
Technical Requirements and Conditions

IB 2022-18 FIBER OPTICS BACKBONE CABLING AT LA TRINIDAD CAMPUS

Project Description: Supply, Delivery, Installation, Testing and Commissioning of Fiber Optics Backbone Cabling at La Trinidad Campus

I. Introduction

This Technical Requirements and Conditions provides the description of the project, the technical specifications, terms and conditions as well as documentary requirements to support the procurement process of the fiber optics backbone cabling.

II. Rationale

This project seeks for the deployment of a robust fiber optics that shall connect all major buildings along the premises of the La Trinidad Campus.

The university has installed Fiber Optics cabling way back in 2002 and has various upgrades however, it is limited and connects only limited areas in the university. The old fiber optics cable is already outdated and is not suited for the expansion that the university is aiming.

The figure below shows the current fiber optics cabling of the university (green lines). The current target of this project is to install new fiber optics lines (blue) and in the future, upgrade it to fully redundant line.

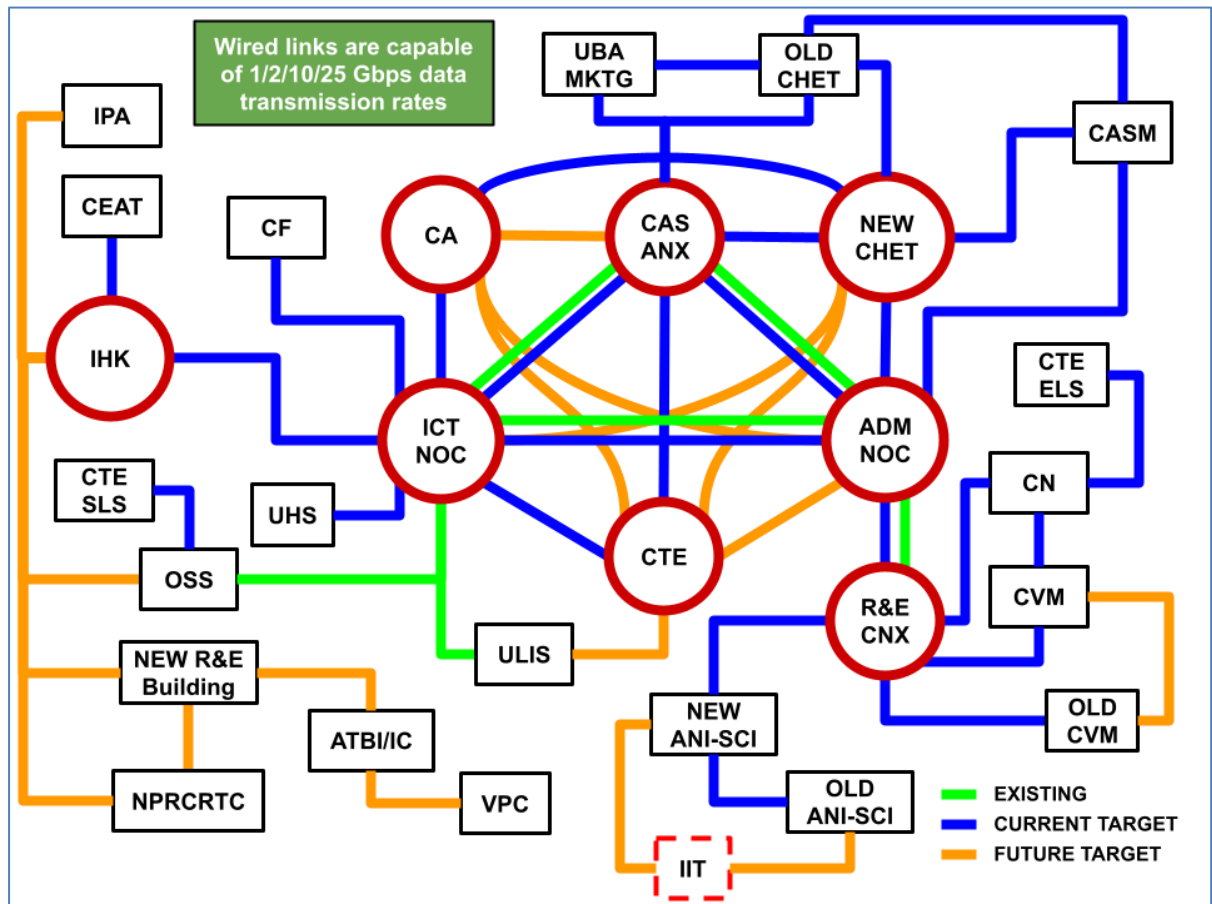


Figure 1. Current, Proposed and Future Fiber Optics expansion

III. Scope of Work

The project requires the deployment of a robust 10-gigabit per second fiber optics backbone which can be upgraded up to 25/40-gigabit per second in the future. It is inclusive of supply, delivery, installation, commissioning, labor, engineering services, and maintenance service.

The service provider shall:

- a. Conduct a site survey prior to the submission of bid documents.
- b. Provide all necessary materials and services: cables, terminators, patch panels, patch cords, data cabinets, public works, labor and others
- c. Avail required permits from LGU or other parties as needed
- d. Provide local technical support and maintenance service within next business day
- e. Conduct and provide a comprehensive report for each test and technical support service
- f. Provide maintenance within the warranty period
- g. Provide a single point of contact personnel
- h. Perform mobilization/demobilization, site works, clearing/grubbing, excavation concrete works, steel works, layout of fiber optic conduit, and electrical wirings.

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- i. Provide the following tools and equipment:
1 unit one bagger concrete mixer, 2 units-welding machine, 1 unit portable concrete cutter, 2-units angle grinder, 4 units power hand/impact drill, 1-lot assorted hand tools.
 - j. Supervise the installation with the following personnel:
Electronics & communication engineer (fiber cabling), electrical engineer (electrical installations), civil engineer, safety officer, foreman.

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 of Prospective Bidder

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 maintenance services and technical support in the next business day
- c. have implemented at least 3 similar projects in the deployment of a fiber optics backbone cabling

V. Technical Requirements

- a. Service provider must submit detailed work plan specifying installation design
- b. Designs and plans must be signed by a professional electronics engineer
- c. Installation shall be supervised by a professional electronics engineer
- d. Service provider shall submit original copy of design proposal, brochures and other publications that supports compliance to the requirements
- e. Service provider is reachable through phone or email for technical support
- f. Complete the delivery of the functional network within 120 days from the receipt of the Notice to Proceed
- g. Upon installation, the network shall be tested for continuity and speed together with all conditions and parameters identified
- h. The fiber-optic cable must be compatible with the university's existing MikroTik S+31DLC10D transceiver modules
- i. The buried fiber-optic cable must have/be:
 - 1. Suitable for outdoor direct buried application

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2. Steel armoured multi-tube single-mode fiber-optic cable
 3. Strength member: steel wire and corrugated steel tape
 4. Moisture barrier: jelly compound
 5. Jacket type: Polyethylene
 6. Tensile load (long term): at least 61 kgf
 7. Crush load (long term): at least 30 kgf
 8. ITU-T G652D, ANSI/TIA568-B.3, EIA/TIA 492, RoHS Compliant
 9. Fiber optic cable must be buried at least 77cm. Exceptions must be approved by the university
 10. Caution/warning tape must be installed above the buried fiber at least 30cm above and parallel with the buried cable. Exceptions must be approved by the university
 11. Buried fiber warning signs/poles (sturdy materials) must be installed above cable routes especially in open areas where construction may be considered in the future
- j. The aerial fiber-optic cable must have/be:
1. Suitable for outdoor aerial application
 2. Figure 8 with steel wire central strength member, loose tube
 3. Moisture barrier: jelly compound, Aluminium Polyethylene Laminate (APL) or other suitable material
 4. Jacket type: Polyethylene
 5. Aerial FOC attachment to poles must use standard electrical mounting hardware such as, but not limited to, pole clamp and guy wire clamp
 6. Fiber loops must be stored/house-kept in loop holders
 7. Support messenger wire must be grounded at both ends. Use proper grounding materials
 8. Installation height of aerial cables must comply with elevations prescribed in the Philippine Electronics Code, as authorized by the electric company in case the fiber-optic cable is co-located in their poles, and as defined by the Department of Public Works and Highways, LGU or other government agencies in case the fiber-optic cable crosses public roads.
- k. Update the university of weekly progress
- l. Service provider shall be responsible and accountable for the removal and proper disposal of debris, material and waste generated in the project
- m. Warranty is 5 years minimum on materials, workmanship 1 year

VI. Deliverables

The Fiber Optic will provide the university with a robust 10-gigabit per second backbone which can be upgraded up to 25/40-gigabit per second in the future. Redundancies on the network's cabling design ensures its stability.

The network will connect the following university locations:

- a. Administration Building
- b. ICT Office & University Library
- c. College of Agriculture
- d. College of Agriculture – New Animal Science Building
- e. College of Arts & Sciences Annex
- f. College of Arts & Sciences Main
- g. College of Engineering
- h. College of Forestry
- i. College of Home Economics Technology Old & New buildings
- j. College of Human Kinetics
- k. College of Nursing
- l. College of Public Administration & Governance
- m. College of Teacher Education
- n. College of Teacher Education Secondary Level School
- o. College of Veterinary Medicine
- p. Chemistry & Soil Sciences Departments Building
- q. Research & Extension Complex
- r. Northern Philippines Root Crops Regional Training Center
- s. Office for Student Services
- t. University Business Affairs & Marketing Center
- u. University Health Services

Note: refer to Annex B for detailed installation diagram and plan