Status Report – Yellow Springs Schools
IT and Related Infrastructure
June 8, 2022

As we understand it, our charge is to gather and document the existing infrastructure elements related to building electrical, lighting and Information Technology systems in the district, including:

- Administrative and instructional computer networks
- Fire and emergency alarms
- Telephone and internal communication
- Security (access control, security cameras, intrusion detection)
- Audio/video distribution

On April 20, Michael Slaughter met with Craig Carter, Craig Conrad, and others to begin the process of gathering information. On April 28 Michael Slaughter, Scott Fife, and Judith Hempfling met with Bill Griffith of MVECA and acting Technology Coordinator for YSEVSD. Based on these meetings, *preliminary findings* for each of the above-named systems at this time include:

Electrical systems
1. A review of the electrical layout at the high school highlights a current and safe panel layout. The panel with outdated pushmatics can be updated with new switch technology.
2. Whatever the renovation plan becomes, it will not require a complete electrical overhaul. A large new electrical panel yields up to 30 breakers that will allow 5-10 new receptacles per classroom at both school locations.
3. Additional power requirements can be strategically placed based on classroom and office demands. Defective outlets can be replaced as needed.
4. Power requirements for new HVAC requirements can also be addressed.
5. USB-based charging stations (wall mounted) should be considered when addressing the need for additional power outlets in classrooms.

Computer Networks
1. Direct fiber links to MVECA offer superior connections to the Ohio Education Computer Network (OECN) and OARnet (Ohio Academic Resources Network) for both school locations. Network traffic monitoring by MVECA indicates bandwidth utilization under normal conditions generally is around 300 Mb/s, with a 1 Gb/s maximum.
2. Wireless networks at both locations consist of a total of 72 Meraki wireless access points installed in 2018. This represents current technology (WiFi6) and is reported by Bill Griffith as functioning well with a few problematic coverage areas. Limitations on wireless connectivity and network throughput are most likely the result of factors other than the wireless infrastructure, specifically older Chromebooks. Upgrading all cabling connecting the Meraki WAPs to category 6a (shielded) is recommended concurrent with any renovation or construction that exposes horizontal cabling infrastructure. Upgrading all other existing category 5e cabling to category 6 is also recommended.
3. A combination of wireless and hardwired connections is desirable.
4. The use of Cisco core networking equipment, i.e. switches and routers, should be continued, as it represents high quality, manageability, and security.
5. Print stations with robust workgroup hardware and software represent a cost-effective solution to the problem of generating printed output. Such needs were not anticipated in the design of the current buildings, but should be included in the design of any proposed renovation or new construction.
6. While many of the IT findings can be considered independently of construction/renovation, the MDF and IDF locations (wiring closets) need to be included in any such planning. Security, proper environmental controls, and sufficient electrical capacity are essential for these locations and require that they be intentionally designed and not an afterthought.
7. Chromebook refresh cycle needs to occur on a more frequent basis to insure compatibility with state testing requirements.

8. Large-screen display technology is presently a mixture of LED screens, older projectors, ultra short-throw projectors, and interactive white board devices. The newest devices in this category, made by Viewsonic, are large LED screens with an onboard computer and interactive capabilities. These devices, however, have experienced problems interoperating with the Chromebooks used by students, thus limiting their usefulness. This is an intricate problem with many possible solutions, and the way teachers make use of this technology is likely to vary considerably with student age and between subject areas. Because of both the complexity and the cost, it is recommended that the issues around these devices be reviewed with faculty at all levels and re-worked prior to any design, renovation, or construction.

Fire and emergency alarms
1. No findings at this time

Telephone and internal communication
1. Current phone system is VOIP and runs on Cisco switches

Security (access control, security cameras, intrusion detection)
1. Explore possibilities for outsourcing appropriate security system functions (retrieving camera content, enrolling users, managing storage, etc.) to MVECA as hosted service

Audio/video distribution
1. Audio systems in both gymnasiums are old and function poorly

Respectfully submitted,

Michael Slaughter and Scott Fife