

Initial Assessment and Probable Cost

Systems age in occupied buildings. Maintenance costs can increase over time as equipment breaks, is discontinued, or damaged while in use. An important metric of a systems' condition is the annual cost to repair or recondition systems to full function. At some point, they must be replaced.

The first step to replacing existing door controls, cameras, and intercoms is to assess the condition of the existing systems and determine exactly what must be replaced. Analyze how the systems are integrated and identify required improvements. Things to consider are:

- Have systems been affected by lightning?
- How well have they been maintained?
- What is the age of the system components?
- Are replacement parts readily available?
- Are there any code issues to address?

Once the initial assessment is complete and a list of needs is identified, prioritize the needed repairs as 1) most critical, 2) somewhat critical, and 3) OK as is. A typical retrofit would endeavor to reuse the conduit, wiring, and devices. Intercoms and cameras can be reused unless they are no longer available, or added functionality is required. Detention locks are custom steel and are simpler to repair as opposed to replace with new. Assign a probable cost to each repair item based on current market conditions. Typical options for replacement are, individually or grouped, as follows:

- Replace computers and touchscreens.
- Replace programmable logic controllers.
- Replace Intercom headend controls.
- Replace camera switchers and recorders.

Funding Approach

Once an assessment is completed, general scopes defined, and probable costs calculated, funding must be secured. Every jail's budget is tight with more needs than dollars. It may take several years to obtain the funds, so probable costs should be linked to the date they were calculated, or a yearly escalation included. Depending on the repairs needed, a phased approach may be required where the most critical need is addressed first, and other needs are funded later. This is not as efficient as performing the work at one time and will increase costs overall.

There are some costs that would not be accounted for in the probable cost. Contractors will require staff escorts whose labor is typically included in the probable cost calculations. If the jail is full, there could be costs to house inmates at other locations while the work is being performed. While the programable logic controllers and intercom controls are being replaced, the facility will be operating by keys and radios which generally require additional staff. Work should be planned and coordinated so that these systems are nonfunctional as short a time as possible.

Steps for Success

The best benefit to cost ratio is achieved through a competitive bid process. Most government purchasing departments have requirements for multiple bids to ensure the most effective use of public funds. Providing detailed and accurate plans to contractors for bidding is a critical and difficult step. Projects in existing facilities will typically contain unforeseen circumstances that may increase construction costs. A contingency amount controlled by the owner must be incorporated. Plans should be developed to accurately reflect the existing conditions and completely identify scope.

- ***Broken Devices***

Specifications should require the successful contractor to provide a test witnessed by staff. A formal report of all existing devices that do not function should be submitted and reviewed. Some of these problems will be corrected by the new controls. What was working before the contractor replaced the existing controls should be working once installation is complete. The owner will have the option to replace the remaining broken devices with staff or pay the contractor to replace them.

- ***Large Scales Plans for Control Rooms and Electronics Rooms.***

Retrofit plans should clearly show what is to be removed and what is to be added. R&N provides demolition large-scale plans of what is to be removed with additional large-scale plans identifying new equipment. Phasing information may also be included.

- ***Alternates to Allow the Final Scope to Match the Available Funding.***

Probable costs are not the same as a contractors' bid price. Probable costs are developed early in the process without the benefit of a complete design or specific equipment pricing. One method to better match the final costs to the contracted scope is to ask for alternates on some priority 2 needs that could be eliminated if the costs are too high.

- ***Detention Hollow Metal, Detention Electro-Mechanical Locks, and Security Glazing***

The detention hardware, frames, doors, and glazing typically last longer than the electronics and are not included in a typical retrofit project. If needed, broken glazing can be replaced, while doors and locks can be repaired, tested, and adjusted. It is difficult to replace a door without a new frame which requires the old frame to be cut out.

If you need design assistance, R&N is capable and ready to assess systems, develop probable costs, develop plans, and write specifications for your retrofit project.

<https://rnsystemsdesign.com/resources>



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