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

# ***SECTION 7*** *– TECHNICAL SPECIFICATIONS*

## TECHNICAL SPECIFICATIONS

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

| Item | Specifications | Statement of Compliance |
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| | | *[Bidders must state here either "Comply" or "Not Comply" against each of the individual parameters of each Specification stating the corresponding performance parameter of the equipment offered. Statements of "Comply" or "Not Comply" must be supported by evidence in a Bidders Bid and cross-referenced to that evidence. Evidence shall be in the form of manufacturer's un-amended sales literature, unconditional statements of specification and compliance issued by the manufacturer, samples, independent test data etc., as appropriate. A statement that is not supported by evidence or is subsequently found to be contradicted by the evidence presented will render the Bid under evaluation liable for rejection. A statement either in the Bidder's statement of compliance or the supporting evidence that is found to be false either during Bid evaluation, post-qualification or the execution of the Contract may be regarded as fraudulent and render the Bidder or supplier liable for prosecution subject to the applicable laws and issuances.]* |
| 1 | **1 Lot FIBER OPTICS BACKBONE CABLING AT LA TRINIDAD CAMPUS**<br><br>**I. Introduction**<br>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 | |

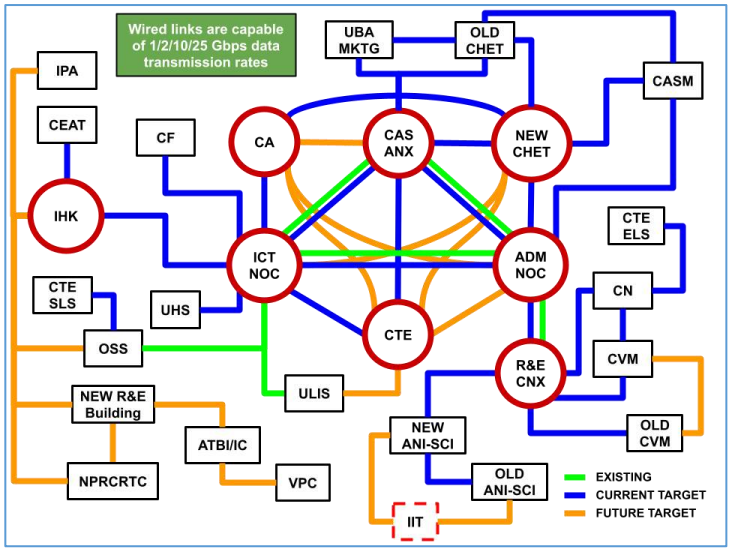


*Figure 1. Current, Proposed and Future Fiber Optics expansion*

## II. 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

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| | h. Perform mobilization/demobilization, site works, clearing/grubbing, excavation<br>concrete works, steel works, layout of fiber optic conduit, and electrical wirings.<br>i. Provide the following tools and equipment:<br>1 unit one bagger concrete mixer, 2 units-welding machine, 1 unit portable<br>concrete cutter, 2-units angle grinder, 4 units power hand/impact drill, 1-lot<br>assorted hand tools.<br>j. Supervise the installation with the following personnel:<br>Electronics & communication engineer (fiber cabling), electrical engineer (electrical installations), civil engineer, safety officer, foreman.<br>The University shall:<br>a. provide installation plans identifying areas or locations for the cabling installations<br>b. allow access of the service provider in the university premises during the installation of the cabling<br>c. monitor the project's progress | |
| | **III. Qualification Requirements of Prospective Bidder**<br>The service provider:<br>a. must have at least five (5) years of experience in supply, delivery, installation, testing and commissioning of network equipment and structured cabling system<br>b. must have the capacity and ability to provide maintenance services and technical support in the next business day<br>c. have implemented at least 3 similar projects in the deployment of a fiber optics backbone cabling | |

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| | **IV. Technical Requirements**<br>a. Service provider must submit detailed work plan specifying installation design<br>b. Designs and plans must be signed by a professional electronics engineer<br>c. Installation shall be supervised by a professional electronics engineer<br>d. Service provider shall submit original copy of design proposal, brochures and other publications that supports compliance to the requirements<br>e. Service provider is reachable through phone or email for technical support<br>f. Complete the delivery of the functional network within 120 days from the receipt of the Notice to Proceed<br>g. Upon installation, the network shall be tested for continuity and speed together with all conditions and parameters identified<br>h. The fiber-optic cable must be compatible with the university's existing MikroTik S+31DLC10D transceiver modules<br>i. The buried fiber-optic cable must have/be:<br>1. Suitable for outdoor direct buried application<br>2. Steel armoured multi-tube single-mode fiber-optic cable<br>3. Strength member: steel wire and corrugated steel tape<br>4. Moisture barrier: jelly compound<br>5. Jacket type: Polyethylene<br>6. Tensile load (long term): at least 61 kgf<br>7. Crush load (long term): at least 30 kgf<br>8. ITU-T G652D, ANSI/TIA568-B.3, EIA/TIA 492, RoHS Compliant | |

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| | 9. Fiber optic cable must be buried at least 77cm. Exceptions must be approved by the university<br>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<br>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<br>j. The aerial fiber-optic cable must have/be:<br>1. Suitable for outdoor aerial application<br>2. Figure 8 with steel wire central strength member, loose tube<br>3. Moisture barrier: jelly compound, Aluminium Polyethylene Laminate (APL) or other suitable material<br>4. Jacket type: Polyethylene<br>5. Aerial FOC attachment to poles must use standard electrical mounting hardware such as, but not limited to, pole clamp and guy wire clamp<br>6. Fiber loops must be stored/house-kept in loop holders<br>7. Support messenger wire must be grounded at both ends. Use proper grounding materials<br>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 | |

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| | Highways, LGU or other government agencies in case the fiber-optic cable crosses public roads.<br>k. Update the university of weekly progress<br>l. Service provider shall be responsible and accountable for the removal and proper disposal of debris, material and waste generated in the project<br>m. Warranty is 5 years minimum on materials, workmanship 1 year | |
| | **V. Deliverables**<br>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.<br><br>The network will connect the following university locations:<br>a. Administration Building<br>b. ICT Office & University Library<br>c. College of Agriculture<br>d. College of Agriculture – New Animal Science Building<br>e. College of Arts & Sciences Annex<br>f. College of Arts & Sciences Main<br>g. College of Engineering<br>h. College of Forestry<br>i. College of Home Economics Technology Old & New buildings<br>j. College of Human Kinetics<br>k. College of Nursing<br>l. College of Public Administration & Governance<br>m. College of Teacher Education<br>n. College of Teacher Education Secondary Level School<br>o. College of Veterinary Medicine<br>p. Chemistry & Soil Sciences Departments Building<br>q. Research & Extension Complex<br>r. Northern Philippines Root Crops Regional Training Center<br>s. Office for Student Services | |

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| | t. University Business Affairs & Marketing Center<br>u. University Health Services | |
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| | **xxxxxxxxxxxxxxxxxxxxxxxx** | |

*I have hereby certify to comply with the above Technical Specifications*

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*Name of Bidder over Printed Name*

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*Designation*

_____

*Date*

# FIBER-OPTICS NETWORK CABLE LAYOUT

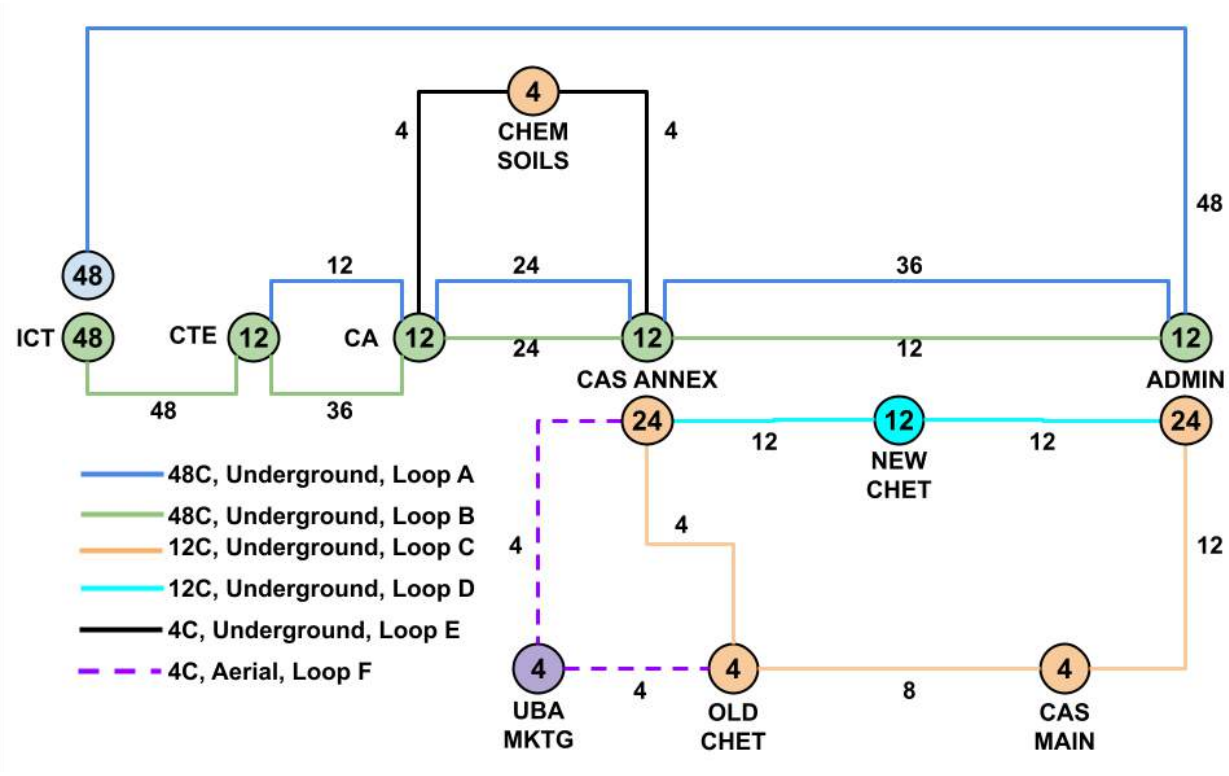


*Figure 1. Fiber-Optic Network Phase 1.*

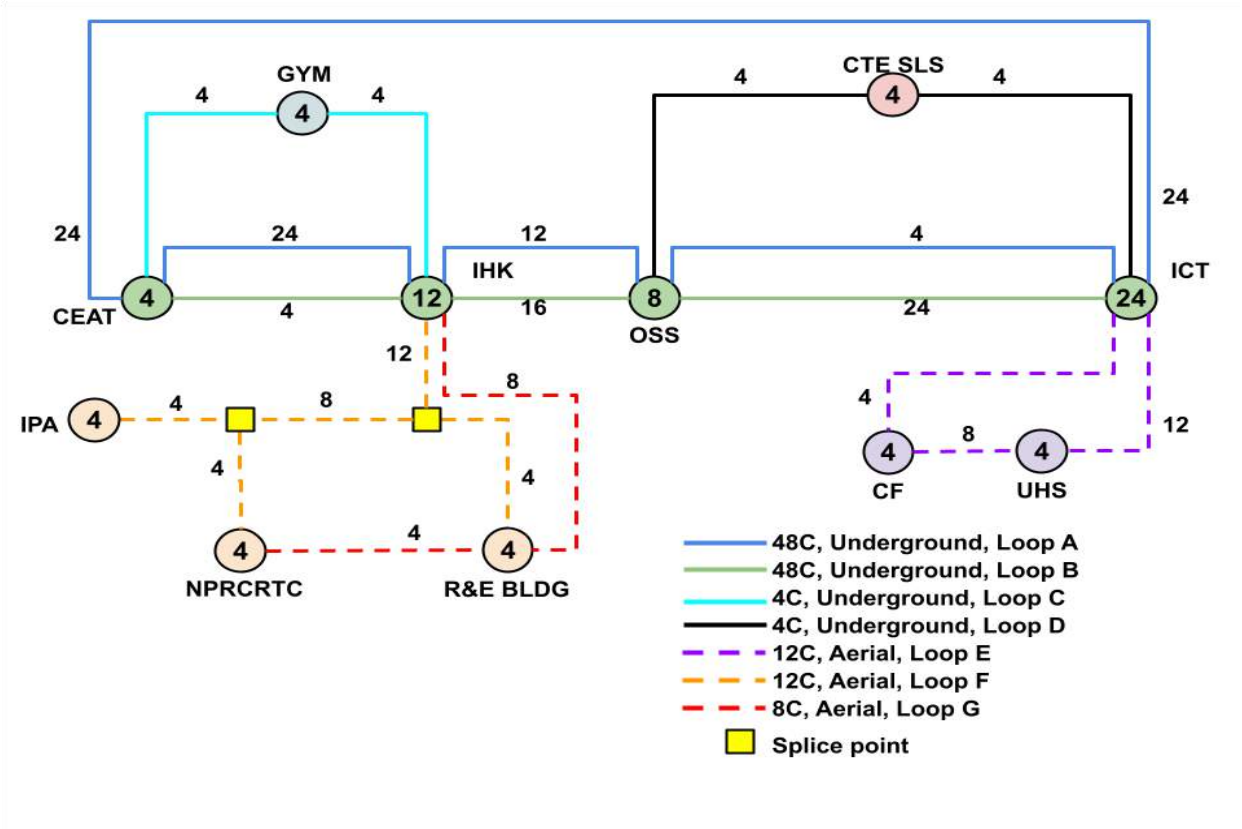


*Figure 2. Fiber-Optic Network Phase 2.*

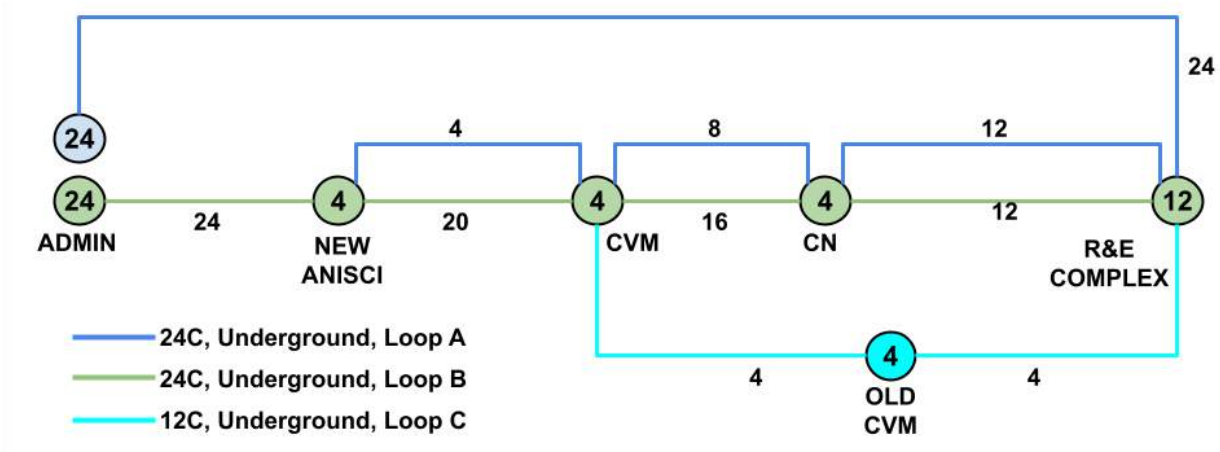


*Figure 3. Fiber-Optic Network Phase 3.*

## FIBER-OPTICS NETWORK MAPS

*Figure 4. Proposed Fiber-optic Network Physical Layout North Main Campus.*

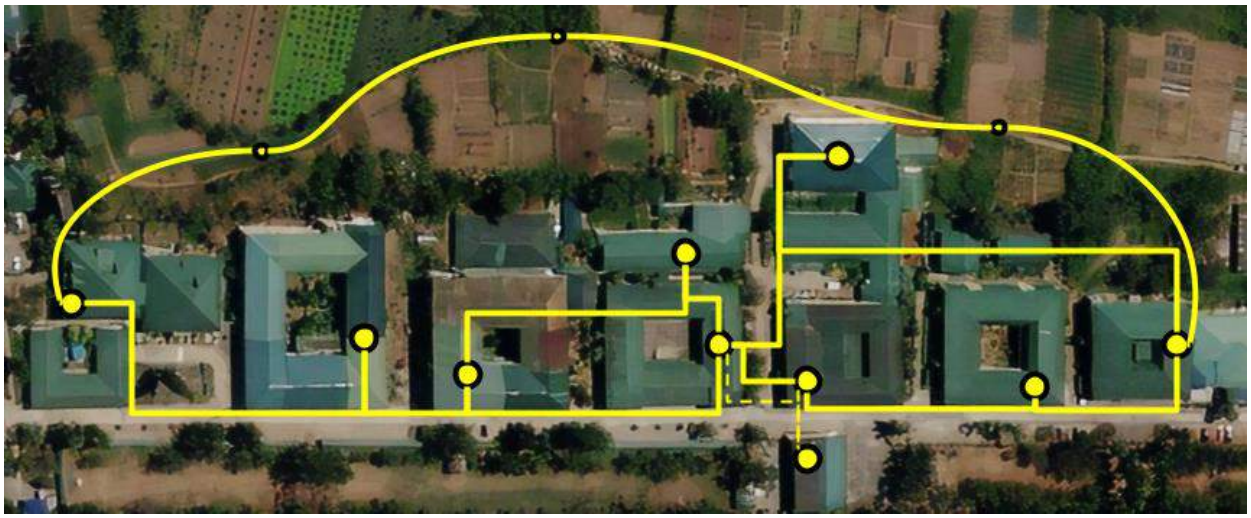

Figure 5. Proposed Fiber-optic Network Physical Layout Central Main Campus.

Figure 6. Proposed Fiber-optic Network Physical Layout South Main Campus.

***NOTE:*** **The supplier will adhere to the following:**

- LC fiber-optic patch panels will be used.
- 2-3-meter long LC-LC fiber-optic patch cords will be provided for every available fiber-optic pair.
- Two (2) 48U 4-post open frame data racks will be installed at the New Administration NOC.
- 42U-48U data cabinets will each be installed at the following locations:
    - Corner Lobby, First Floor, College of Agriculture
    - Data Room, Second Floor, Former College of Arts & Sciences Annex
    - Backstage, Audio Visual Room, First Floor, College of Human Kinetics
    - Data Room, College of Public Administration & Governance *(Former R&E Complex)*
    - Data Room, Second Floor, College of Teacher Education
    - Lobby, Main Floor, University Library & Information Services
- 16U-20U wall mounted data cabinets will each be installed at the following locations:
    - Hallway, Ground Floor, Former College of Arts & Sciences Main
    - Lobby, Second Floor, College of Engineering

- Reception Area, Second Floor, College of Forestry
- Hallway, Second Floor, New College of Home Economics & Technology
- Hallway, Second Floor, Old College of Home Economics & Technology
- Hallway, Second Floor, College of Nursing
- Faculty Room, College of Teacher Education Secondary Level School
- Hallway, Second Floor, College of Veterinary Medicine
- Hallway, Old Administration College of Veterinary Medicine
- Corner Lobby, Second Floor, New Animal Science Building
- Lobby, University Board of Regents Building
- Hallway, Second Floor, Chemistry & Soils Department
- Stage Right, Closed Gymnasium
- Hallway, Second Floor, New Research & Extension Building
- Reception Area, First Floor, New University Health Services Building
- Second Floor, University Business Affairs/ Marketing Center

- IP20/IP30/IP40/IP50 rated data cabinets will be used for fully indoor installations.
- IP55/IP65 rated data cabinets will be used for flood prone, partially indoor and outdoor installations.
- All available pairs will be properly labeled and printed trace maps stickers will be pasted behind the 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 type shown or similar to that below are REJECTED.

*Figure 7. Rejected data cabinet lock and key type*

# FIBER-OPTICS NETWORK EQUIPMENT DEPLOYMENT

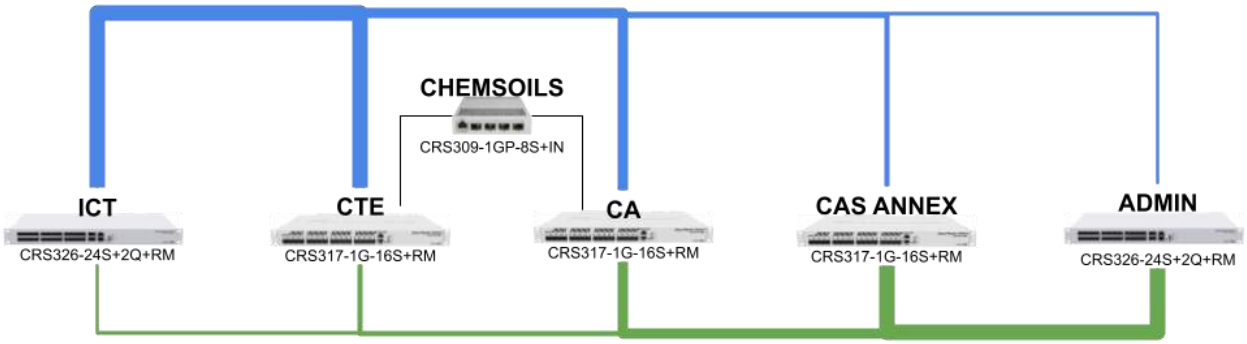


*Figure 8. Fiber-Optic Network Phase 1A Equipment Deployment.*

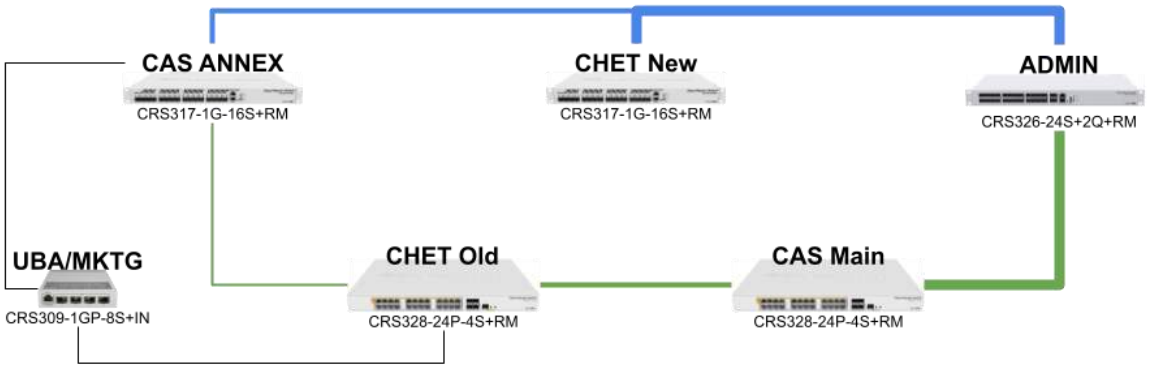


*Figure 9. Fiber-Optic Network Phase 1B Equipment Deployment*.

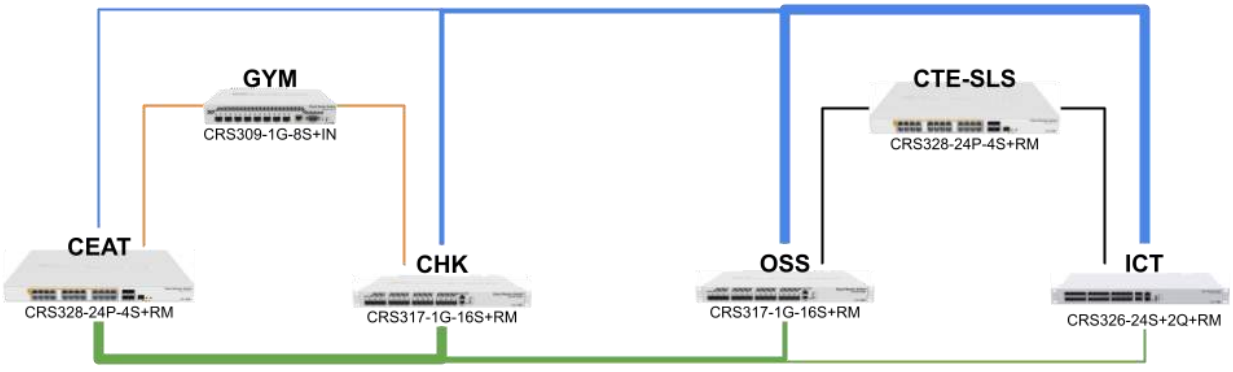


*Figure 10. Fiber-Optic Network Phase 2A Equipment Deployment.*

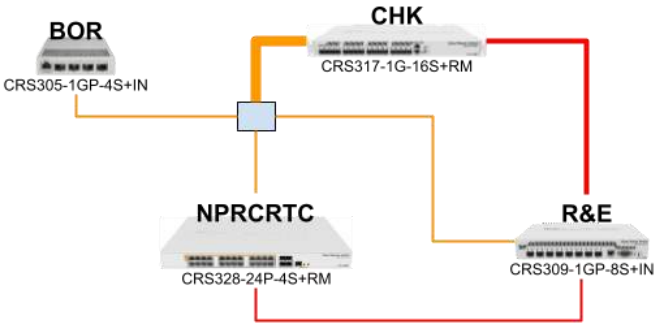


*Figure 11. Fiber-Optic Network Phase 2B Equipment Deployment*

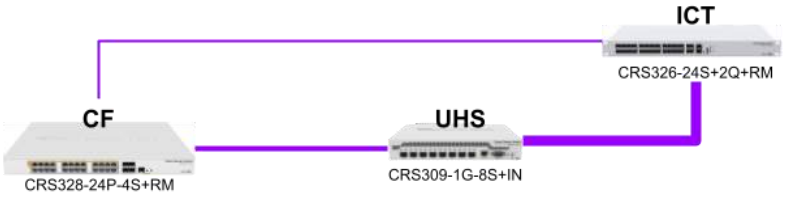


*Figure 12. Fiber-Optic Network Phase 2C Equipment Deployment.*

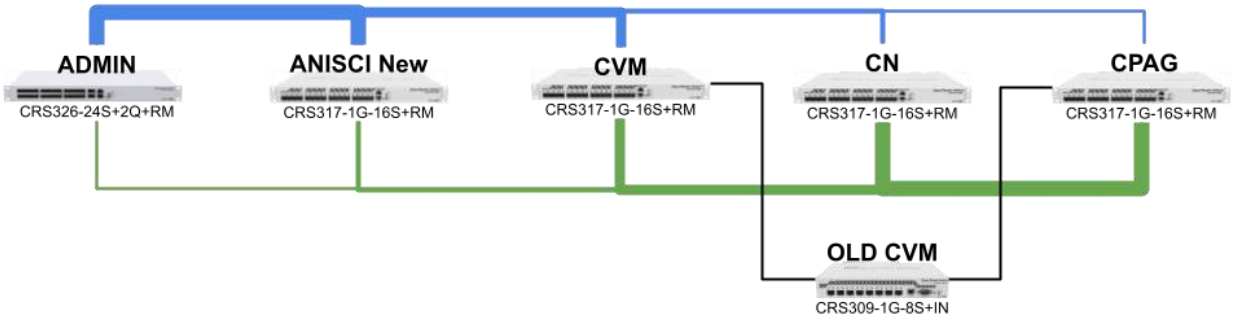


*Figure 13. Fiber-Optic Network Phase 3 Equipment Deployment.*