

## Wired Network for Maury High School

The best way to calculate total estimated cabling cost is to average the shortest and longest cable runs from the telecommunications closet and the equipment rooms. The floor layouts are assumably similar therefore the shortest and longest runs will be almost the same for each floor.

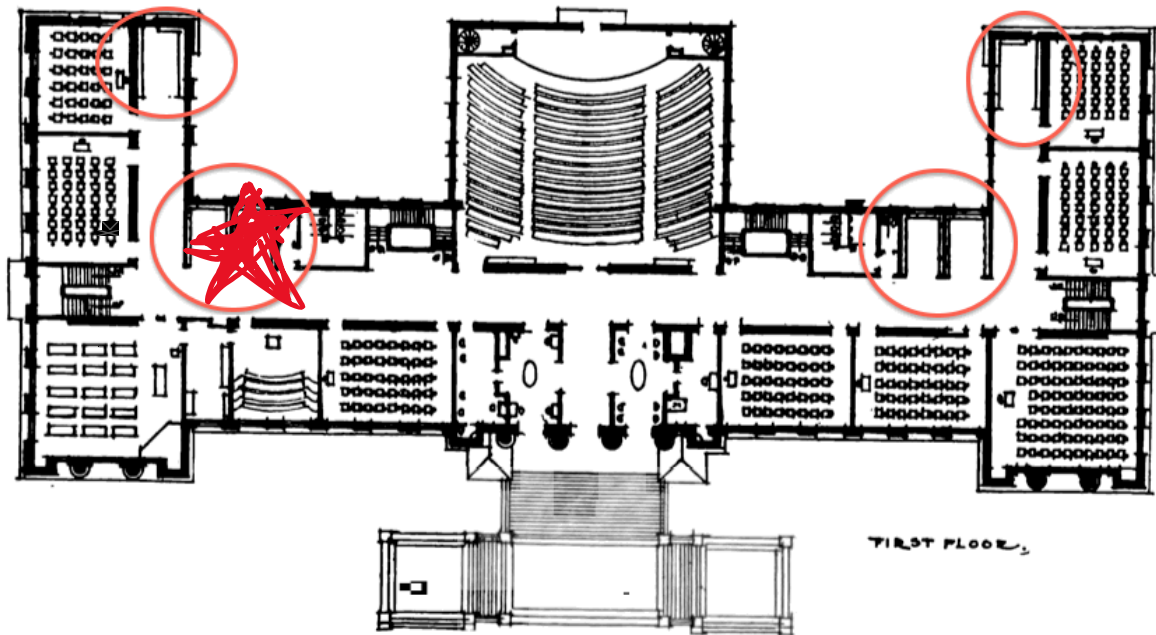
Below is the approximate number of classrooms on each floor, the approximate number of outlets need, and the approximate number of cablings for the floor.

**Basement | 2 classrooms | 4 outlets | 100 ft | 400 ft**

**First Floor | 10 classrooms + 1 auditorium | 22 outlets | 100 ft | 2,200 ft**

**Second Floor | 11 classrooms | 22 outlets | 100 ft | 2,200 ft**

**Third Floor | 12 classrooms | 24 outlets | 100 ft | 2,400 ft**



The main equipment room will be on the first floor in one of the more centrally located offices given to use, see picture below with a **STAR** to label it.

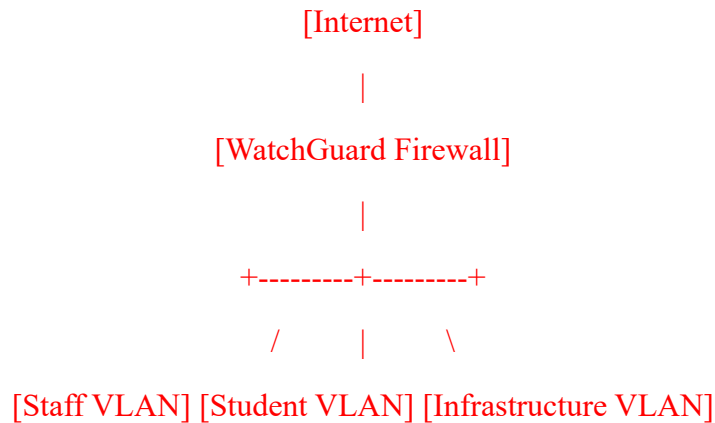
If we assume the longest cable run to be approximately 200ft, and the shortest to be 1ft. The average cable run (rounded) would be 100ft.

With an approximate number of classrooms and the outlets, I have estimated we will need approximately 7,200ft of cabling, rounding to 8,000ft for slack, ceiling runs and error margin.

On each floor will be a telecommunications closet. This will include the switches and patch panels.

### Security Plan

The WatchGuard Firebox T55-W will support our 200-300 users. There will be 3 VLANs. One for students, staff and infrastructure. Each with a different subnet and purpose. The staff VLAN will be for teachers and admin use. The student VLAN will be for student devices. The Infrastructure VLAN will be for network equipment.



### Costs

From Cable Wholesale, I found **Cat6 cabling for \$252.32 per 1,000ft** a spool. I will need to buy 8 spools to give me 8,000ft. Cost coming in at (rounded) **\$2,019** cabling.

With my above estimation of classrooms and outlets. Given two outlets per classroom, I need about 72 outlets. From Amazon, you can get **RJ45 Keystone Wall Plate Two-pack for \$11.00**. Given this cost and the amount of outlets needed. The cost of outlets is about **\$396.00**.

Each patch panel will support 24 ports, for 72 outlets, I will need **3 patch panels**. On Amazon, you can get them **for \$37.00** each. Given I need 3, the total for patch panels will be **\$111.00**.

On each floor there will be a **Cisco 250 Series Smart Switch, found on CDW for \$109.00** each. For four, the cost for managed switches comes in about **\$436.00**.

To protect network traffic, we will use a **WatchGuard Firebox T55-W**. Cost on Newegg is **\$1,713.99**.

**In total, the cost will be (rounded) approximately \$4,700.**