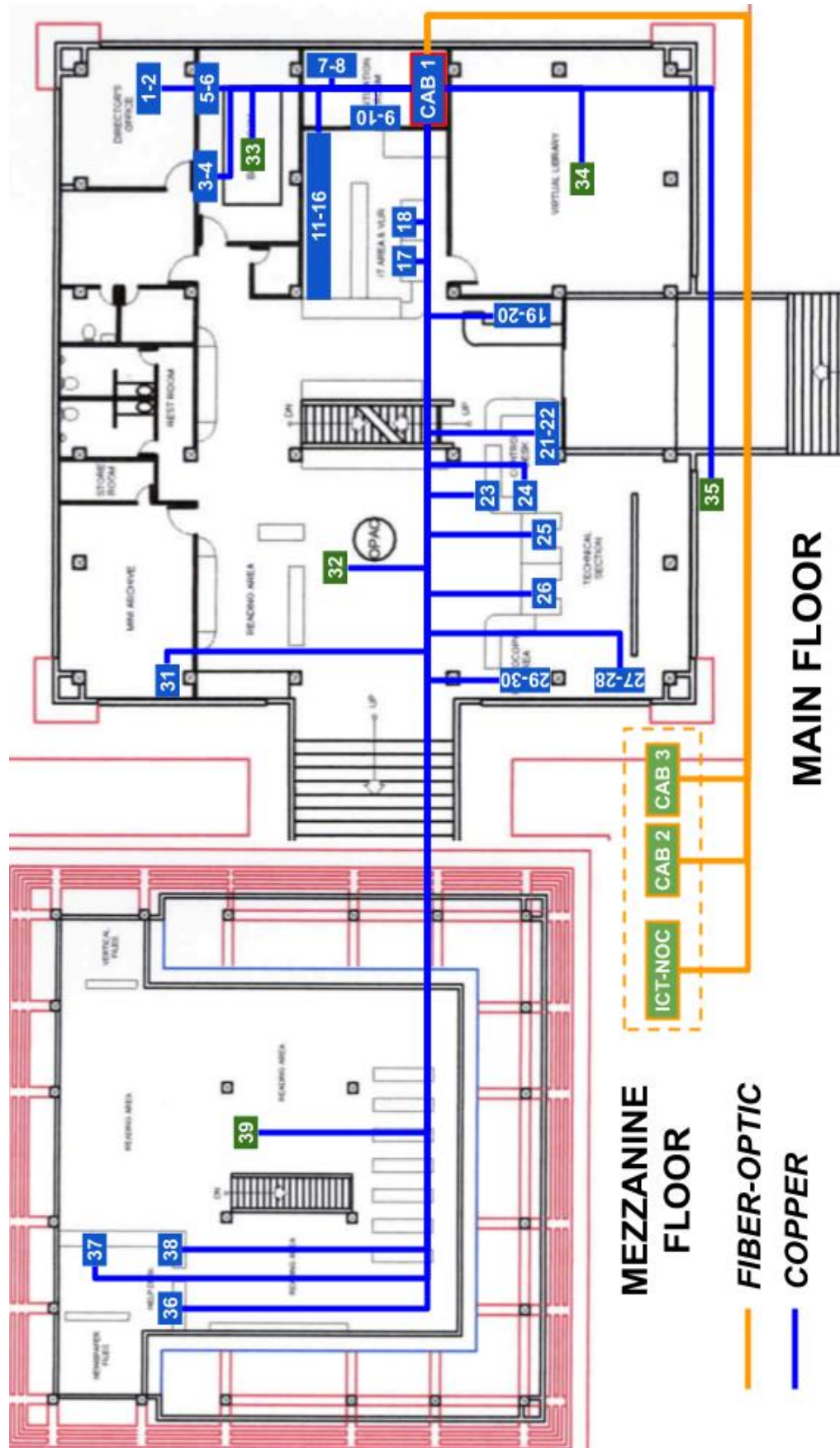
COPPER

COPPER CABLING LAYOUT ANNEX BUILDING

SECOND FLOOR ANNEX

MEZZANINE FLOOR ANNEX
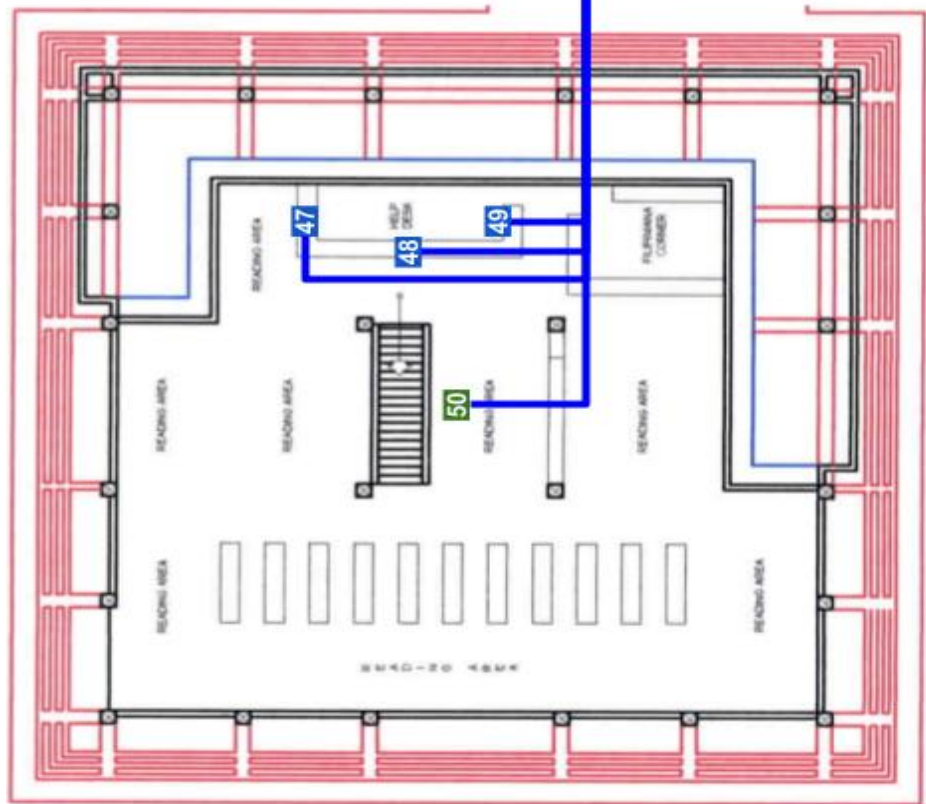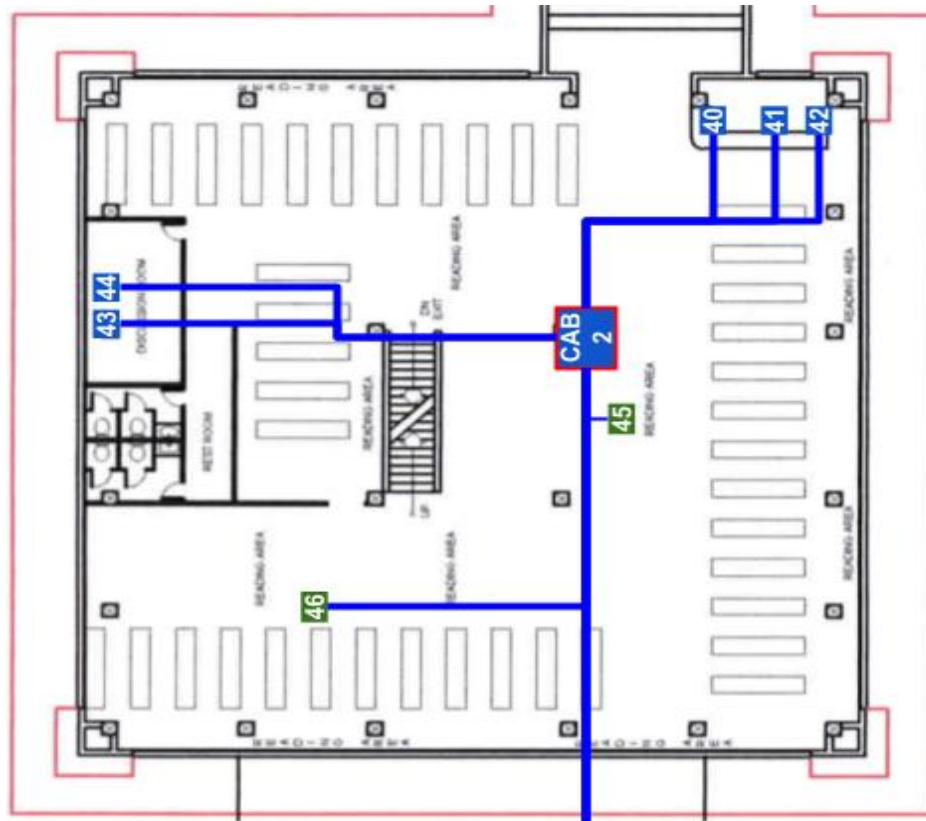
COPPER CABLING LAYOUT BASEMENT, MAIN BUILDING

BASEMENT

PLAN DETAILS:

NOTE: The supplier will adhere to the following:

Copper Cabling:
- CAT6 Outdoor cables will be used for Outdoor links between network devices.
- CAT6 Indoor cables will be used for Indoor links between network devices.
- CAT6 Indoor cables will be used for endpoints.
- Ethernet cables to be used must contain the Underwriters Laboratories (UL) badges/marks.
- Ethernet cables to be used must be made of pure copper. Copper clad aluminum cables will be REJECTED.
- Ethernet cables to be used must be Plenum-rated.
- All copper cables will be enclosed in either flexible PVC, cable ladder (stainless/galvanized steel), or wire basket/mesh.
- Cable raceways will be secured to walls/ceilings using rivets/screws.
- Cable raceway installations must allow easy access and/or replacement of cable runs.
- Cable raceway installations must have ample space for additional cable runs.
- End points are terminated using duly-rated data outlets.
- CAT6 patch cords will be provided for all patch panel ports
- CAT6 patch cords will be provided for all endpoints.

Data Cabinets:

● 48U data cabinet *(similar to image below)* will be installed at the Main Floor Main Building *(located in the map as CAB 1)* and will contain or have the features listed as follows:

- *Removable side panels.*
- *100kgs weight capacity*
- *2 standard fixed shelf*
- *2 pieces full height Vertical cable managers (left and right)*
- *4 pieces 1U horizontal cable managers (24-port cabling)*
- *4 exhaust fans*
- *2 horizontal power distribution units (PDU) with 6 universal outlets each*
- *Screws, nuts & bolts*
- *IP20/IP30/IP40/IP50 rated*
- *2 pieces, fully loaded CAT6 24-port punch down copper patch panels complying with ANSI/TIA-568.2-D, ISO/IEC 11801-1 and EN 50173-1 Class E specifications.*
- *Castors & adjust feed*

● 12U wall mounted data cabinets *(similar to image below)* will each be installed at the 2nd Floor Annex building *(located in the map as CAB 2)* and the basement *(located in the map as CAB 3)* and will contain or have the features listed as follows:

- *Removable side panels.*
- *60kgs weight capacity*
- *1 piece 1U horizontal cable managers (24-port cabling)*
- *2 exhaust fans*
- *1 horizontal power distribution units (PDU) with 6 universal outlets*
- *Mounting screws, nuts & bolts*
- *IP20/IP30/IP40/IP50 rated*
- *1 piece fully loaded CAT6 24-port punch down copper patch panels complying with ANSI/TIA-568.2-D, ISO/IEC 11801-1 and EN 50173-1 Class E specifications.*

● All Patch panels will be properly labeled and printed trace maps stickers will be pasted behind the corresponding data cabinet's front door.

● Connect ALL data cabinets to each respective location's electrical circuit complete with an appropriately rated circuit breaker.

● All Data cabinet locks can be opened by a single master key. Multiple copies of this master key will be provided to the university.

● The data cabinet lock & key type shown or similar to the image below are REJECTED.

Network Equipment:

- 1 unit Layer 3 Fiber-Optic Smart Switch compatible with existing MikroTik CRS317-1G-16S+
    - ARM 32bit Architecture, 2x 800MHz CPU cores, RouterOS L5, 512MB RAM, 16MB FLASH storage, Approximately 200,000 hours at 25C MTBF, -40℃ to 70℃ tested ambient temperature, 12-57V DC jack input Voltage, 23W Maximum power consumption, Passive Cooling, 802.3af/at PoE in, 18-57V PoE in Input Voltage, 1 Gigabit Ethernet port, 8x SFP+ ports, RS232 Serial port, CPU temperature monitor, 1U rackmount case. CEA/EAC/ROHS Certifications, IP20, Rack ears and screws, 24V/1.2A power adapter. 12-month warranty on materials and workmanship under normal use and service by the manufacturer, except in case of damage caused by mechanical, electrical or other accidental or intended damages caused by improper use or due to wind, rain, fire or other acts of nature. On-call/next-business day support must be provided by local supplier/dealer.

- 1 unit Layer 3 48-port Gigabit Ethernet Smart Switch compatible with existing MikroTik CRS328-24P-4S+RM
    - MIPSBE Architecture, 650MHz CPU core, RouterOS L5, 64MB RAM, 16MB FLASH storage, Approximately 200,000 hours at 25C MTBF, -20℃ to 60℃ tested ambient temperature, Dual 100-240 AC inputs, 60W Maximum power consumption, 3x Fans, 1x Ethernet port, 48x Gigabit Ethernet port, 4x SFP+ ports, 2x 40G QSPF+ ports, 1x RJ45 Serial Console port, CPU temperature monitor, PCB temperature monitor, Voltage monitor, 1U rackmount case. CEA/EAC/ROHS Certifications, IP20, Rackmount ears and screws, Cable management brackets, 2x IEC cords. 12-month warranty on materials and workmanship under normal use and service by the manufacturer, except in case of damage caused by mechanical, electrical or other accidental or intended damages caused by improper use or due to wind, rain, fire or other acts of nature. On-call/next-business day support must be provided by local supplier/dealer.

- 2 units Layer 3 24-port Smart Switches compatible with existing MikroTik CRS328-24P-4S+RM
    - ARM 32bit Architecture, 800MHz CPU core, RouterOS L5, 512MB RAM, 16MB FLASH storage, Approximately 200,000 hours at 25C MTBF, -40℃ to 60℃ tested ambient temperature, 10-30V DC jack Input Voltage, 24W Maximum power consumption, Passive Cooling, Passive PoE in, 24x Gigabit Ethernet ports, 2x SFP+ ports, 1x RJ45 Serial Console port, CEA/EAC/ROHS Certifications, IP20, Rack ears and screws, 24V/1.2A power adapter. 12-month warranty on materials and workmanship under normal use and service by the manufacturer, except in case of damage caused by mechanical, electrical or other accidental or intended damages caused by improper use or

due to wind, rain, fire or other acts of nature. On-call/next-business day support must be provided by local supplier/dealer.

- 3 units indoor wireless access point compatible/same brand with existing MikroTik CRS328-24P-4S+RM cAPSMAN
  - ARM 32bit Architecture,Quad Core 716MHz CPU, RouterOS L4, 128MB RAM, 16MB FLASH storage, Approximately 100,000 hours at 25C MTBF, -40°C to 70°C tested ambient temperature, IPsec hardware acceleration, 300Mbit/s Wireless 2.4GHz Max data rate, Dual 2.4GHz wireless chains, 802.11b/g/n, 6dBi Antenna gain for 2.4GHz, Wi-Fi 4 wireless 2.4GHz generation, 867Mbit/s Wireless 5GHz Max data rate, Dual 5GHz wireless chains, 802.11a/n/ac, 5.5dBi Antenna gain for 5GHz, Wi-Fi 5 wireless 5GHz generation, AC1200 AC speed, 2x Gigabit Ethernet ports, 24W max power consumption, Passive cooling, 1x 802.3af/at PoE In port, 18-57V PoE in Input Voltage, 1x Passive PoE Out port up to 57V, 500mA max out per port, CE/FCC/IC/EAC/ROHS Certifications, Mode button, 24V/1.2A power adapter, ceiling mount, Gigabit PoE Injector, fastening kit. 12-month warranty on materials and workmanship under normal use and service by the manufacturer, except in case of damage caused by mechanical, electrical or other accidental or intended damages caused by improper use or due to wind, rain, fire or other acts of nature. On-call/next-business day support must be provided by local supplier/dealer.

- 1 unit outdoor wireless access point compatible/same brand with existing MikroTik CRS328-24P-4S+RM cAPSMAN
  - ARM 32bit Architecture, black, Quad Core 488-896 (auto)MHz CPU, RouterOS L4, 128MB RAM, 16MB FLASH storage, Approximately 100,000 hours at 25C MTBF, -40°C to 70°C tested ambient temperature, IPsec hardware acceleration, 300Mbit/s Wireless 2.4GHz Max data rate, Dual 2.4GHz wireless chains, 802.11b/g/n, 2.5dBi Antenna gain for 2.4GHz, Wi-Fi 4 wireless 2.4GHz generation, 867Mbit/s Wireless 5GHz Max data rate, Dual 5GHz wireless chains, 802.11a/n/ac, 2.5dBi Antenna gain for 5GHz, Wi-Fi 5 wireless 5GHz generation, AC1200 AC speed, 2x Gigabit Ethernet ports, 10-57V DC jack Input Voltage, 10W max power consumption, Passive cooling, 1x 802.3af/at PoE In port, 18-57V PoE in Input Voltage, CE/FCC/IC/EAC/ROHS Certifications, IP54, PCB temperature monitor, Voltage monitor, 24V/0.8A power adapter, Gigabit PoE Injector, desktop stand, ceiling mounting kit, metal ring. 12-month warranty on materials and workmanship under normal use and service by the manufacturer, except in case of damage caused by mechanical, electrical or other accidental or intended damages caused by improper use or due to wind, rain, fire or other acts of nature. On-call/next-business day support must be provided by local supplier/dealer.

- 12 units fiber-optic transceiver modules compatible/same brand with existing MikroTik CRS317-1G-16S+ and CRS328-24P-4S+RM switches
  - Dual LC UPC Connector, 1G/10G Data rate, 300m distance, SFP+ format, Multi Mode, 850nm wavelength, 40°C to 70°C tested ambient temperature.
- 1 unit 3 KVA rackmount UPS, universal outlets, with rack mounting kit
- 2 units 1 KVA UPS, universal outlets