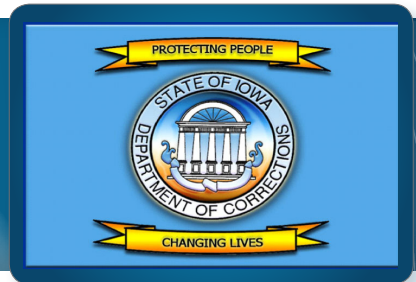




Iowa Department of Corrections Locks Down Infrastructure Costs

IMAGINiT Technologies trains engineering department to manage multiple, large design and construction projects more effectively



The Organization

The Iowa Department of Corrections (IDOC) provides oversight of correctional facilities at nine sites across the state. With more than 30,000 community based corrections offenders and 8,200 incarcerated offenders under their care, the department serves the public, employees and offenders in many ways. IDOC employees ensure that offenders in custody do not endanger the safety and security of others in a variety of ways – from community supervision to electronic monitoring and incarceration.

The Challenge

Two of Iowa's correctional facilities were built in the 19th century. While they had undergone several upgrades over the years, many were not up to present code standards. Due to a general increase in state population, most facilities were overcrowded. The department was already investigating how best to improve both situations when the state of Iowa issued I-JOBS bonds to stimulate the economy. The department was able to secure approximately 300 million dollars for infrastructure projects. One project alone—a new state maximum security penitentiary—was worth 130 million dollars.

Previous attempts to improve facilities had been met with mixed results. Correctional facilities are like small communities containing housing, food services, warehousing, medical clinic, armory, laundry, and more. Each requires highly specialized design knowledge. Department officials coordinate with the many different teams involved and provide overall direction for projects.



“When you are dealing with public money, making the best use of every dollar is extremely important. With IMAGINiT’s knowledge base and implementation help, we’ve been able to drastically reduce construction costs. Traditionally, when you manage project costs change order costs below five percent, you feel like you’ve done a good job. It feels great to significantly exceed that goal.”

— Mickel Edwards
Facilities Engineer
Iowa Department of Correction

“No matter what the project, bringing that many people together to create a unified design presents challenges,” said Mickel Edwards, facilities engineer, Iowa Department of Corrections. “What we found in the past was that so much information is generated in the design phase, but a lot of the detail and sometimes even the program intent was not carried through in the actual construction.”

In addition, once a building was turned over to the owner, the people charged with running the facilities did not always understand how systems worked because information had not been shared with the end user. For the next round of projects, Edwards and his team were determined to find technical solutions to help resolve these communications issues.

The Solution

Edwards approached long-term partner IMAGINiT Technologies for advice about design solutions that might address their concerns. He knew that building information modeling (BIM) tools worked well for 3D design and visualization. What he needed advice on was how to take advantage of BIM processes for project coordination. IDOC provides overall direction and coordination for many different projects at any given time and they work with external architects and other consultants to provide design services.

IDOC requested that all new projects be created using BIM, so the architects they would work with had to be BIM-ready. IMAGINiT knew several suitable firms and introduced IDOC to them. While the design services were bid, IDOC implemented Revit Architecture, MEP, and Structure as well as Navisworks in-house. IMAGINiT helped the staff understand what BIM was about in general, guided them through developing their own BIM standards and then showed them various ways to access the information inside a model so they could share it with others.

“It was important that we knew enough about what a model could do so that we could ask our designers the right questions and get them to prepare the model the way we wanted it,” said Edwards. “IMAGINiT was invaluable — providing us with the consulting and training services we needed.” IDOC staff spent time orienting and training remotely with IMAGINiT’s convenient LIVE Online system and then went to an IMAGINiT facility for classroom training that focused on the functions they needed to know the most. “We got our money’s worth by learning on site where we could really focus on critical path functions and gain mastery,” said Edwards. As owners, IDOC needed most to be able to access and share the information in a model with their transition team members, so the customized training focused around learning how to use Navisworks and Revit to share the design intent of their projects. “It was early enough in the design effort that IMAGINiT trainers were able to bring several more models to us that they had constructed. One night a trainer modified a model and added to it to make it more appropriate for the next day’s training topics,” said Edwards.

LONG-TERM BENEFITS AND RESULTS

Using public funds wisely

As a public service and, funded by taxpayer dollars, it is very important to IDOC to have a transparent process and to report on every dollar spent. Edwards notes that “Revit, and the support we’ve had from IMAGINiT, has really helped us meet that very high level of responsibility when using public dollars. We have saved an enormous amount at the construction phase where change orders have become nominal when compared to the past. This is as a direct result of having a detailed building model that we can see and show our design teams and construction partners.”

Providing a blend of security and rehabilitation

By mandate, IDOC provides secure facilities that also promote mental well-being to reduce criminal recidivism. This makes for a fine balance because often the most secure facilities are not designed with the mental and physical health of inmates in mind. Using the fly-throughs and advanced modeling, the various design teams that worked with the architects and engineers could all visualize exactly what the new environment would look like – before it was built. This meant that they could alter spaces in order to ensure security and at the same time generate designs for improved inmate health. To increase security on one project, the team widened the multi-purpose space so that all doors could be viewed simultaneously. In addition, some of the mast lights were moved to prevent glare and allow a better view of the yard. “The fine tuning that we perform now at the outset of the project means we deliver a far superior end product,” said Edwards.

Superior visualization to meet project goals

Being able to visualize the finished environment was particularly important at the Iowa Correctional Institute for Women. Women are not as high a security risk in general so a ‘softening’ of the prison would be conducive to their rehabilitation. IDOC chose to take a holistic approach to the women’s needs. “We really wanted to move away from the institutional look,” said Edwards. “The warden was particularly concerned that we didn’t build a harsh looking facility. She wanted the facility to look completely different from the typical model. With BIM, we were able to show her exactly what the facility would look like during the design phase.”



Improving facility operations over the building lifecycle

Original construction costs for a correctional facility represent a portion of the total cost. Operating costs continue on an annual basis. By providing operations personnel with an accurate building model, IDOC will save on operations and maintenance costs over the planned 100-year building lifecycle. “IMAGINiT showed us how BIM works today and prepared us for a future in which we would be using barcodes on equipment for maintenance,” said Edwards. “We’ll scan a barcode on an HVAC unit and the model will pull up the design criteria, commissioning, shop drawings, preventative maintenance, parts inventory, and maintenance activity. Equipment can be replaced with best practice using life cycle costing. This is just the beginning.”

Armed with knowledge of building information modeling and successful projects under their belt, IDOC looks forward to a future with integrated facilities management tools, and the ability to use the final delivered model for future remodeling or renovation projects. Knowing the right tools, data and systems, IDOC can now address all its constituents needs effectively.

About IMAGINiT Technologies

IMAGINiT Technologies (imaginitt.com), a division of Rand Worldwide, advances the way architects and engineers design, develop, and manage projects. Customers of this leading professional services and technology company include organizations in the building, infrastructure, manufacturing and facilities management industries. Fortune 500 and *Engineering News Record's Top 100* organizations work with IMAGINiT Technologies to gain competitive advantages through expert technology consulting, implementation, training, and support services. As one of the world’s largest integrators of Autodesk 3D design and engineering software, the team leverages unrivalled industry experience to design systems that accelerate innovation while improving project quality and profitability. For more information visit imaginitt.com or rand.com.

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