

CS124187

# **BIM 360 and Beyond: A Boutique Hotel Case Study Part 1**

Christopher Baierl – BIM Manager  
Winter Construction Company

David Epps – Director of Construction Technology  
Winter Construction Company

## **Learning Objectives**

- Understand the potential uses and benefits to the BIM 360 platform
- Gain working knowledge of UAV usage and the ReCap Pro workflow
- Discover potential uses for laser scanning and photogrammetry during early project phases
- Discover potential benefits and challenges for BIM/VDC design team collaboration

## **Description**

This class will walk through an early construction case study of a boutique dual-branded hotel in midtown Atlanta that began in January 2017. Beginning with establishing existing conditions and site logistics, working through MEP (mechanical, electrical, and plumbing) coordination and structure build up, this class will cover a wide variety of construction technology integration. Fully designed in Revit software, this project team embraced using the BIM 360 platform—including BIM 360 Docs software, BIM 360 Glue software, BIM 360 Field software, and BIM 360 Team software—to manage documentation and project coordination between the design team, general contractor, and trade contractors. We'll also explore the benefits and challenges of reality capture and photogrammetry in an urban environment using laser scanning and unmanned aerial vehicle (UAV) flights in conjunction with the ReCap Pro software.



## Your AU Experts

### Christopher Baierl – BIM Manager

#### Winter Construction Company

Christopher Baierl is the Building Information Modeling Manager at Winter Construction. Christopher graduated with a degree in Computer Graphics Technology from Purdue University and is a seasoned BIM professional with over nine years of BIM industry experience. Christopher manages Winter's BIM services and promotes technology and graphics solutions across all projects. With extensive experience in the Data & Technology and Corporate Office sectors, he is well versed in model authoring, graphics creation, and building coordination during all phases of projects from pursuit through facility management. Christopher focuses on driving projects forward through implementation of technology and smarter solutions for construction projects.

### David Epps – Director of Construction Technology

#### Winter Construction Company

As Director of Construction Technology, David oversees the implementation, management and innovation of technology that provides value to the Construction process. This includes Building Information Modeling and Virtual Design and Construction, but also extends into other exciting and overlapping areas like Drones / UAVs, Laser Scanning, Virtual Reality, and Construction Simulation. His focus also includes project pursuit and marketing support, project setup, BIM Execution Planning, company and industry training, project standardization and consistency, recruitment, and managing the day-to-day workload and support needs across the company.

He is responsible for the evaluation, purchasing, and management of new software and hardware that is released to the industry and collaborating with leading software and hardware providers to push the technology toward adding higher value on Construction projects. He is a member of the BIMForum Leadership Group and a frequent presenter at numerous industry conferences and events in the hopes that educating and working with the most innovative members of the Design and Construction industry will lead to a more collaborative and efficient Construction process for everyone involved.



## Introduction

Christopher Baierl and David Epps

Winter Construction Company

### Project – AC Marriott / Moxy Hotel

The AC Marriott / Moxy hotel is a \$52Million, dual-branded hotel located in the heart of Midtown Atlanta. It is located on 14<sup>th</sup> Street and will be neighbor to the Atlanta Marriott Suites and the Four Seasons Hotel. The 300,000 square-foot, 12-story hotel will feature 300 parking spots, a pool, and a pool bar with an outdoor kitchen available for guests to use. The AC Marriott portion of the hotel has 128 guestrooms and the Moxy has 155 guestrooms.

### Goals for the Class – Learning Objectives

- Understand the potential uses and benefits to the BIM 360 platform.
- Gain working knowledge of UAV usage and the ReCap Pro workflow.
- Discover potential uses for laser scanning and photogrammetry during early project phases.
- Discover potential benefits and challenges for BIM/VDC design team collaboration.

## Measure a Million Times, Cut Once

### Capturing Existing Conditions

The Plan – Laser scan the existing site for existing conditions.

The Benefits – As-Built documentation of site and adjacent buildings.

The Challenges – Know why you are scanning. Plan a path. Proper access and line of sight.

### Drone Flight – Orthomosaic/Photogrammetry/Inspections

The Plan – Site Imagery for Orthomosaic and Photogrammetry, Workflow ReCap/Remake.

The Benefits – Current Compared to Google Earth, Higher Resolution, Different Angles, 4K Video.

The Challenges – FAA Approval, Certified Pilot, Adjacent Buildings, Manual Flights, Wind Tunnel.

## **Shovel Meet Dirt**

### **Underground Coordination**

The Plan – Document underground conditions and coordinate proposed utilities/structure.

The Benefits – Started before trades were on board.

The Challenges – Tight site with active Hotels on each side. Abandoned structures under building.

### **Shoring Coordination**

The Plan – Was not planned. Realized the possible benefits during UG coordination meeting.

The Benefits – Found a possible re-design opportunity.

The Challenges – Working with the engineering team to ensure the option was possible.

### **Truck/Delivery Coordination**

The Plan – Establish delivery options for the site due to lack of potential laydown space.

The Benefits – Defined the possible locations for delivery trucks to route around power lines.

The Challenges – Live power lines near building; Two adjacent buildings and busy streets.

### **Crane Coordination**

The Plan – Use Point Clouds and model to locate tower crane type, size, and position.

The Benefits – Simulate crane access and reach, confirm location/height plan is feasible.

The Challenges – Simulating crane movement through point clouds is manual.

## **With a Little Help From Our Friends**

### **Design Team – Cooper Carry Architects**

Fully designed in Revit (Arch, Struct, MEP)

Participate in weekly BIM coordination meetings

Incorporate RFI responses in to model updates

## BIM 360 Platform

Document Management (Formerly Docs), Glue, and Field.

Desktop and Mobile Access to all information.

Assistance from Autodesk in initial setup.

## BIM 360 Document Management

The Plan – Use BIM 360 Docs for construction document management and viewing.

The Benefits – Access from everywhere.

The Challenges – Field team not familiar with interface, does not have all desired features.

## BIM 360 Glue

The Plan – Use Glue as model repository and mobile model access.

The Benefits – Automatic version history, automatic updates, Time Savings Model Management.

The Challenges – Unforgiving, difficult on larger projects, incomplete compatibility with Navisworks.

## BIM 360 Field

The Plan – Manage Punchlist and Field Reports.

The Benefits – Can automate report creation once setup is complete.

The Challenges – Extensive setup process, Getting field team on board, Early hurdles.



Images by Cooper Carry Architects

## **A Little Bit Taller Now**

### **Pre-Pour Scans**

The Plan – Scan MEP, rebar, and post-tension cabling prior to concrete pour using ReCap/Scene.

The Benefits – Verify prep work and record as-builts of post-tension cabling.

The Challenges – Timing of scans, Active Jobsite, No room for error.

### **Monthly Drone Flight Updates**

The Plan – Replace outsourced aerial photography with sUAS photography

The Benefits – Can fly any day, can choose specific angles, fly repeat paths

The Challenges – FAA permissions, weather, immediate surroundings

### **3D Coordination**

The Plan – 3D Model Coordination among design team and trade contractors

The Benefits – Eliminate issues early with minimal cost impact, assist RFI creation

The Challenges – Infinity System, different MEP systems for each hotel brand

## **The Real Fun Begins (Closing Thoughts)**

### **Topping Out Structure**

Recovering the schedule from weather delays.

Unique Infinity System of structural walls.

### **MEP Rough-In**

Construction Verification of MEP installation.

Staying ahead of the schedule, Dealing with design changes.

### **Material Tracking**

Use Field to track Infinity System Wall Panel Delivery.

Use Field to track the delivery and installation of doors and hardware.