PlanGrid

Constructed Campus

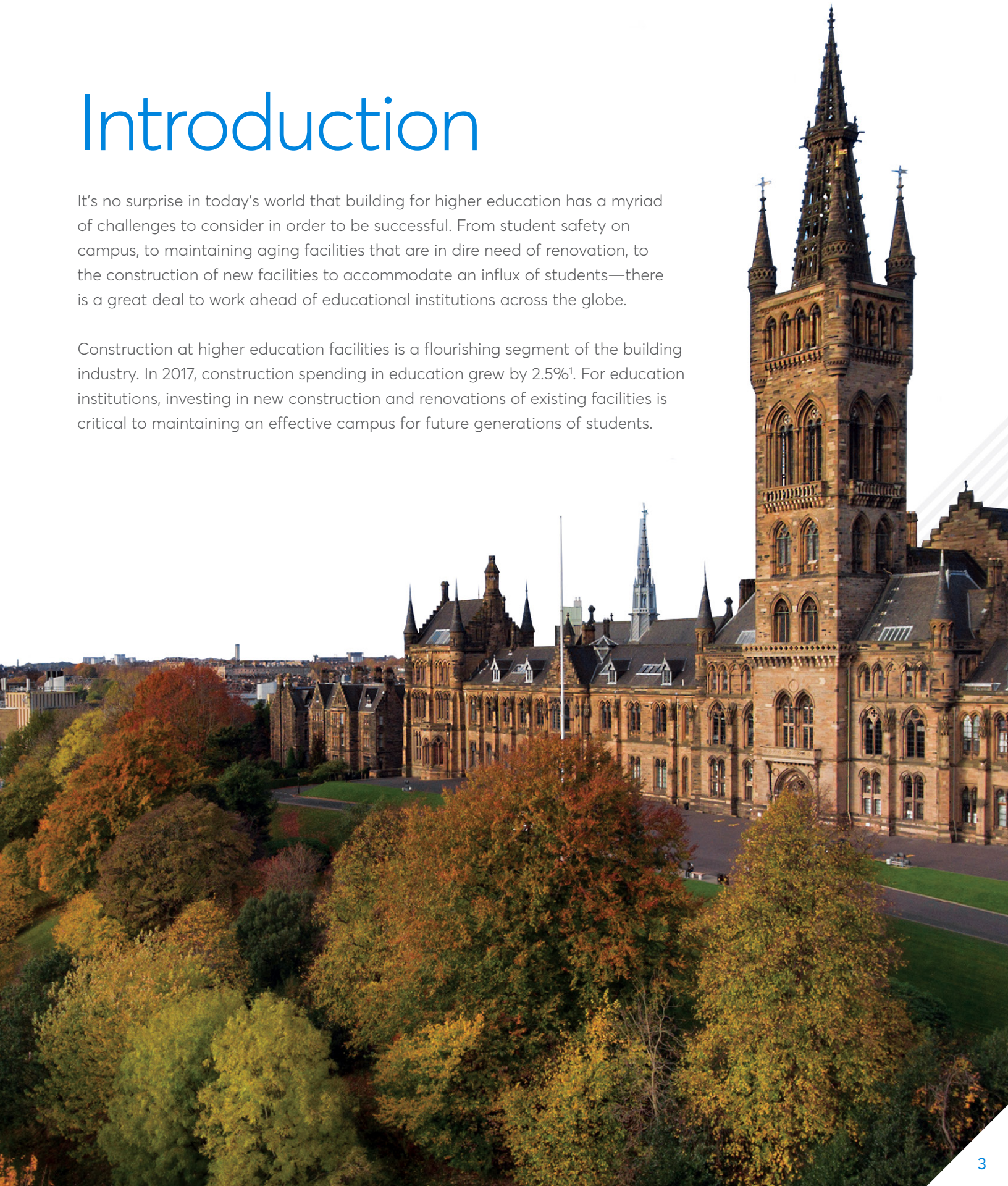
How leveraging technology empowers teams to build and maintain lasting campuses in higher education.

What's Inside?

Introduction

It's no surprise in today's world that building for higher education has a myriad of challenges to consider in order to be successful. From student safety on campus, to maintaining aging facilities that are in dire need of renovation, to the construction of new facilities to accommodate an influx of students—there is a great deal to work ahead of educational institutions across the globe.

Construction at higher education facilities is a flourishing segment of the building industry. In 2017, construction spending in education grew by 2.5%[1]. For education institutions, investing in new construction and renovations of existing facilities is critical to maintaining an effective campus for future generations of students.



The Challenges of Building for Higher Education

Higher education teams have many challenges when delivering, maintaining and restoring their campuses. For most teams, it's important to find the right tools that will work on campus. This applies whether you're trying to streamline your facilities team managing a sports complex or if the administration wants a solution to help gain visibility into the data scattered and siloed across the university. This ebook will help education leaders choose the right tools to:

- Scale university-provided services in parallel with university growth
- Provide visibility into facility and campus data
- Meet tight construction deadlines
- Minimize disruption to campus during construction
- Ensure the safety of their students and faculty on campus
- Build legacy facilities that will provide for years
- Create a positive reputation for your institution

Scaling Service Levels in Parallel with University Growth

As universities grow in size, it's important for their facilities and maintenance teams to better manage their available resources. If resource management slips, student and faculty satisfaction with their service drops dramatically. Many of these teams are receiving tens or even hundreds of work order requests per day, especially at the beginning of each school year. Often times, they are not provided additional resources to manage this volume of work, yet they are expected to provide rapid response times to meet these requests. Campus teams need to find ways to do more with their existing resources, especially when additional funding isn't available to increase the size of maintenance crews.

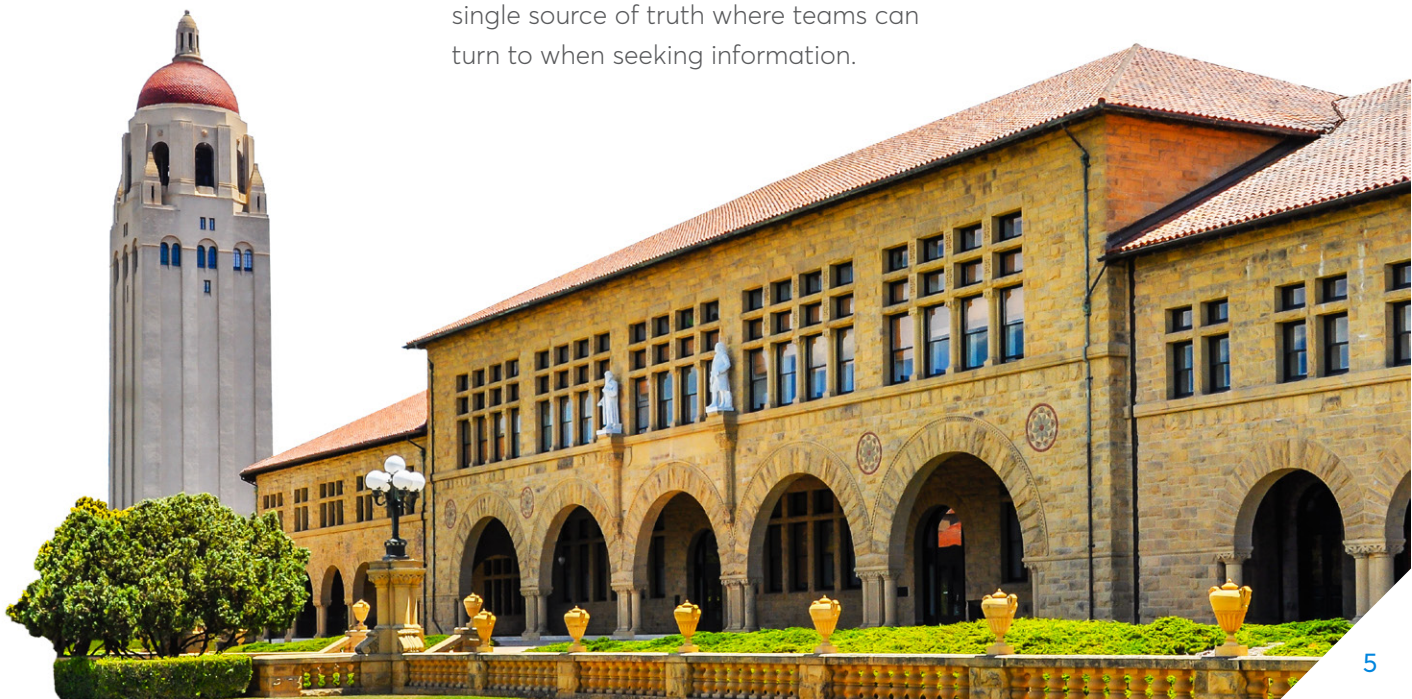
Due to two recent construction booms in education, first in the 1970s and later in the 2010s, most campuses have many building lifecycles coming to an end simultaneously. This means facility renewals and renovations must be prioritized thoughtfully within budgets that have little room for error[2].

Schools must find tools that help prioritize how they are maintaining the spaces that are critical to their educational mission. As universities grow, facilities teams are responsible for more square feet of real estate. Furthermore, this investment in new facilities is drawing capital away from the existing aging buildings. This means teams are going to continually be asked to do more with their resources without an equivalent increase in available manpower[2]. Construction is a framework that can boost efficiency and profits[1].

Lack of Visibility Into Facility and Campus Data

Many education institutions can span miles across a city, or have facilities located on the other side of a country (or the globe). For example, Penn State University Park is a campus in the U.S. that spans across 22,000 acres of land and contains 32 million square feet of buildings and structures. This is one single campus that encompasses 19 commonwealth campuses spanning across the state of Pennsylvania. With such distances between buildings and satellite campuses, there is often little visibility into data for existing facilities, ongoing renovations and new construction projects.

Furthermore, most university institutions are siloed from one another. This starts with the academic institutions that make up a university and extends all the way to facilities management[3]. Communication between departments is fragmented at best and there often exists no single source of truth where teams can turn to when seeking information.



Tight Project Timelines

Universities and other education institutions have narrow windows of time where they can freely build on campus. Students return to school on a set schedule, so projects that impact their daily lives must be completed on time without exception.

An example of this is the recent boom in student housing development. This growth has firstly been fueled by demand stemming from the need for alternatives to the limited availability of housing. The second challenge is the increasing age of most dormitories and other on-campus housing[4]. Universities across the U.S. only have enough available housing for between a quarter and a fifth of students enrolled in classes. Additionally, the median age of the available housing on most campuses is 51 years, meaning building lifecycles are nearing their end–ultimately requiring renovation to stay useful[4].

If new housing projects aren't completed on time, then there will be nowhere for students to go when they arrive for the start of the semester. This would be nothing short of a crisis given the limited options for temporary student housing available to most universities.

Minimize Disruptions to Campus

When maintenance and construction work can't be limited to the slower parts of a school year when fewer students are around, great care has to be taken to ensure that construction and renovations don't cause disruptions. Construction projects are hardly inconspicuous. Large, loud and messy, projects can be a serious inconvenience for any student who's investing serious money to attend the institution. Not to mention the safety risks of an active construction site in a highly trafficked part of campus.

While a new project is incredibly exciting for an entire campus–it's only really of value once it's complete. Universities can't afford to have unhappy students and staff fed up with the disruptions of on-campus construction. This is why builds often need to be concentrated during "off-times" like weekends and summer holidays. Therefore, building teams for higher education construction projects need to adopt the most productive strategies and tools to execute when they do have the time.

Student and Faculty Safety

Higher education teams need to balance managing today's increased risks in campus safety with creating an environment that fosters learning and growth for the students that use it. When building new facilities, campus designers can consider a number of design features to achieve this. These can include placing buildings at the edges of campus to define a perimeter while leaving central courtyards open to eliminate hiding places, which will allow campus staff to see threats as they may develop[5].

Further measures to secure campuses may include building schools on elevated ground, using landscaping to control the flow of foot traffic on campus, incorporating layers of secure zoning that can be monitored and controlled by the administration, installing safe zones and rooms for students and faculty to safely hide in, building aesthetically pleasing embassy-style fences around campuses and leveraging foolproof alarm systems that are monitored by administrators for incident authenticity before an alarm actually sounds[6].

Building Legacy Facilities and Creating Positive Institutional Reputations

A big part of boosting the reputation of any educational institution is creating inspiring environments for students and faculty to collaborate and learn in. Many universities are spending millions on new buildings that closely resemble the high-tech workspaces of Silicon Valley[7]. Universities are justifying this trend for varying reasons, including employer dissatisfaction with graduates' preparation and unhappy students concerned about outdated teaching methods[7].

When building new facilities for universities and colleges, owners and project executives need to be mindful of more than the immediate needs of a facility. They also need to think about what the future of the building will entail. As technological advancements are constantly being made in education and construction, universities with the latest and greatest in facilities and curriculum will be best positioned to compete for new students.

Construction Productivity Software Meets Higher Education

To meet the growing demands of the education sector, construction companies building in higher education will need to invest in cutting-edge strategies and technology to keep up. This is where construction productivity software comes into play.

Construction productivity software streamlines document control, simplifies information distribution and facilitates easy communication across all university teams. It also provides construction, maintenance and facilities teams with easy access to all relevant information from any mobile device or computer. Embracing the right construction software tool can impact:

- Being a better steward for your institution
- Improving service quality and speed across campus facilities
- Confidently building things right the first time
- Easily accessing campus data and other information
- Tracking construction progress in real-time, from anywhere

Be Better Campus Stewards

With many universities dating back hundreds of years, educators should consider how their facilities will impact both the students of today and those that will arrive on campus years down the road. This is why it's important for educators to plan and build with a longer-term lens. They must bring together all key stakeholders during design to make informed value-based design decisions with respect to long-term operational costs, sustainability and durability.

Choosing the right software tool can help with campus stewardship by helping track quality, ensuring the facility is being built to expectations. These tools also let your facilities and maintenance teams build faster, safer and smarter campuses–while reducing schedule slippages, material waste and cost increases. The extra funding that is derived streamlining your projects can then be put towards exciting things that enhance the student experience.

Thoughtful campus stewardship positively impact students, faculty and alumni alike. With many institutions deriving a large portion of their funding from benefactors (either from an alumnus or otherwise), it's important to ensure resource management and allocation on campus is done efficiently. Additionally, many public institutions are frequently managing government funding. The right software tools will create an easy to follow audit trail, which will ensure that every dollar is being used efficiently, effectively and in-line with the mission of any university.

Improve Service Levels Campus-Wide

For facilities and maintenance teams–the students and faculty are your customers. Many of today's software tools allow your facilities and maintenance operations to work together smarter, not harder.

At the start of the school year, facilities teams receive their largest volume of service requests and aren't allotted additional resources to manage the work. Software tools allow teams to better manage their resources during boom times, helping them to decide which projects are urgent and which ones can wait until more help is available. Furthermore, as a university grows–problems in existing processes become readily apparent. Implementing the right tool at the right time can make facilities teams scale with ease.

As an example, it may be manageable to rely on paper drawings and your memory for a single building or a small project, but that's a recipe for disaster as projects spread across campus and become more complicated. Software tools allow you to have your finger on every aspect of a project (or projects), meaning finding the information you need isn't a time-wasting guessing game.

Build the Facilities Right the First Time

Construction plans for a university campus can frequently change. Traditionally, project changes are shared back to the main facilities office and then distributed manually to everyone working on the project.

This information sharing is critical to ensure field modifications and change orders aren't needed later, which cause schedules to slip and costs to inflate.

Modern productivity tools solve the challenges a manual work environment creates and can yield a huge impact on how you operate as a business. Teams spend less time on administrative tasks like keeping field workers up-to-date with new plans, issues, shop drawings or requests for information (RFI). Additionally, coordination with your general contractors (GCs) and subcontractors goes smoother when everyone can easily see when and how they fit in project plans.

Education institutions typically hire GCs to build their facilities for them. These GCs hire multiple subcontractors to build their facilities, meaning there are often many teams spread across campus that have to closely coordinate to meet the project schedules and requirements. The bottom line is that the use of technology to ensure everyone is working from the most up-to-date information delivers significant ROI for education institutions. These tools help reduce the frequency of rework, generating significant cost savings from a reduction in mistakes.

Improved Visibility: Access All Campus Data From Anywhere

When software tools provide a central location to collaborate–one that easily links up the GCs, subcontractors, project offices, field workers and other trades to your facilities office–it reduces the amount of time spent on coordination. Inspection reports, submittals, progress photos, as-builts, equipment manuals–every piece of information that you can possibly need on a project can be accessed and marked up in the right software tool.

Be sure to select a tool that provides this level of access to your data even if you're sitting in your office across campus, standing on the roof of the facility or working from a remote satellite campus. Whether you're online or offline, with the right tool will be able to access your data anywhere, anytime.

Easily Track Construction Process and Quality

With the right software tool, you will have the single source of truth for your entire campus, allowing you to easily track building quality and construction progress. Whether your construction teams are tracking changes during new construction or your facilities and maintenance teams are monitoring building conditions over time, software tools can keep a robust audit trail of all the work you've done, allowing you to be confident the way your campus is operating and serving the students.

Boosts Project Satisfaction

Knowing which aspects of a project are regarded as the most valuable to the owner and end users allows teams to make the best, quickest decisions without jeopardizing the outcome. When owners know that

their best interest is at the core of every decision that is made on the project, the speed at which issues are resolved in significantly increased. Decision making and contributions are decentralized, which allow the project to move quicker towards closeout.

A project team that can promptly resolve any blockers has a better chance of staying on schedule and tracking to budget. All of these factors lead to a happy owner–and ultimately to more contracts, work and profit for everyone involved.

Increases ROI

Companies have reported an increase in productivity through the application of Lean Construction management principles to a project, translating to an increased return on investment. Production rates are the core measurement units that a subcontractor or any "producing" party on a project base their estimates on. Ultimately, meeting the production rate used for an estimate is the key to being profitable. Any increase in productivity reduces the risk of losing profit. Apart from the increase in productivity, any reduction in waste–whether actual material waste or procedural waste–results in overall efficiency of the project.

"A lot of people use PlanGrid and are enthusiastic about it. They see PlanGrid and understand that they always have all the most up-to-date drawings."

– **Greg Brand**
Project Manager, Granger Construction on the University of Michigan Athletics South Competition Project

Software in Action at the University of Michigan

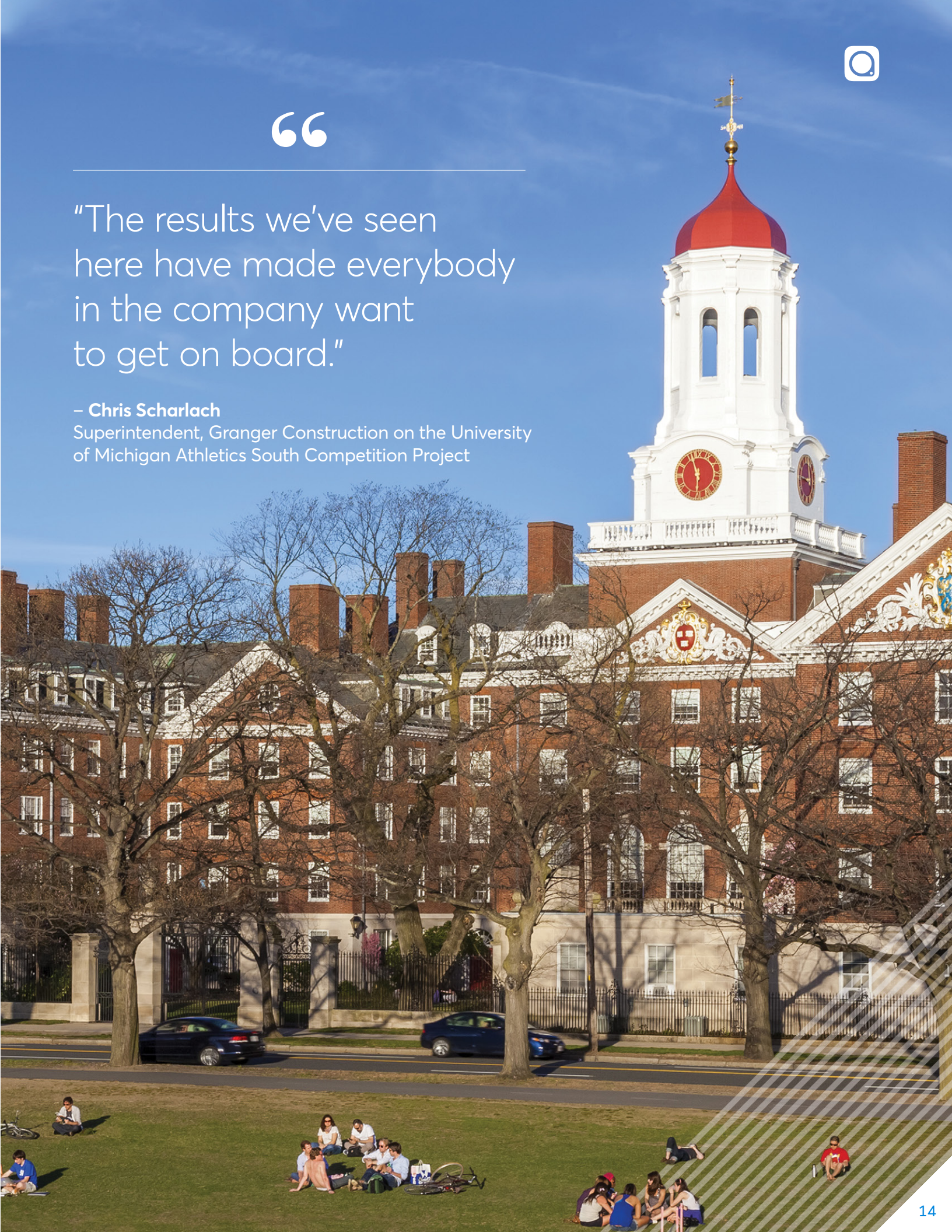
In 2016, Granger Construction began work on the University of Michigan's massive $168 million Athletics South Competition and Performance Project. The multi-building site included a throwing field, indoor and outdoor track buildings, a lacrosse building with a synthetic turf field and much more. These facilities are all connected to a sports performance center and spread across 22 acres.

When Granger made its bid for the project, they were considering a software investment that would allow them to reduce costs associated with paper–reducing the amount of sheets and other documents they had to print as well as the time and labor required to distribute them.

Implementation Across the Project

Before beginning the athletics project at the University of Michigan, PlanGrid licenses were distributed to Granger and all of their subcontractors. From the start, it was mandated that the full project team use the tool across the entire build. This included the general contractor, architect, subcontractors, superintendents, project managers, project engineers, inspectors, commissioners and administrative assistants.

PlanGrid gave the owner and project manager a clear view of how the project was moving along. For the team on campus, using PlanGrid meant electronic RFIs were resolved faster and everyone was aligned when discussing specific issues that arose. They all had access to the same information and could easily add attachments to their documentation. With PlanGrid, no printing was required–teams simply pinned photos to the appropriate sheet. This saved the University of Michigan money and kept the project on track to meet its targeted deadlines.



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"The results we've seen here have made everybody in the company want to get on board."

– **Chris Scharlach**
Superintendent, Granger Construction on the University of Michigan Athletics South Competition Project

The team used progress photos throughout the project to keep track of changes and they were able to reference them directly on the drawings. Before PlanGrid, it was difficult to locate the most up-to-date photos. With PlanGrid, it was incredibly easy to search for or pin photos directly to a drawing. That meant it was simpler to track the progress of each part of the project across campus and coordinate the work among the trades, which resulted in a better workflow and a more efficient use of labor.

Since the entire team on the University of Michigan project used PlanGrid, everyone was on the same page at all times, from the office to the field. It's no surprise that some subcontractors who first used PlanGrid on this project now use it in their work outside of this project.

Results at the University of Michigan

The Granger team quickly saw how much time PlanGrid helped them save. Because they were able to distribute new drawings to the entire team electronically, people were always confident that they had the most current drawings and no longer had to run across campus distributing endless rolls of printouts. Plan distribution costs went from six labor hours spent for every change, to zero labor hours for instant distribution via PlanGrid. What's more, the quality gaps that happen when multiple versions of the plans are used and new changes aren't caught in time were eliminated. With a reduction in rework, the university saved up to 4% of the project's total cost.

Conclusions

It's clear that educators have many obstacles to consider when planning for campus growth in both the near and long term future. Fortunately, there is a real opportunity to build a lasting legacy that will positively impact students for decades. Construction productivity software and other modern tools give teams the right framework to increase service levels for students across campus, while making sure new facilities are being built to higher standards than ever before. It's an exciting time to build for education!

Universities Using PlanGrid

CALIFORNIA STATE UNIVERSITY LONG BEACH

CASE WESTERN RESERVE UNIVERSITY EST. 1826

CMU CENTRAL MICHIGAN UNIVERSITY

FRANKLIN & MARSHALL COLLEGE

UNIVERSITY OF MICHIGAN

THE UNIVERSITY OF KANSAS HEALTH SYSTEM

UCDAVIS

UNIVERSITY OF SAN FRANCISCO

UNIVERSITY of VIRGINIA

WASHINGTON AND LEE UNIVERSITY

References

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2 State of Facilities in Higher Education 2017, Sightlines

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4 A Rush to Meet Rising Demand and Expectations for Student Housing, Vivian Marino, February 2017

5 Spotlight on Safe School Design, Mariana Lavezzo, September 2018

6 Schools rethink building design to protect students from mass shooters, Jacob Passy, February 2018

7 The Innovation Campus: Building Better Ideas, Alexandra Lange, August 2016

See a Live Demo

or give us a call at +1 (415) 429-1227

PlanGrid's Construction Productivity Software is the easiest and most cost-effective way to get substantial return on your investment in construction mobile apps. By using PlanGrid you will:

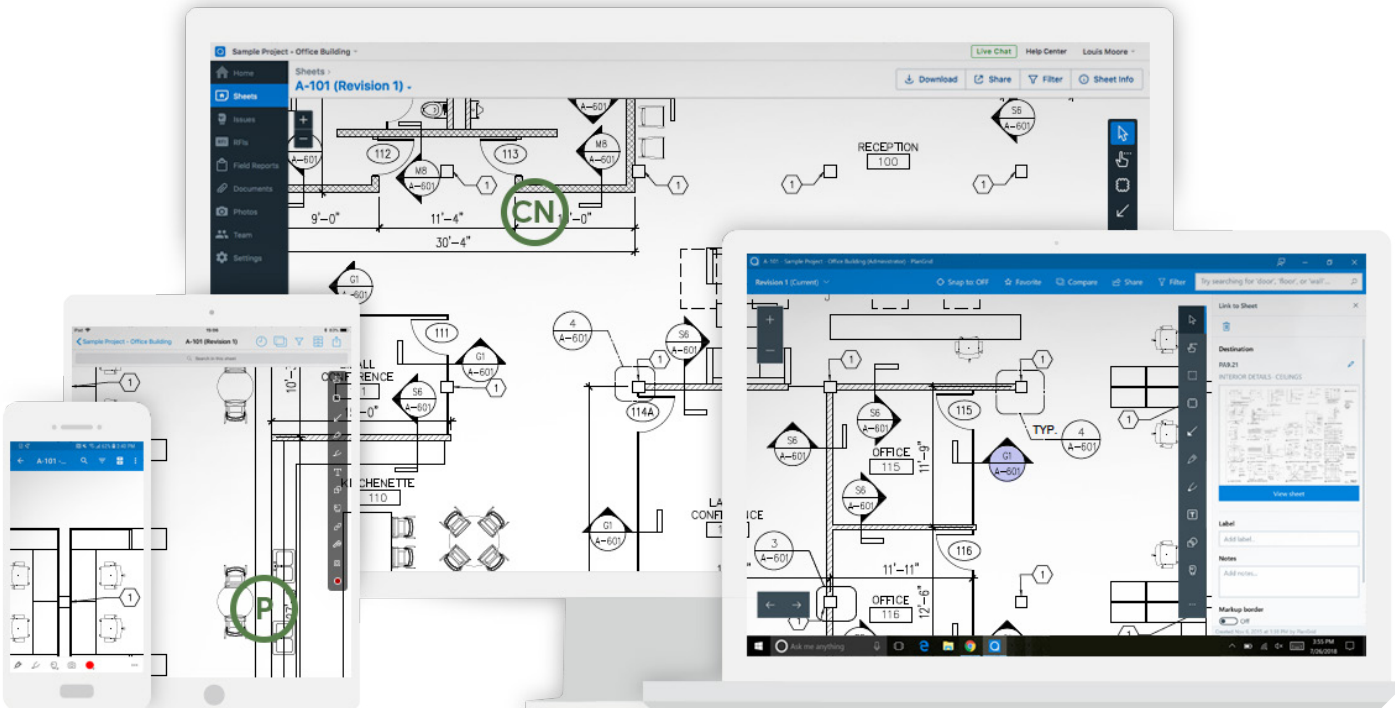
- **Complete projects faster:** 90% of project costs occur in the field and not in the office. This includes wasted time and project delays. With PlanGrid, you can reduce wasteful trips to the trailer and time delays, while eliminating costly rework. PlanGrid also allows for faster collaboration and communication.
- **Reduce costs:** PlanGrid allows you to optimize productivity in the field, which eliminates time waste that causes project overruns. By completing projects early or on time with PlanGrid, contractors will benefit from reduced costs.
- **Win more bids:** The best way to bid more competitively is not just to track costs so you can provide more accurate estimates — it's to improve your overall productivity. PlanGrid's Construction Productivity Software will allow you to increase productivity so you can reduce costs and win more bids.

PlanGrid is construction productivity software used on more than 1 million projects across 90 countries. Our software helps teams collaborate more efficiently with access to an intelligent record set on any device.

Available on the App Store
★★★★★ (3,904)

Get it on Google Play
★★★★½ (2,080)

Available on Windows



PlanGrid

Used on more than 1,000,000 projects around the world, PlanGrid is the first construction productivity software that allows contractors and owners in commercial, heavy civil, and other industries to collaborate, collect, and share project information from any desktop or mobile device through the entire project lifecycle.

PlanGrid increases project efficiency by streamlining document management, providing construction teams with easy access to all project information from any device, and enabling seamless collaboration within teams.

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