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### Overview

This document serves to communicate non-technical standards and timeline expectations for construction and renovation projects. It will describe requirements by Lehigh's Library and Technology Services (LTS) for projects to plan properly. All deliverables referenced in this document will be electronic unless otherwise specified and delivered to the project manager directly.

### Referenced Standards

Here is a list of standards this document references:

- LTS Communications Infrastructure Standards: CIS
  - References accurate for Rev. 2019-11-04
- LTS Network Device Requirements
  - <http://go.lehigh.edu/netreq>
- LTS Audio Visual Standards: AVS
- Please contact LTS AV for latest standards

## **Pre-Construction Milestones**

Pertinent milestones for construction projects are enumerated below. If a construction project does not warrant a milestone, timelines will need to be adjusted accordingly.

### **1. Programming**

- 1.1. Facilities to notify LTS of project commencement including project index
- 1.2. LTS project creation
  - 1.2.1. Upon notice from facilities, LTS will create internal project documentation and define scope for LTS involvement

### **2. Schematic Design**

- 2.1. Facilities-run meeting with Architects
  - 2.1.1. During SD, LTS will communicate our expectations for design
- 2.2. Project estimate
  - 2.2.1. LTS will provide a budgetary estimate for equipment and material. Estimate will include cost for:
    - 2.2.1.1. Wireless Access Points
    - 2.2.1.2. Network switch equipment and materials
    - 2.2.1.3. Estimate for confirming outside plant pathway
    - 2.2.1.4. New phone installations
    - 2.2.1.5. Emergency phones
- 2.3. Closet plan
  - 2.3.1. Specifics for closet requirements are enumerated in CIS section 2
  - 2.3.2. Rack designs can be found in CIS Appendix C
  - 2.3.3. Lehigh prefers fewest possible closets while maintaining cable length specification
  - 2.3.4. A riser diagram including inter-closet and riser pathway is required
- 2.4. Building connectivity plan to identify origination of fiber connectivity as well as associated pathway
- 2.5. Network jack locations and densities to be allocated based on CIS Appendix D

### **3. Design Development**

- 3.1. Facilities-run meeting
  - 3.1.1. During the DD process, LTS requires a facilities-run meeting to discuss the plans as they exist so LTS can provide feedback, especially with regard proposed jack locations and density
- 3.2. Equipment sizing
  - 3.2.1. At 100% DD, Lehigh requires a total count of network connections per closet (including all BAS connections). In addition, the total count of new phones is required.
- 3.3. Wireless plan
  - 3.3.1. Lehigh will provide a wireless plan based on 100% DD drawings
  - 3.3.2. One DWG furniture layer per floor is required
  - 3.3.3. Layers need to be reduced to the following: exterior walls, interior walls (with correct material), furniture, legend, and room numbers
  - 3.3.4. Lehigh will ensure a final wireless design is submitted before CD
- 3.4. Technology selection

- 3.4.1. It is imperative that all systems connecting to Lehigh's network conform to the LTS Network Device Requirements referenced above. Exceptions will not be made for equipment that does not support Lehigh's environment
- 3.4.2. AVS will meet the University standard for all classrooms. LTS will provide our 4 standard classroom designs that correlate to each style of room. One-off systems will be discussed and designed per room functionality.
- 3.5. LTS must be provided with 2 printed sets of plans (half sheets) including telecom, electrical, AV layers, and relevant specifications

**4. Construction Documents**

- 4.1. Facilities-run meeting
  - 4.1.1. Before construction documents are issued LTS requires a facilities-run meeting to ensure issued plans are correct and follow LTS' standards
- 4.2. Equipment sizing
  - 4.2.1. At 100% CD, Lehigh requires a total count of network connections per closet (including all BAS connections). In addition, the total count of new phones (by use case - i.e. common area, faculty, staff etc. ) is required.
- 4.3. Once CDs are issued, LTS requires 2 printed sets of final plans (full sheets) including telecom, electrical and AV layers
- 4.4. LTS will review and approve AV wiring diagrams along with touch panel layout and functionality.

## **Construction Milestones**

### **1. Commence Construction**

- 1.1. Meeting with construction manager
  - 1.1.1. LTS requires a facilities-run meeting with construction manager to ensure plans, standards, and assumptions are inline with LTS requirements
  - 1.1.2. LTS attendance at job meetings will be scheduled during this phase

### **2. Low Voltage Construction Commences**

- 2.1. Meeting with CM and low voltage contractor
  - 2.1.1. LTS requires a facilities-run meeting with the CM and the electrical contractor to ensure questions are answered and to review jack labeling standards

### **3. Substantial Completion**

- 3.1. Switch installation
  - 3.1.1. Fiber test results should be submitted prior to this phase
  - 3.1.2. Lehigh will not install active electronics until the network closets have been cleaned, construction in the vicinity of the closets has completed, and the doors can be locked and remain closed at all times. It will be up to LTS to provide clearance for installation
- 3.2. Network patching phase 1
  - 3.2.1. Certain BAS systems need to be functional before a temporary CO can be granted. Lehigh will patch BAS systems as necessary to allow building work to continue
  - 3.2.2. All required patching needs to be submitted via the project manager using the format specified in CIS Appendix B
  - 3.2.3. LTS requires 1 week to complete this patching pursuant to 3.2.2

### **4. Temporary CO**

- 4.1. Network patching phase 2
  - 4.1.1. Copper test results should be submitted prior to this phase
  - 4.1.2. LTS will be provided cable documentation identifying jack locations. Refer to CIS 3.5.2 for further information
  - 4.1.3. Facilities and LTS will jointly define a patching schedule indicating which jacks are to be activated based on furniture locations, phone locations and user needs
  - 4.1.4. LTS requires 2 weeks prior to furniture move-in to complete this patching

### **5. Furniture Move-in**

- 5.1. Existing phone relocations
  - 5.1.1. Two weeks prior to move date, LTS requires a list of phones that will be relocated, specifying the phone number, user's name, current location, new location (room and jack), and move date
- 5.2. New phone installations
  - 5.2.1. Two weeks prior to desired installation date, LTS requires a list of phones to be installed, specifying the new phone type and location (room and jack)

### **6. Project Completion**

- 6.1. Lehigh requires one full-size copy and one half-size copy of as-builts (including furniture layout and room numbers) before project completion

- 6.2. Facilities will notify LTS when GIS plans have been updated with new pathway and jack locations
- 6.3. Lehigh requires final copies of per-floor furniture layers in DWG format
- 6.4. LTS will conduct a walk-through of each room with the AV installer to ensure system functionality.