

## Executive Summary

This Senior Thesis Final Report intends to present analyses of three aspects of the Central Ohio Elementary School renovation/addition project. The 140 year old school was damaged by fire and forced to close. A recent availability of funding has allowed the school to undergo a complete restoration and the addition of more modern facilities. The areas of analyses include photo documentation, structural modification and alternate plumbing materials.

### *Analysis 1: Use of Multivista Construction Documentation*

The project uses a third-party photo documentation service to visually document the construction process from pre-build site conditions to project completion. The service is an additional cost incurred by the owner. This analysis investigates the benefits of a service such as this and analyzes the potential monetary return.

### *Analysis 2: Use of Steel Deck and Cast-In-Place Concrete*

A portion of the project is new construction that will connect two existing buildings. Precast hollow core planks will be used for the flooring system. Establishing accurate dimensions of the space has been difficult as the aging structure does not provide level surfaces or consistently straight walls from which to take the necessary measurements. The design of a steel deck and cast-in-place concrete alternative would prove more flexible and therefore eliminate the potential for delays associated with the production of replacement precast planks. Installation of the deck and concrete will also benefit other trades as highly detailed coordination will not be required as early in the project as is necessary with precast.

### *Analysis 3: Use of PEX Tubing for Domestic Plumbing*

The plumbing system for this elementary school is designed using copper with soldered joints; the industry standard for commercial construction. Time and monetary savings are a consideration on every job and installing PEX instead of copper on this project can achieve both. This analysis estimates the actual savings, compares the friction loss associated with both systems and investigates the advantages and disadvantages of PEX.