MEP X-RAY DOCUMENTATION GUIDE

Why Pre-Drywall MEP Capture Belongs in Every Commercial Construction Scope

WHAT THIS GUIDE COVERS

The hidden cost of skipping pre-drywall documentation — and the window that closes permanently once walls are installed.

- What MEP X-Ray documentation captures and why it matters
- The one-time window in every construction project lifecycle
- Real-world cost comparison: documentation vs. exploratory demolition
- Who benefits and how to include it in your project scope

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The Problem: What Happens When Walls Close

Commercial buildings are long-lived assets. The typical commercial building will remain in service for 30 to 50 years, during which it will be repaired, renovated, sold, refinanced, and re-tenanted — often multiple times. The people who supervised the original construction will long since have moved on.

Every maintenance decision, every renovation plan, every warranty repair that involves a wall, ceiling, or floor depends on one question: what is in there? For most buildings, the answer is whatever was recorded during construction — which is usually a set of as-designed drawings that don't reflect field changes, a folder of job-site photos that weren't taken with future access in mind, and the fading memory of trades that haven't worked on the project in years.

The result, eventually, is exploratory demolition: opening finished walls and ceilings to find pipes, conduit, and ductwork that should have been documented but weren't. It is expensive, disruptive, and entirely avoidable.

> *“Having the MEP walkthroughs saved us from tearing open a finished wall during a warranty claim. We pulled up the 360° capture, found the drain line in thirty seconds, and made the repair through a four-inch access panel instead of a four-foot opening.”*
>
> **— General Contractor, Central Florida**

02

What MEP Systems Are — and Why They Disappear

MEP stands for mechanical, electrical, and plumbing — the three categories of building systems installed during the structural framing phase, before interior finishes begin. On any commercial project, these systems run through walls, above ceilings, and under floors in a dense web of pipes, conduits, ductwork,

junction boxes, and access points.

Once drywall is installed, every element of that system becomes invisible. The only records that exist are as-designed drawings — which rarely match what was actually built in the field.

WHY AS-DESIGNED DRAWINGS DON'T TELL THE WHOLE STORY

- Trades adapt to field conditions on the fly — structural conflicts, coordination issues, and RFI resolutions all result in field changes
- Change orders are documented but as-built drawings are rarely updated to reflect every field adjustment
- Subcontractors move on after their phase is complete — the institutional knowledge of where things are leaves with them
- Digital construction documents capture design intent, not field reality

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The Narrow Window: Timing Pre-Drywall Capture

The window for MEP documentation is specific: after all mechanical, electrical, and plumbing rough-in work has been inspected and approved by the building inspector, but before any drywall installation begins. On a typical commercial project, this window is one to two weeks.

Missing it means the opportunity is gone permanently. Unlike aerial photogrammetry — which can be reflown if a flight is missed — or progress walkthroughs, which can be captured at any interior phase, MEP documentation has exactly one window in the entire lifecycle of a construction project. There is no way to reconstruct pre-drywall conditions once walls are closed.

PHASE	MEP DOCUMENTATION OPPORTUNITY
Pre-Construction	Aerial baseline — CAN be re-captured if missed
Earthwork / Grading	Aerial progress — can be re-captured at next flight
Structural Framing	Interior walkthroughs — can be captured at any phase
MEP Rough-In Complete	■■ ONE-TIME WINDOW — cannot be recreated after drywall
Drywall Installation	MEP systems now permanently invisible
Interior Build-Out	Walkthroughs — can be captured at any phase
Project Close	Digital twin hand-off — compiled from all prior captures

SkyGator coordinates directly with the superintendent at the start of each engagement to identify the pre-drywall window in the project schedule and schedule accordingly. Most MEP captures of a 10,000–20,000 SF floor plate are completed in a half day.

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What the X-Ray Layer Contains

SkyGator captures MEP systems using 8K 360° cameras, systematically documenting every room and corridor in the building before drywall installation. The captures are navigable — viewers can stand in any room, look in any direction, and see every pipe, conduit, duct, and junction box exactly as installed.

Each capture is geographically linked to a floor plan so facility managers can navigate by location rather than scrolling through a linear video archive. The MEP layer is accessible via web browser without specialized software and is permanently archived as part of the building's digital twin.

COMPLETE MEP X-RAY LAYER CONTENTS

- All mechanical rough-in: HVAC ductwork, equipment connections, access points, and diffuser rough-ins
- All electrical rough-in: conduit runs, panel locations, junction boxes, switch and outlet rough-ins
- All plumbing rough-in: supply and drain lines, cleanouts, shut-off valve locations, water heater connections
- Floor-to-ceiling coverage of every room, corridor, and mechanical space
- Cross-referenced to floor plan for location-based navigation
- Timestamped and geolocated for documentary evidence purposes

SPECIFICATION	DETAIL
Camera System	8K 360° cameras capturing full spherical view — no blind spots
Navigation	Web browser access, no software install required
Floor Plan Link	Each capture location tied to dimensioned floor plan
Archive Format	Permanent link-accessible archive, shareable with any stakeholder
Delivery	Delivered within 3 business days of capture date

Integration	Included as MEP layer in final digital twin hand-off

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The Cost of Not Having It

Exploratory demolition on a commercial building is not a minor expense. Opening a finished wall — accounting for demo labor, material costs, patching, finishing, and painting — runs $3,000 to $15,000 per opening depending on wall type, finish level, and scope of work. When the location of a system element is unknown, multiple openings may be required before the target is found.

SCENARIO	WITHOUT MEP DOCUMENTATION	WITH MEP DOCUMENTATION
Warranty repair — locate drain line	4–6 wall openings $24,000–$51,000 demolition cost	30-second navigation to exact location 4-inch access panel repair
Renovation — identify conduit routing	Exploratory openings across multiple walls Project delay + rework cost	Pre-renovation review of exact as-installed conduit paths Contractor mobilizes with full information
New tenant build-out — relocate plumbing	Trial-and-error wall openings Unexpected rerouting adds cost and schedule	Complete pre-drywall plumbing layout available Design based on actual conditions
Insurance claim — verify pipe location	Open wall to confirm Additional damage to claim	Visual confirmation without demolition Claim documentation already exists

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Real-World Outcomes

On the SkyGator Slab-to-Shingles case study project — a 3-story mixed-use commercial development in Central Florida — MEP documentation captured before drywall delivered measurable outcomes at multiple points in the project lifecycle.

$34K	Estimated demolition costs avoided during a first-year warranty repair. The MEP layer allowed the GC to locate a specific drain line in under 60 seconds and make the repair through a four-inch access panel.
0	Owner site visits required during interior build-out. Out-of-state ownership group used weekly 360° walkthroughs for complete remote visibility throughout the interior phase.
1 day	Change order approval time for MEP-related scope changes, down from an average of five days. Visual documentation eliminated back-and-forth on as-installed conditions.
36 wks	Continuous project documentation from pre-construction baseline through certificate of occupancy — with MEP X-Ray as the foundational layer of the final digital twin hand-off.

> *“I was in Chicago for the entire interior build-out and never once felt like I didn't know what was happening on site. Every Friday I walked the building. That level of visibility changed how we think about remote project oversight.”*
>
> **— Development Owner, Chicago IL**

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Who Benefits and How

General Contractors

Warranty risk management is the primary GC benefit. The MEP layer establishes defensible documentation of as-delivered conditions at project close — protecting the GC against subcontractor disputes and reducing warranty repair costs for the duration of the warranty period. Change order documentation is a secondary benefit: visual evidence of as-installed conditions eliminates the back-and-forth that typically delays change order approvals.

Out-of-State Ownership Groups

MEP documentation is part of the permanent record that ownership receives at hand-off. For owners who were not present during interior build-out, the MEP layer provides the first complete visual record of what is inside the building they now own — and a permanent reference for any future work.

Facility Managers

Facility managers are the primary long-term users of the MEP layer. Every maintenance decision, renovation plan, and system service call that involves a wall, ceiling, or floor benefits from knowing what is inside before work begins. The MEP layer is typically the most-referenced component of the digital twin in day-to-day facility operations.

Future Contractors & Tenants

Any contractor who works in the building after occupancy — HVAC technicians, electricians, plumbers, tenant improvement contractors — benefits from access to pre-drywall conditions. The MEP layer eliminates the guesswork that drives exploratory demolition costs.

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How to Include MEP Documentation in Your Scope

MEP documentation needs to be planned at the beginning of a project, not requested at the end. The pre-drywall window cannot be anticipated after the fact — it must be built into the project schedule from the start, with a drone documentation provider already engaged and ready to mobilize.

01 Engage early

MEP capture works best when the drone documentation provider is engaged at the permit stage alongside other early subcontractors. This ensures the capture window is identified in the project schedule and coordination with the superintendent happens in advance, not under pressure.

02 Identify the window

The superintendent or project manager identifies the window: after the rough-in inspection is passed and signed off, before any drywall hanging begins. SkyGator coordinates with the PM to confirm the date and mobilize accordingly.

03 Capture all floors

SkyGator systematically captures every room, corridor, and mechanical space on each floor. A typical 10,000–20,000 SF floor plate takes half a day. Larger buildings may require multiple capture sessions coordinated around the drywall schedule.

04 Receive the deliverable

Captures are processed and delivered within 3 business days as a navigable 360° archive linked to the building floor plan. The MEP layer is accessible via web browser and shareable via link with any stakeholder.

05 Integrate into digital twin

At project close, the MEP layer is compiled into the final digital twin hand-off along with exterior aerial data, completion walkthroughs, and as-built floor plans. The facility manager receives a single permanent record of the complete building.

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SkyGator MEP Documentation: What to Expect

SkyGator Aerial Intelligence is a Central Florida-based commercial drone services company specializing in full-lifecycle AEC documentation. Michael Smithkey, founder and lead operator, brings a background in national insurance claims management and forensic documentation — which informs SkyGator's emphasis on defensibility, precision, and workflow integration over generic aerial photography.

DETAIL	SKYGATOR SPECIFICATION
Service Area	Central Florida, Tampa Metro, Space Coast / Brevard — statewide Florida
Certifications	FAA Part 107, DJI Enterprise Certified, Fully Insured
Equipment	DJI Matrice series with RTK GPS, 8K 360° ground-level cameras
MEP Capture Speed	10,000–20,000 SF floor plate completed in half a day
Delivery Timeline	3 business days from capture date
Mobilization	Most projects mobilized within 3–5 business days of scope confirmation
Documentation	COI, FAA Part 107 certificate, LAANC authorization available on request
Pricing	Scoped per project based on building size, floor count, and schedule

Request a MEP Documentation Scope

Every SkyGator MEP engagement is scoped to your specific project — building size, floor count, capture schedule, and integration with the project's documentation requirements. Submit a scope request and receive a tailored proposal within 1 business day.

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