



**CASE STUDY:**  
**HENSEL PHELPS  
CONSTRUCTION CO.**



A Verizon company



# How a Major General Contractor Built and Scaled Drone Operations



**HENSEL PHELPS**

Plan. Build. Manage.

Based in Greeley, Colorado, Hensel Phelps Construction Co. is one of [the largest general contractors and construction companies](#) in the United States, with more than 3,000 employees and a diverse range of domestic and international construction projects. They are consistently ranked among the top [30 contracting companies](#) by ENR magazine.

Hensel Phelps has among the most comprehensive and sophisticated drone operations in the industry. Overall, construction and engineering has adopted drones at a [faster pace](#)—and with more diverse use cases—than most other industries in the U.S.

Like most successful commercial drone operations, Hensel Phelps' started out small and scaled over time. But because they started developing their drone operations so early, they benefited from the competitive advantage of early adoption. Richard Lopez, virtual design and construction manager at Hensel Phelps, saw the potential for unmanned aviation to make design and construction processes more efficient.

## **OPPORTUNITY:**

# Being an early adopter

“When I started working on the procurement side here, I saw opportunities to get footage of buildings for videos that would highlight all of our projects,” Richard said. “So we paid helicopter pilots, which cost \$14-20,000 per flight.”

A year later, the Phantom 2 was on the market, so Hensel Phelps decided to try including drone footage in that year’s marketing materials.

“Hensel Phelps isn’t shy about new technology, as long as they are able to prove value in everything that’s being implemented,” he said. “This was early on, but we did find a company that would fly a drone for us. They found everything we were looking for, but they were actually really expensive—there wasn’t a significant cost savings. I thought, there has to be a way to do this.”

But with the commercial drone industry in its infancy, Richard needed to show that drones wouldn’t be an overly risky investment in terms of liability.

## **CHALLENGE:**

# Gaining buy-in for drones

At the time, Hensel Phelps had decided not to fly drones on job sites for insurance reasons. This was prior to the United States' Part 107, the law governing commercial drone operations, and in order to fly legally, businesses had to undergo a cumbersome exemption process, which created a significant barrier to entry. For example, the FAA required commercial drone operators to have traditional aviation experience, with at least a sport pilot certificate.

Not discouraged, Richard obtained a pilot's certificate as a hobby in his spare time. He also began developing risk mitigation plans and researching drones so he could make the case to his bosses and legal team. He had a good idea of what they would be most concerned about: a system for managing inventory and logging maintenance, just as Hensel Phelps does with cranes and backhoes, and a way to ensure compliance with the FAA.

Around this time, Richard attended Drone World Expo in San Jose, where he first learned about Skyward.

## **SOLUTION:**

Use Skyward to manage equipment and operator compliance.

"I saw right away that Skyward was the perfect solution to present to our legal team," he said. "I already had a plan in place for documenting inventory and keeping track of everything, including checks and balance, and inventory requirements. I wanted to model our system off manned aircraft. Skyward had the functionality I had been looking for, so I signed up for a personal subscription."

Once Richard had everything in place, he approached the legal team.

"Skyward was the biggest factor in getting our drone program approved," he said. "What our legal team loved was the thoroughness of the software and the ability to document pilots. All of our information is on the web and contained in one database, so all of our district teams, our legal team, and the safety team can access this information whenever they need to."

Skyward gives Hensel Phelps the ability to keep one central drone flight logbook for their entire organization, allowing them to track pilot hours, flight records, and maintenance in the same place where they maintained regulatory compliance. It works with any drone from any manufacturer, and it's easy to integrate new aircraft.

"At Hensel Phelps, we really pride ourselves on safety," he added. "Skyward gives us a way to document everything, know that our machines are properly maintained, and have that extra layer of safety."

# OPPORTUNITY:

## Scaling up

After starting with the single, most obvious use case — marketing videos that previously required a helicopter — Hensel Phelps has scaled up its drone program to not only save money but also to make money and create more efficient processes.

These days, in addition to building inspections like the one in this DJI Matrice 200 promotional video showing Hensel Phelps operators at work, they also uses drones for:

- Cloud points to incorporate into building information models software to provide to architects
- Photogrammetry, providing valuable data to superintendents and job site managers
- Cardinal direction views for clients and building owners
- LiDAR, for surveying
- FLIR, for inspecting HVAC efficiency

Hensel Phelps is also expanding its drone services to other regions. “My goal is to get Part 107-certified pilots in each of my eight districts,” Richard said, adding that Part 107 has made it much easier to find qualified pilots.

## CHALLENGE TO SCALING:

### Regulatory inefficiency

Even though Part 107 has lowered the barrier to entry for businesses and drone operators, it has created some additional challenges, especially for companies such as Hensel Phelps that were already running fairly sophisticated operations.

“It’s more difficult to obtain permission to fly in controlled airspace now,” Lopez said. “Previously, if I saw that I had a project in controlled airspace, I’d just call air traffic control and work it out with them. Now, we have to go through the waiver process, which can take months.”

Though Hensel Phelps has been [successful in receiving approvals](#) to fly in Class D airspace, they have yet to hear back about their first waiver application, which was submitted in August.

# Insights From an Early Adopter

1

## **Educate your colleagues**

Hensel Phelps has a strong internal educational campaign to spread the message about the drone program. They also hold company-wide seminars to go over all aspects of their business.

2

## **Have a safety protocol in place**

In order to sell drones to the higher ups, you need to have a crisis management protocol in place, like you would for any other machine on the job site.

3

## **Document everything**

Document your pilots, document your aircraft, document your maintenance schedules. Be thorough! Skyward can help track this data.

4

## **Start with the low-hanging fruit and go from there**

Hensel Phelps started with marketing videos, which were expensive to produce and required a helicopter. After replacing the helicopter with a drone, they expanded to include more projects and services, maximizing their initial investment in the technology.