Case Analysis: Wiring Maury High School

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Overview

It is possible to find the average of the longest and shortest links to the instrument room or telecom storage space, then multiply that figure by the cables going to that room to get the total estimated wiring for Maury High School. Therefore, the longest and shortest cable runs will be the same for each floor because the layouts of the basements, first floor, second floor, and third floor are all identical. There will be a single equipment room in the center of the second floor, followed by telecommunication rooms on the first, basement, and third floors. The provided schematics shall clarify the location of the equipment room and telecommunication closets. The network configuration will be based on a star topology. Only backbones, distribution sections, horizontal cabling terminating points, circuit control points, and auxiliary workstations power generators will be housed in the equipment rooms and communications closets.

The Plan

Telecommunications will be installed in the basement in a closet located near the center of the floor next to the entry. The telecommunications closet in the upper right-hand corner will be connected by the longest wire run of about 45 meters or 150 feet because the institution is 95 meters wide. The shortest cable run will be one foot long and will connect the telecommunications closet to the neighboring room. Since each classroom has a live network plug, there will be 30 wires running into the communications closet area. The total cable length for the basement will be approximately 2,250 feet.

The telecommunication space on the first floor will be located in the same place as the basement's telecommunication room. The first floor will require about 2,550 feet of cable, which includes the average cable run of 75 feet and the 34 connected cables to the closet. The second and third floors will also require an average cable run of 75 feet and 36 cable lines, resulting in 2,700 feet of cabling required for each floor. In total, the institution will require 10,200 feet of cable to connect all floors.

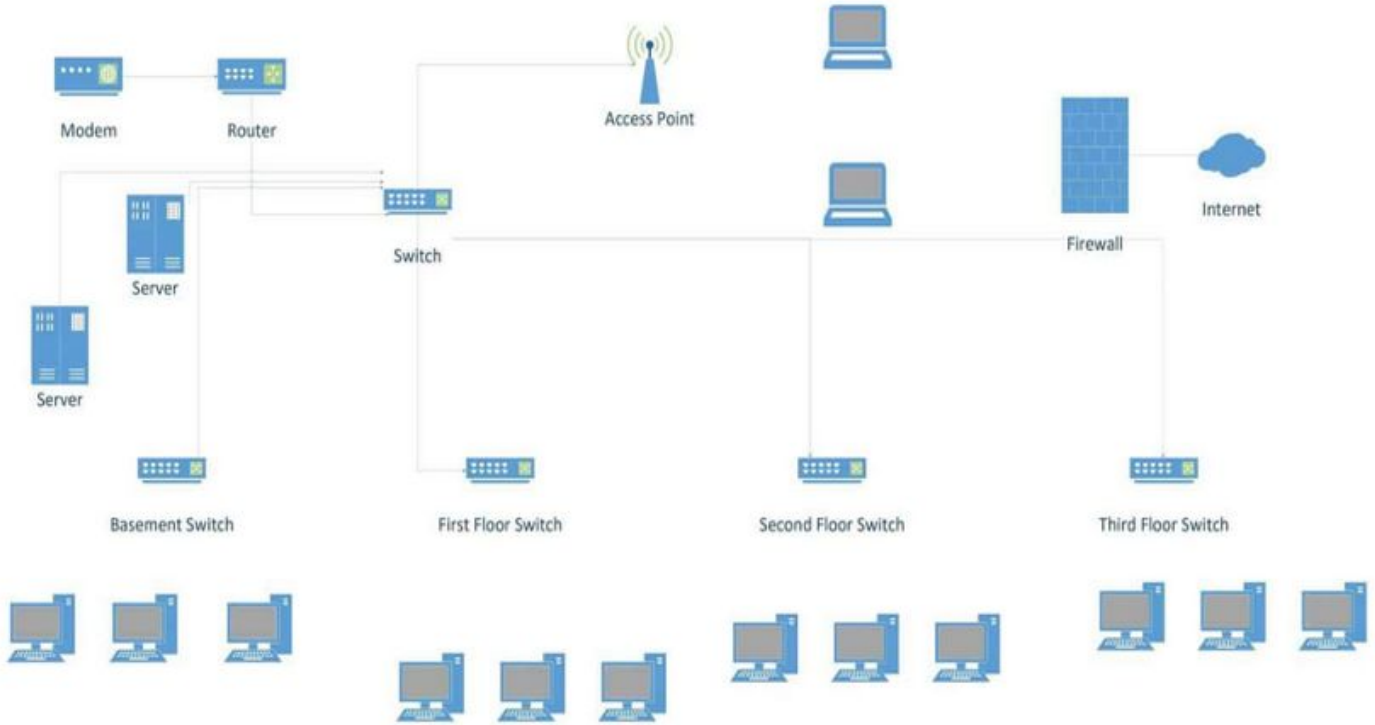
Budget

ITEM	LINK	QUANTITY	PRICE PER ONE	TOTAL
Cat6 1000ft	Cat6 Link	11	$252.32	$2775.52
RJ45 wiring panel	Wiring Panel	50	$74.00	$3700.00
RJ45 connectors	Connectors	50	$11.00	$550.00
Switches	Switches	4	$109.00	$436.00
Firebox	Firebox link	1	$1,713.99	$1,713.99
				$9175.51

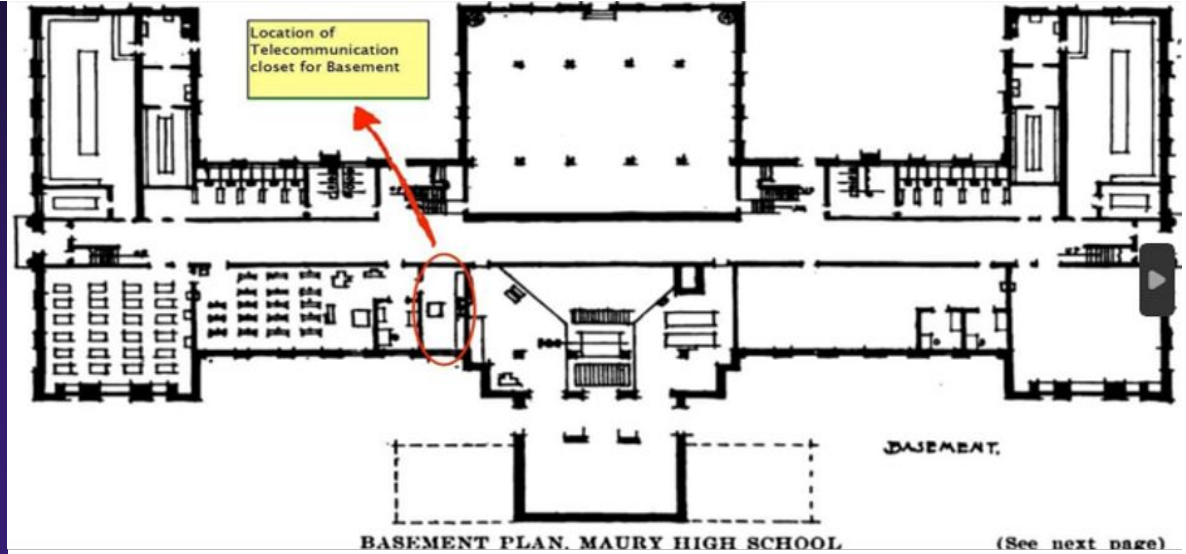
Budgeting Explained

- 11 Cat6 1,000-foot cables were purchased at a bulk price of $252.32 per 1,000 feet, totaling $2,775.52.
- 100 RJ45 connections and wiring panels were needed for each room to have two live network outlets, costing $3,700 for the panels and $550 for the connectors.
- Four controlled switches were purchased for each floor, including the telecommunications closets and instrument room, costing $436.
- A WatchGuard Firebox T55-W Security Network & Antivirus equipment (multifunctional firewall) was purchased for $1,713.99 to secure the network traffic.
- The total cost of the school's network upgrade budget is $9175.51.
- The school uses 1 gigabyte of Ethernet, and all machines have 10/100/1000Base-T network interface cards.

Image Representation

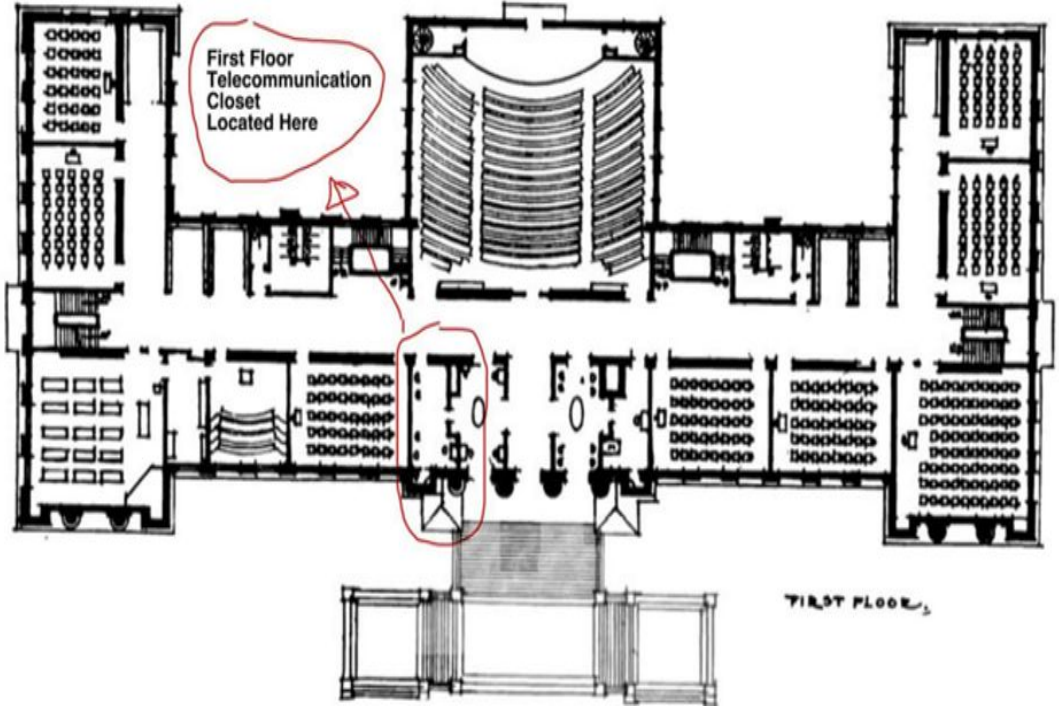


Basement Floor Plan

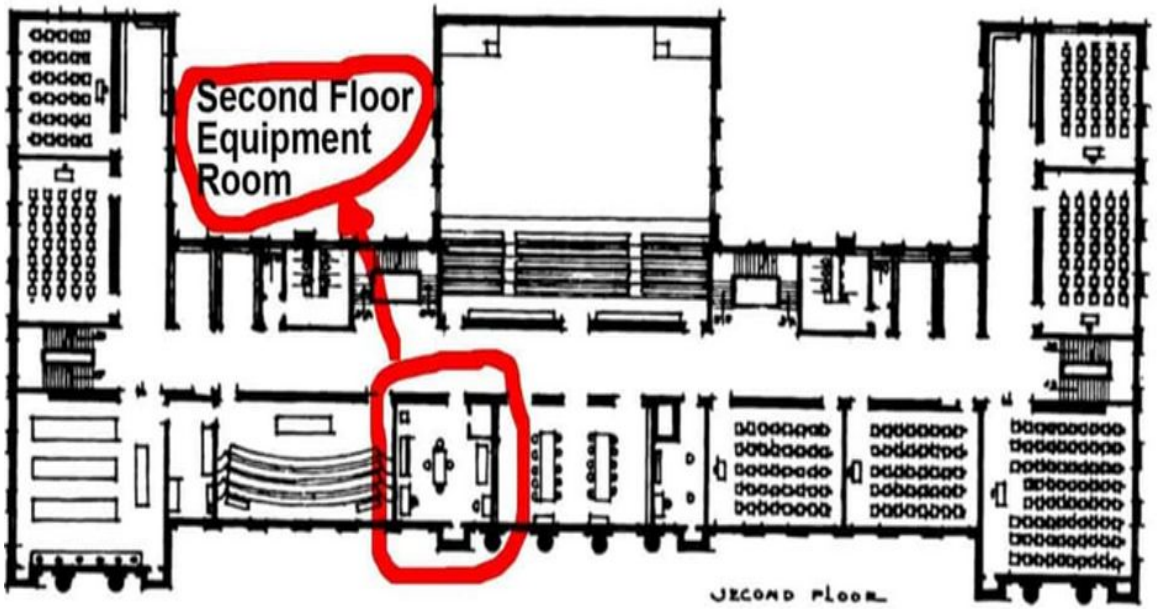


- The telecommunications closet for the basement will be located in the basement itself.
- The closet will be next to the entry and near the center of the floor.
- The access point, modem, router, internet firewall, and servers will be located within or connected to this telecommunications closet.
- The switch(es) for the basement may also be located in this closet..

First Floor Plan



Second Floor Plan



Third Floor Plan