

UPGRADING SYSTEMS IN ORNATE SPACES: WHERE ARE YOUR PRIORITIES?

By Dan Flanagan and Dan James

Imagine that you have a historic building with a beautiful lobby featuring high-end finishes, ornate moldings, and marble floors. Because your space is older, it needs upgrades to bring the fire and life safety systems up to current Building Code. You agree that this must be done, but the aesthetic beauty of your historic structure would be compromised if there were any exposed sprinkler pipes. The planning process begins. The Construction Manager maps out how to perform the job and orders materials. Because the existing levels of finish vary in the building, the plan includes a combination of exposed pipe and pre-manufactured pipe cover. Exposed pipe is most prevalent because it's the most convenient and least expensive way to get the job done. Unfortunately, pipe cover is only slightly more appealing than exposed pipe, and the negative aesthetic impact of the upgrade as specified is becoming apparent. Schedule and budget constraints prohibit a wholesale redesign and it appears your only option is to sacrifice the beauty of your building.

Planning ahead and detailing a comprehensive project scope are important components of any successful construction project. But, when you're working to upgrade fire and life safety systems in a historic space decorated with ornate architectural details, pre-planning becomes crucial. When you are starting a project like this, there are four things you should do with your project team before construction starts:

1. Clearly identify the scope of the project
2. Set your expectations for the outcome
3. Organize your priorities
4. Create a realistic schedule and **STICK TO IT!**

This article will present a case study of a fire and life safety system upgrade at

Newton Country Day School of the Sacred Heart in Newton, Massachusetts. The decision makers at the school, through vigilant communication with the entire design/construction team, followed the four rules listed here and the result was better than anyone expected.

Newton Country Day School – A Brief History

According to Newton Country Day School's website, they were founded in 1880, as an independent, college preparatory school for girls, grades 5-12. Rooted in the Roman Catholic tradition, NCDS is a member of the Network of Sacred Heart Schools. In the 1920s, interest in the school continued to increase and it began to outgrow its small facility in Boston. In December 1925, it exchanged its four Commonwealth Avenue townhouses for the Loren D. Towle estate in Newton.

Towle, a prominent real estate execu-

tive, philanthropist, and city activist, bought 20 acres on Centre Street in Newton in 1916 with the intent to build his dream home. Shortly after the purchase, he began work on a 35-room, Gothic-style mansion with formal gardens, terraces, tennis courts, and a garage. Unfortunately, Towle died in 1924 before the house was completed. Towle's wife was left with unpaid debt and an unfinished house. NCDS – desperately in need of a larger facility for its growing student body – acquired the property.

The property, while state-of-the-art in 1925, was in need of some new amenities and upgrades by 2005. The school was interested in constructing a large addition to the back of the mansion that would house a new library and function space. While exploring options for a new library, NCDS also realized it was time to upgrade the fire and life safety systems within the nearly century-old building. When Towle built the mansion



Newton Country Day School moved into the 20-acre Loren D. Towle estate in Newton in 1925.

in the early 1900s, he was nervous at the prospect of a fire destroying his home, so he fireproofed the mansion as best he could for the times by building the entire house with thick, cast-in-place concrete walls. However, by 2005, that kind of fire protection was no longer sufficient. At the very least, the building needed sprinklers and fire detectors in the main lobby and classroom spaces, as well as the wood-framed chapel that was added when NCDS obtained the property.

The school understood the need for the upgrades, but the decision makers were concerned because they wanted to preserve the high-end finishes and ornate millwork of their main building and chapel. The beautiful and historic look and feel of the school would be compromised if there were exposed pipes and large sprinkler heads scattered throughout those elegant spaces.

Preplanning at NCDS

Once NCDS decided it would move forward with the fire and life safety upgrades in conjunction with the new library project, a design and construction team had to be selected. The school chose Erland Construction as Construction Manager and D'Agostino Izzo Quirk as the Architect. Before any plans were made on how to approach the fire and life safety upgrades, representatives from the Owner and Construction Manager – along with the sprinkler subcontractor, Yankee Fire Protection – met to discuss the project and the potential problems that might occur along the way. At that time, the school's representatives were able to voice concerns about maintaining the aesthetic beauty of their space and the team could begin to think about how to tackle the project ahead. During these meetings, the team discussed the project scope, expectations for the project, the Owner's list of priorities, and the schedule.

Scope

Coming into the project, Ted Carey, NCDS's Owner's Representative, and Tom Galvin, the school's Director of Facilities, thought that the fire and life safety upgrades would take two or three summers to complete. They were prepared to stretch the work out because they did not want any construction going on in the main building while school was in session. But Erland was prepared to commit two Field Superintendents to the this project – one dedicated to the library addition and one to the system upgrades – and felt confident that the improvements to the lobby, classrooms, and chapel could be finished in just one summer. The school agreed and the project was compressed.

Expectations

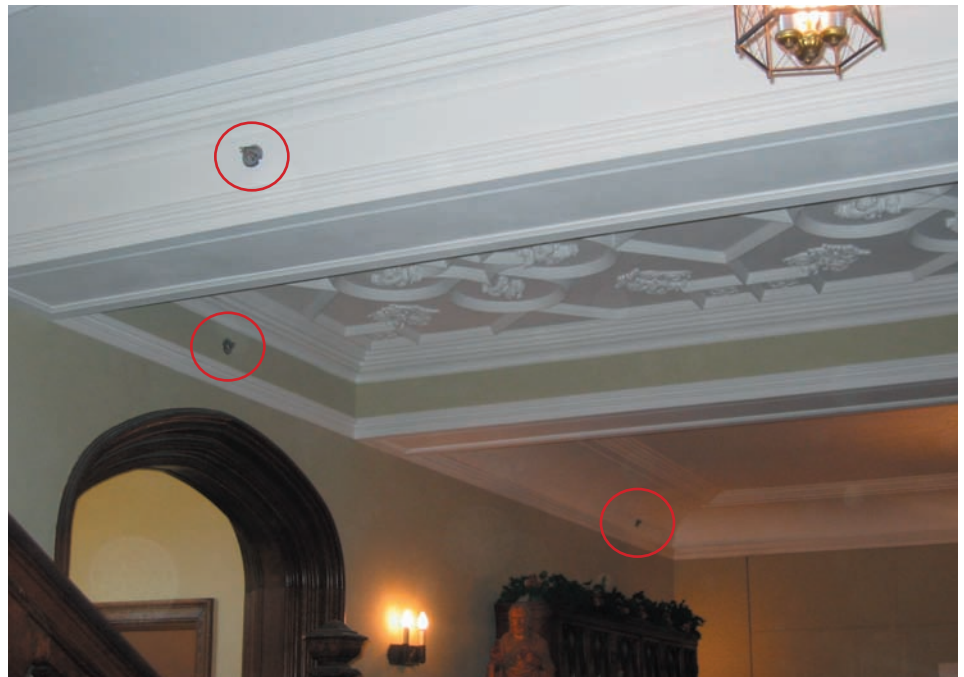
Ted Carey and Tom Galvin were clear from the beginning on what NCDS's expectations were for this project. They wanted to upgrade the fire and life safety systems to ensure the health

and well being of the students, but they were also adamant that the aesthetic beauty and historic significance of the mansion remain intact. They still wanted the school to have the look and feel of a turn of the century home when construction was finished.

Priorities

With the expectations set, the school needed to establish a list of priorities. Unfortunately, it wasn't possible to upgrade the systems while totally maintaining the building's original design. There had to be some sprinkler heads and exposed pipes – the Massachusetts Building Code is very explicit about the number and location of sprinkler heads and fire alarms within a certain square footage. Given those specifications, the school had to decide which spaces were sacred and which could be compromised.

NCDS decided that preserving the main lobby and first floor common areas was the top priority – there could be no exposed pipes or sprinkler heads, and fire



A new spinkler system had to be installed in the lobby of the existing building, providing the project team with the challenge of not damaging the ornate plaster ceilings. Sprinkler heads are circled in red.

alarms had to be expertly disguised or minimally intrusive. To satisfy that need, Erland placed pipes in closets, behind stairwells, and even on different floors (snaked through the ceilings to the sprinkler heads) without compromising the aesthetics of the lobby.

The chapel was another space where the school hoped to disguise large pipes and sprinklers. Luckily, the ceiling of the chapel was so high that Erland was able to expose a single pipe running along the center of the ceiling by painting it the same color as the wood – rendering it virtually invisible to those standing on the ground.

The school was willing to make sacrifices in the classroom spaces. This concession meant that the construction team could expose pipes in the classrooms – located on the second floor – and then run pipes through the floor to the more ornate areas. This was especially helpful for one specific reception room on the first floor, located at the very end of the mansion and built completely out of stone including marble floors and concrete walls. It was impossible to run pipes unexposed in that room, so the construction team put the pipes in a classroom located above this stone room, drilled a hole in the floor of the classroom (the ceiling of the stone room), and fed the line down.

Schedule

Setting a meaningful schedule and communicating it to the faculty and staff of NCDS was important because the project could not have been a success without buy in from them. The need to maintain the look of the mansion and chapel meant that it was necessary to install some of the pipes, sprinkler heads, and fire alarms in places like classrooms and offices – places that were potentially intrusive to the faculty and staff of NCDS. Personnel needed to know when the construction crew was going to be in their spaces ahead of time so they could make proper ar-

rangements to move their things. Compressing the project into such a short time frame meant that meeting each critical path deadline was extremely important. If the schedule was set ahead of time and then the construction crew missed a target date and the timeframe started to change, people would start to believe that things would never get done. Setting the schedule early and sticking to it was crucial to not just getting, but also maintaining, cooperation from the faculty and staff at NCDS.

Working Through Problems with Creative Solutions

So this all seems pretty straightforward, right? Follow these guidelines and your project will be successful. But what happens when you've set your expectations and listed your priorities and then your Construction Manager tells you your needs exceed your budget or what you want simply can't be done? Now, you're in need of a Construction Manager that can think outside the box and offer you creative solutions to your problem.

Part of the project at NCDS included upgrading the fire and life safety systems in the existing, soon to be vacated, library. This space had extensive millwork and a coffered ceiling and, while not as ornate as some of the other spaces in the mansion, the school did not want exposed pipes in this area. The sprinkler contractor said it couldn't be done within the stringent requirements of the Massachusetts Building Code. Working with John Giangregorio of D'AIQ Architects, Erland explored alternate types of sprinkler heads that could be mounted on sidewalls and would also provide the required coverage. Employing this option allowed the team to avoid installing heads in the ceiling while also reducing the total number of required sprinkler heads. To conceal the piping, the team built a new perimeter plaster soffit. Those who noticed the additional soffit com-

mented that it actually improved the overall appearance of the space. And – as an additional bonus – building the soffit allowed the team to increase the size of the pipe they used, thereby achieving a more stringent fire rating. This enabled NCDS to use this room for assembly purposes – which was a great help because they really needed a new recital hall. Because of Erland's creative thinking and willingness to research alternatives, NCDS not only preserved the aesthetic beauty of their old library, but they actually made the space more useful.

Meeting the Design Criteria Without Compromising the Aesthetic

As with all construction projects, the most significant measure of success is whether you've satisfied the expectations of the client. Towards the end of this project, Fred Levy, Business Manager at NCDS, wrote an email to Erland's project manager, Dan Flanagan, that said, "I'd like to thank you and all the folks at Erland, Yankee Sprinkler, and their subcontractors for the good work you're doing. Every member of the crew is polite, courteous, and happy to respond to my requests ... It's a pleasure having all of you working here for Newton Country Day." Erland spent the time working with the decision makers at NCDS to satisfy their needs and, on occasions when problems arose or plans had to be amended, Erland worked with the school to develop solutions that everyone could live with. This group truly worked together as a team – constantly in communication, willing to go the extra mile, and with clear expectations set from the beginning. That's why this project was a success for both the school and the contractor.