

QuickStart Guide

7 Ways to Boost Productivity in Heavy Civil Construction

Boost Productivity and Start Completing Jobs on Time with Construction Productivity Software



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Introduction

The infrastructure of the world is essential and grows more critical every year. Investing in the infrastructure means boosting the economy. Infrastructure projects help to create good jobs and promote economic recovery. These projects serve as the base for a healthy economy and influence the economy's ability to grow. Without roads, airports and ports, goods and supplies cannot reach the places they are needed most. Without water and sewer capabilities, communities face the danger of deadly illnesses. If schools were not free from safety hazards and overcrowding, the nation's future workforce would be inadequately prepared and at risk.

In fact, the infrastructure across America is failing and needs updates and improvements. The American Society of Civil Engineers gave the US infrastructure a D+ or "poor" rating in 2017.¹ Their extensive report gives insight into areas facing critical trouble in virtually every state in the nation.

To bring the rating up to a B or a "good" rating by 2025, an estimated \$4.6 trillion will need to be spent on projects designed to enhance and improve our nation's roads, bridges and ports.

Even if the country doesn't want "good" infrastructure, it will still cost money. In order to meet humanity's most basic needs, \$3.3 trillion per year will need to be spent on infrastructure through 2030. The amount required to repair this vastly impacted infrastructure can vary. One of the influencing factors is the companies themselves.

The ability to curtail costs and complete projects within a budget is key to fixing a growing infrastructure problem. When companies are able to work efficiently and affordably, they can simply handle more tasks and are better able to complete the projects they are given in a timely manner. Since delays are costly in more ways than one, the ability to work productively and stay on schedule will allow the nation's roads, bridges and other important pieces of infrastructure to be repaired and accessible to citizens more rapidly.

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The High Cost of Low Productivity in Heavy and Civil Engineering Construction and Infrastructure

Productivity in Heavy and Civil Engineering Construction can be a troublesome constraint; the amount of paperwork, communication and even a language barrier can be seemingly insurmountable obstacles. Gaps of information between jobsites make it even more difficult to make decisions and get supplies where they are needed most. Issues with tracking and accountability mean problems often go unresolved or unnoticed until they cause delays.

Reports and communications are often complicated by the realities of horizontal jobsites—varying weather conditions, teams physically spread out over long distances, inconsistent or complete lack of connection to the internet in remote areas. Weak technology in the field historically limited options around these problems. When the teams in the field are unable to communicate needs or get real time feedback from engineers and designers, entire projects suffer.

It's no secret that heavy civil projects are often over budget and completed late. The IHS Herold Global Projects Database² estimates 80% of large infrastructure, mining and oil projects cost more than predicted.² This startling figure means the vast majority of infrastructure projects run well past their anticipated timeline -- only the minority 20% actually complete as expected. Even worse, according to the database, some projects take up to 20 months longer to complete than initially agreed upon or do not function or operate as they should and need to be redone.

All of these delays and issues cost money.

A lot of taxpayer money.

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How to Boost Productivity Across Heavy Civil Construction Sites

With so much obvious room for improvement, the first question is where to begin. It's estimated that the construction industry loses \$15.6 billion each year³ by not using technology platforms that make communication and data sharing easier. This figure represents rework, lost time, updated plans, and unnecessary trips back to the office. While the construction industry is not always quick to take on the latest technological advancements, making some changes in the way the industry manages information can improve productivity and lower costs.

A lack of understanding of just how much a technology based solution can help, worries about complexity or difficulty and resistance to change are all barriers to accepting the very advancements that would help a brand or firm move forward. Here are 7 simple steps you can take to start improving heavy civil construction productivity.

Step 1: Bring (the Right) Technology on Board

One of the easiest ways to increase productivity to a construction jobsite is to incorporate technology that enhances both collaboration and communication. This step helps with workflow and communication, and improves the environment by cutting down the use of paper. Using a technology platform, such as a system for sharing reports and keeping documents, can help alleviate some of the stress and lost time often associated with construction sites. Having a virtual way for owners, clients, suppliers, and contractors to communicate quickly can efficiently resolve issues that can lead to downtime and lost profits. A solution that makes it easy for your team to collaborate can eliminate many of the time-wasters that happen on a typical worksite.

Step 2: Better Data for Better Planning and Risk Mitigation

Understanding completely what a job entails allows teams to better prepare for their individual parts. Exact measurements will affect how pieces fit together, what tools need to be used, and who is the best person for the job. Advances in technology can help in this area. More and more things are digital and offer more precision than previously possible; for example, digitally tracking daily field reports, or project issues and punch walks makes it easy to find trends and uncover useful insights that could be leveraged on future projects. The more accurate and detailed your plans and data are, the easier it will be for your team and subs to understand what you need them to do.

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Step 3: Training and Experience

With so much dependent on manual labor, a project is only as good as the employees. Better-trained employees will likely know how to handle unexpected situations safely and efficiently and will perform daily tasks more swiftly than their lesser-trained counterparts. By training employees in productivity, the team as a whole can benefit and keep the project moving along. Training can also help skilled workers with buy-in and ensure they feel like important parts of your team. These soft skills may not seem like much, but turnover is costly, and if you show your team you value them, they are far more likely to stick around.

Step 4: Partner with Government Agencies

Government agencies are eager and incentivized to adopt modern processes and technologies, and you can help them while improving project efficiency for yourself. Under its Accelerated Innovation Deployment (AID) Demonstration program, for example, the Federal Highway Administration (FHWA) has awarded nearly \$48 million in grants since 2014 to agencies for innovations such as Slide-In Bridge Construction, e-Construction (paperless technology), and more.⁴ Partnering with agencies to use new technologies and processes not only improves communication and productivity on the job site, but according to the FHWA's own findings, it has proven to save an average of 1.78 hours per day per person.⁵

Step 5: Optimize Tracking for Unit Price Contracts

Unit price contracts are common in infrastructure construction, and when working with government agencies on contracts financed with public funds, any variations or unexpected costs must be justified with careful documentation—at least if you want to get paid for them. By using technology to digitally track quantities and as-builts from anywhere in the field, you not only capture a transferable record of the work that was done, but you make it easier for owners and agencies to quickly confirm any claims that need to be made and pay you more quickly.



Step 6: Go the Extra Mile for Safety

In the heavy civil construction area, there are approximately 200 fatalities each year.⁶ The rate of injury and illness is about 2.8 percent. That adds up to a lot of lost time and lost profits. Keep employees working by making sure safety equipment is adequate and all employees are trained to use it. Encourage employees to use safety equipment and think about any other ways to make sure everyone returns home in one piece that night. For example, reduce trips across busy highways or other dangerous areas by giving teams access to software that stores all project documents right in their tablet or makes it easy to share updates from the field. Construction software that enhances communication can actually improve the safety level of your job sites if you hire workers who aren't fluent in English.

Step 7: Improve Communication

Better communication is essential in just about any industry, but it is especially crucial for construction. Communication between the project design team, the construction site management, the owners, and the clients are all critical to completing the job quickly and efficiently. Lack of communication between parties slows down progress and is a roadblock to timely completion. Poor communication can also result in having to redo the work, costing more money and bringing more frustration.

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4 Features that Will Improve Heavy Civil Construction Productivity

There's An Easier Way

Field technology and software can help improve communication and increase productivity. PlanGrid, a software used on more than 500,000 projects around the world, can increase productivity by connecting personnel, owners and agencies, engineers, and clients. PlanGrid can expand the ability to communicate and manage activity with the crew and the project, making projects flow more quickly and efficiently whether on the other side of a highway or working offline in a remote area. Having a system that can provide a smooth flow of information will increase productivity across all aspects of a heavy civil project.

Field Reports

With the forms already loaded into the PlanGrid system, everyone is using the same documentation. Select the people with access to complete and submit the forms. Consistency makes the reviews easy.

Having the digital forms means employees don't have to carry around paper and pens, only to lose them before turning them in. With PlanGrid, you can click on a form, complete the form, and submit all from the tablet or mobile device. The field reports are convenient, efficient, and manageable, making everyone's job easier. This is an ideal example of better communication working on the jobsite.

Markups

Instead of requiring paper documents for markups, they can all be completed in one digital system using PlanGrid. Highlight sections for review, draw arrows or designs to bring something to attention, or use the built-in measurement tool to take linear, path, and area dimensions for immediate field estimation. The marks can stay on the document and be shared with the entire team, or can be removed or edited when the items have been addressed.



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Issue Tracking

Employees can enter and track issues and punch lists in real time with PlanGrid. Management can see a breakdown of outstanding problems and who is responsible for the fixes, all represented in graphs for easy viewing. This measure of accountability is essential to monitor results and to notice ongoing personnel issues.

Documents

Having access to any plan or document in the field is a major time saver. Instead of having to hunt for the materials needed, only to realize you left them somewhere else, your team can save time, money, and frustration by having the documents in one location that can be accessed from anywhere. Some of the documents that you can have access to, even offline, with PlanGrid include:

- **Job Hazard Analysis:**

A pro-active way to review projects and tasks to discover potential hazards so steps can be taken to prevent injuries to your team.

- **Traffic Control Plans (TCPs):**

Internal Traffic Control Planning can help reduce injury and damage on the workplace by minimizing the amount of exposure workers on site have to equipment and vehicles in motion. A plan can help optimize traffic and procedures and protect your on-site team.

- **Standard Details:**

The documents, drawings or renderings that are detailed enough and specific enough to be used on a variety of worksite projects.

- **Geotechnical Report:**

A detailed listing and assessment of on-site conditions and expert recommendations to enhance safety and efficiency on the worksite. Investigations and reports can cover rock, subsurface soil and water conditions, prepared by a geotechnical engineer. This report needs to be detailed and comprehensive to make the most of the information and to attain optimal results for the project.

- **Pipe and Structural Details:**

Discovering a pipe, manhole or other structural piece once work has commenced can lead to costly damage, downtime and delays. A pipe and structural detail report can alert you to existing conditions and ensure your team is aware of what to expect and allow you to make plans to work around or replace troublesome structural details and artifacts.



Case Study: PlanGrid in Action in California



Any way to save time and money on the jobsite is valuable. Using PlanGrid can save both time and money by allowing instant access to documents and information. One construction company in California discovered just how much that access matters:

Granite Construction Moves Highway

Granite Construction is a premier heavy civil general contractor headquartered in Watsonville, California. They began working with a plan to move part of a highway in Fresno, California to allow space for the new high-speed rail system. The Highway 99 Realignment project started in late 2015 and will continue until 2019. Moving several miles of highway approximately 80 feet from the railroad tracks will cost roughly \$150 million dollars and includes relocating multiple local streets and utilities, and replacing three bridges.

Communication on such a massive project is always challenging. With multiple revisions and complications, the idea of managing the sheer amount of information can be daunting. Prompted by the Department of Transportation's requirement that inspectors, engineers, and field personnel have mobile devices for easier communication, Granite Construction went one step further and provided field personnel with PlanGrid.

The results were immediate and impressive. Having all the documents needed, when they were required dramatically sped up the communications. Meetings with field inspectors didn't need to be put on hold so someone could run back to the office to get a document. Plans and revisions were immediately available.

PlanGrid helped day and night shifts stay in contact easily. It even helped catch minor mistakes before they turned into major problems. In the case of the Highway 99 Realignment Project, the lead project engineer found what could have been a

\$40,000 mistake by using PlanGrid. He noticed the road wasn't graded properly to the latest specifications and was able to correct the situation before it became a problem.

Granite Construction also opted to use PlanGrid for the Folsom Dam Spillway. The company estimates that using PlanGrid saved five hours per person each week and saved \$500,000 in rework on this project alone. Heavy construction projects like these require the best possible data and collaborative tools to reduce errors and make the most of the time allotted for the job. The more prepared your team is for a job, the more effective they will be. When your team knows not only the work they need to perform but what surprises could be lurking under the surface, from pipes and manhole covers to old structures and debris, you are able to prepare for any issues that could arise.



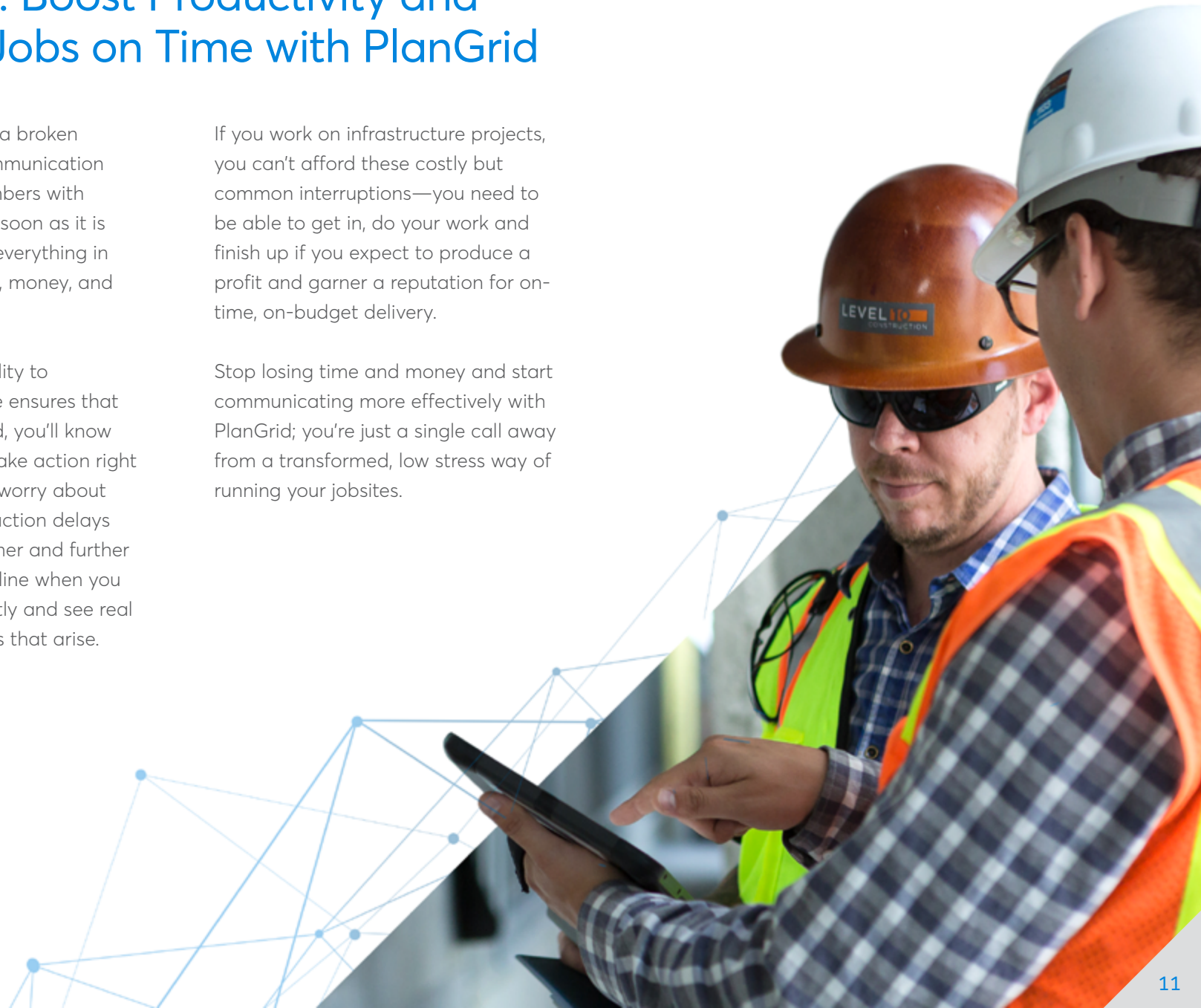
Conclusion: Boost Productivity and Complete Jobs on Time with PlanGrid

PlanGrid can help repair a broken system by improving communication and providing team members with the latest information as soon as it is available. PlanGrid puts everything in one location, saving time, money, and frustration for everyone.

Giving your team the ability to communicate in real time ensures that if a problem is discovered, you'll know about it and be able to take action right away. You won't have to worry about the typical heavy construction delays pushing your project further and further from your intended deadline when you can communicate instantly and see real time images of any issues that arise.

If you work on infrastructure projects, you can't afford these costly but common interruptions—you need to be able to get in, do your work and finish up if you expect to produce a profit and garner a reputation for on-time, on-budget delivery.

Stop losing time and money and start communicating more effectively with PlanGrid; you're just a single call away from a transformed, low stress way of running your jobsites.



References

¹ [2017 Infrastructure Report Card](#).

² [The IHS Herold Global Database](#)²

³ Full Stack Modular. "[Industry Background](#)".

⁴ FHWA. "[Accelerated Innovation Deployment Demonstration](#)".

⁵ FHWA. "[e-Construction and Partnering: A Vision for the Future](#)".

⁶ [Heavy and Civil Engineering Construction: NAICS 237](#).



See a Live Demo

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

PlanGrid 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:

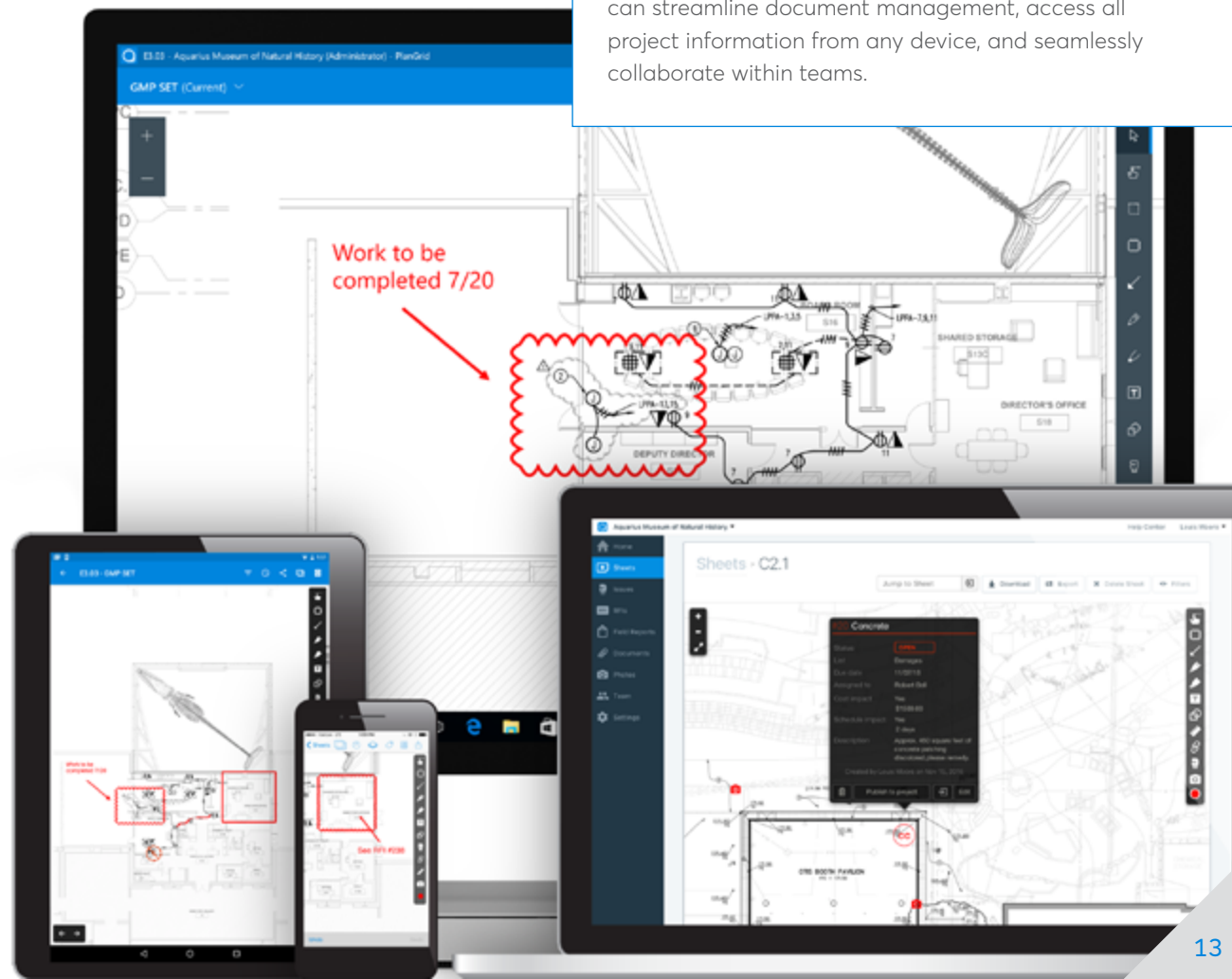
- **Complete projects faster:** 90% of project costs occur in the field not the office and most can be attributed to time waste or delays. With PlanGrid, you can reduce wasteful trips to the trailer and time delays while eliminating costly rework with faster collaboration and communication.
- **Reduce 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.



Try PlanGrid for Free



There is a reason why PlanGrid is not only the #1 construction app, but also the highest rated. With PlanGrid construction productivity software, you can streamline document management, access all project information from any device, and seamlessly collaborate within teams.





Used on more than 500,000 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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