

Leveraging Technology to Ensure Success in Sustainable Laboratory Renovations

10/20/2025



Brandon Hurlburt
VDC Manager



William Jacobs
VDC Manager

Learning Objectives

1

Learn how laser scanning can be used to provide a digital capture of existing conditions.

2

Explain how BIM and the virtual build process can improve coordination and construction efficiency in sustainable reuse projects.

3

Understand how early involvement of laser scanning and existing condition documentation can assist with improving efficiency and accuracy in the design phase of a project.

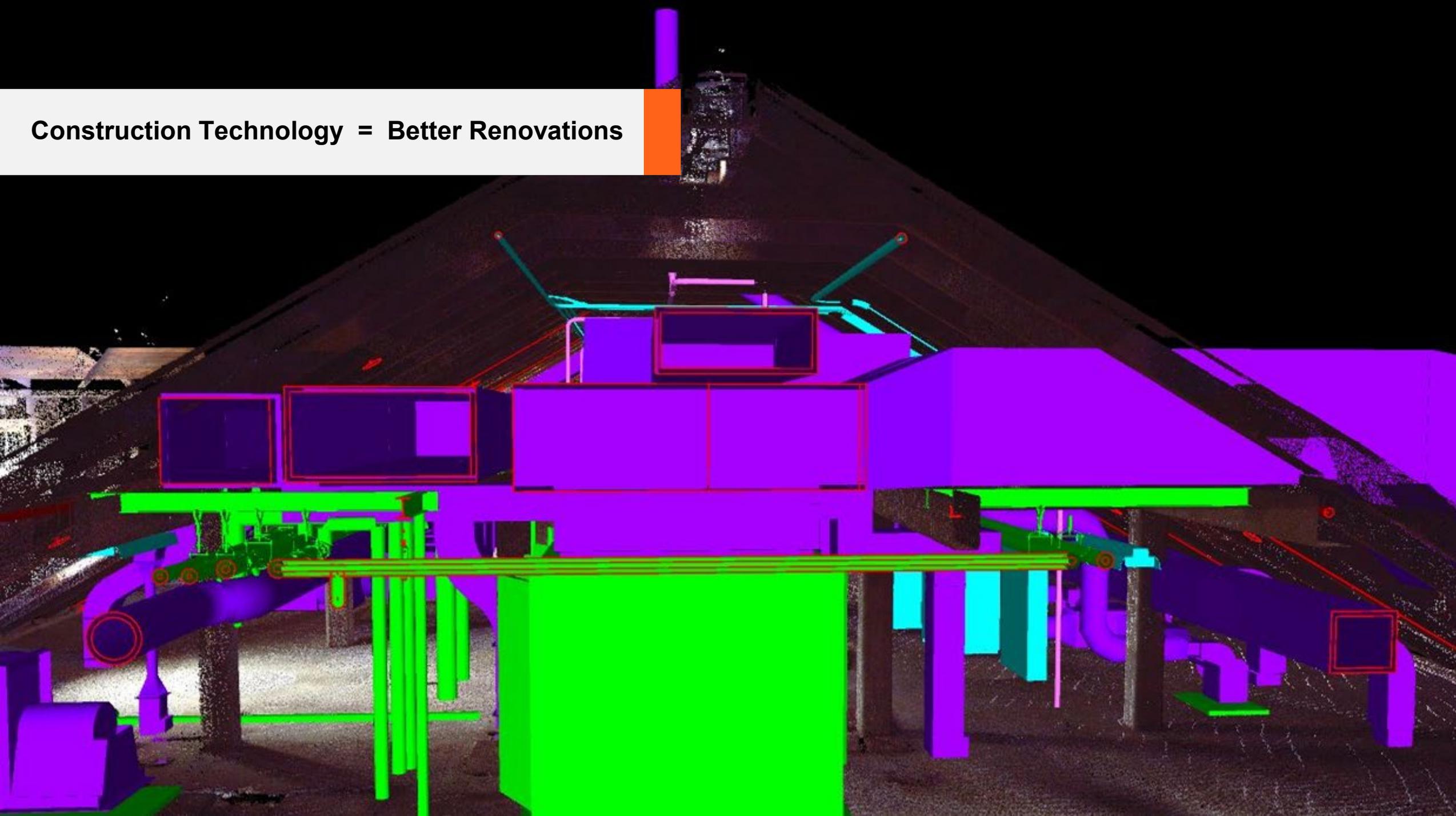
4

Identify opportunities for pre-fabrication and offsite construction in renovations and retrofits through confidence in existing conditions and more efficient model coordination.

AGENDA

- 1** | Pre-Story
- 2** | Challenges of Adaptive Reuse
- 3** | What is Laser Scanning?
- 4** | How Can BIM Help You?
- 5** | Adaptive Reuse Through BIM
- 6** | Early Involvement is The Key To Success
- 7** | Understanding Timing
- 8** | Prefabrication
- 9** | Questions

Construction Technology = Better Renovations



Construction Technology = Better Renovations

Better Everything

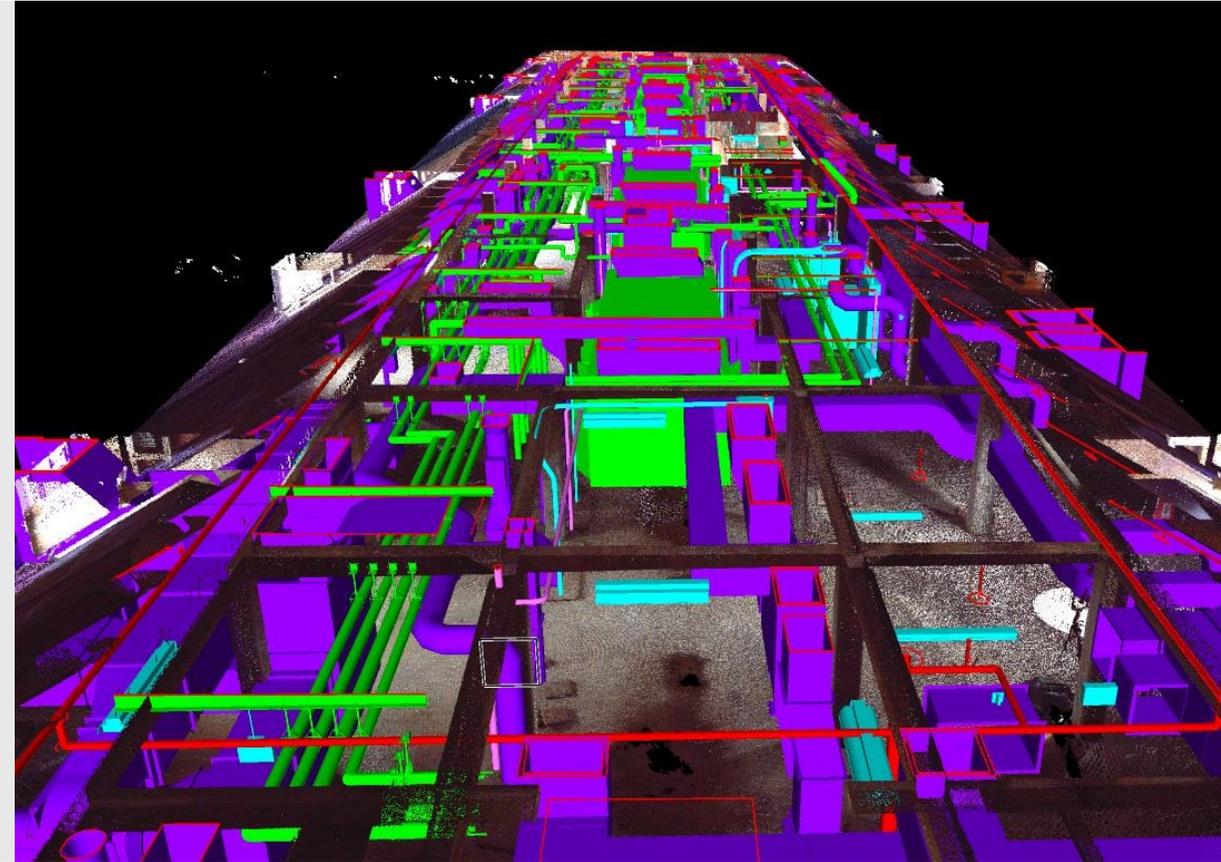
Process

Communication

Delivery

Experience

Labs



With Opportunities, Come Challenges



Uncertainty and risks of existing conditions



Physical limitations
(existing structure, etc.)



Limited flexibility in programming and planning

Scanning Overview

Learning Objective 1

Mobile + Terrestrial

Trimble, FARO,
Leica, NAVVIS

Variable Accuracy:
+/- mm possible

Relatively Quick



Point Cloud = Billions of discrete measurements

Scanning Overview

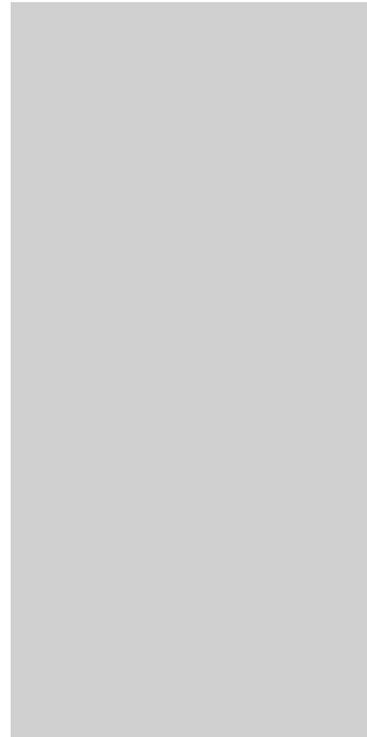
What Can It Do?

Provide Insight

Analyze

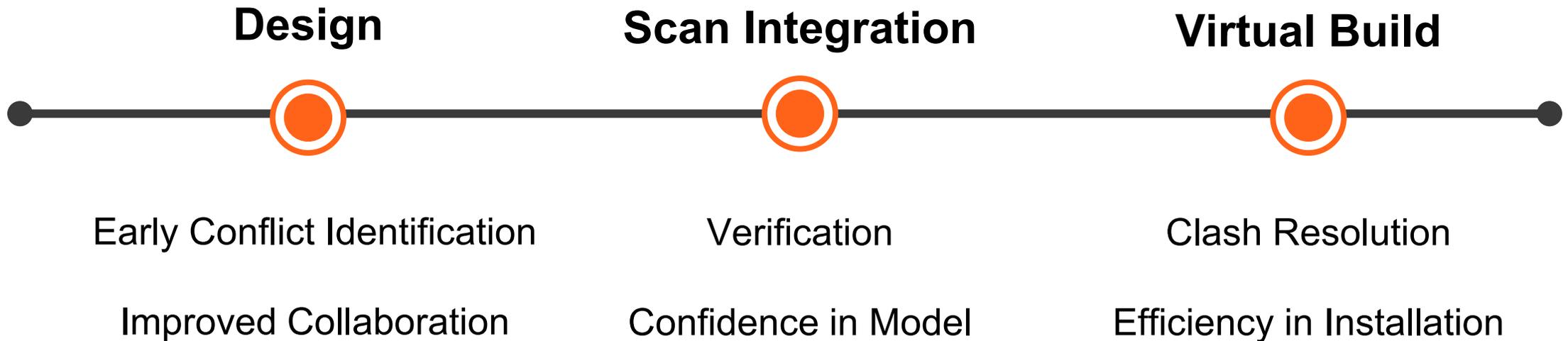
Model

Validate



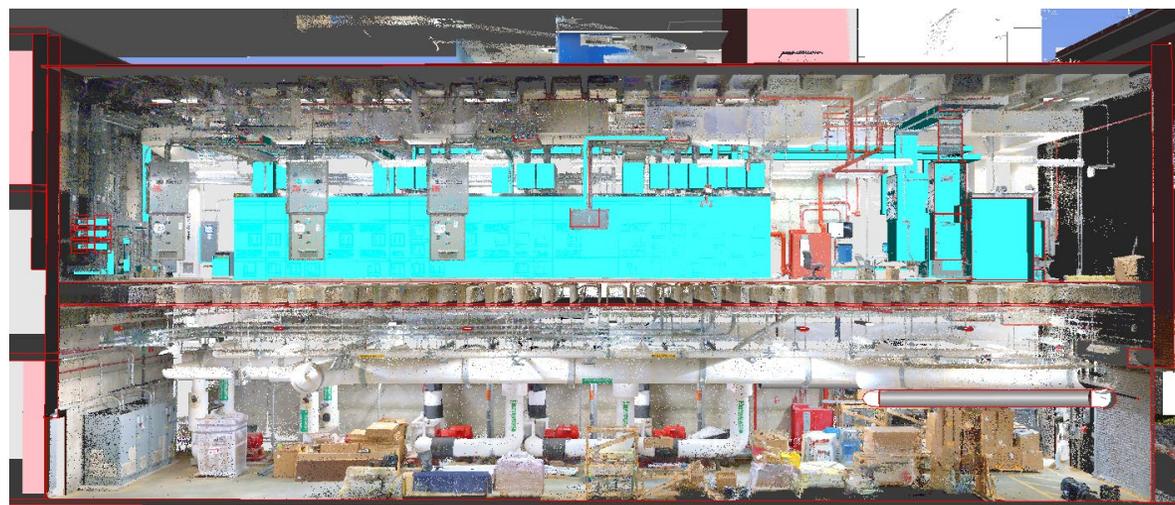
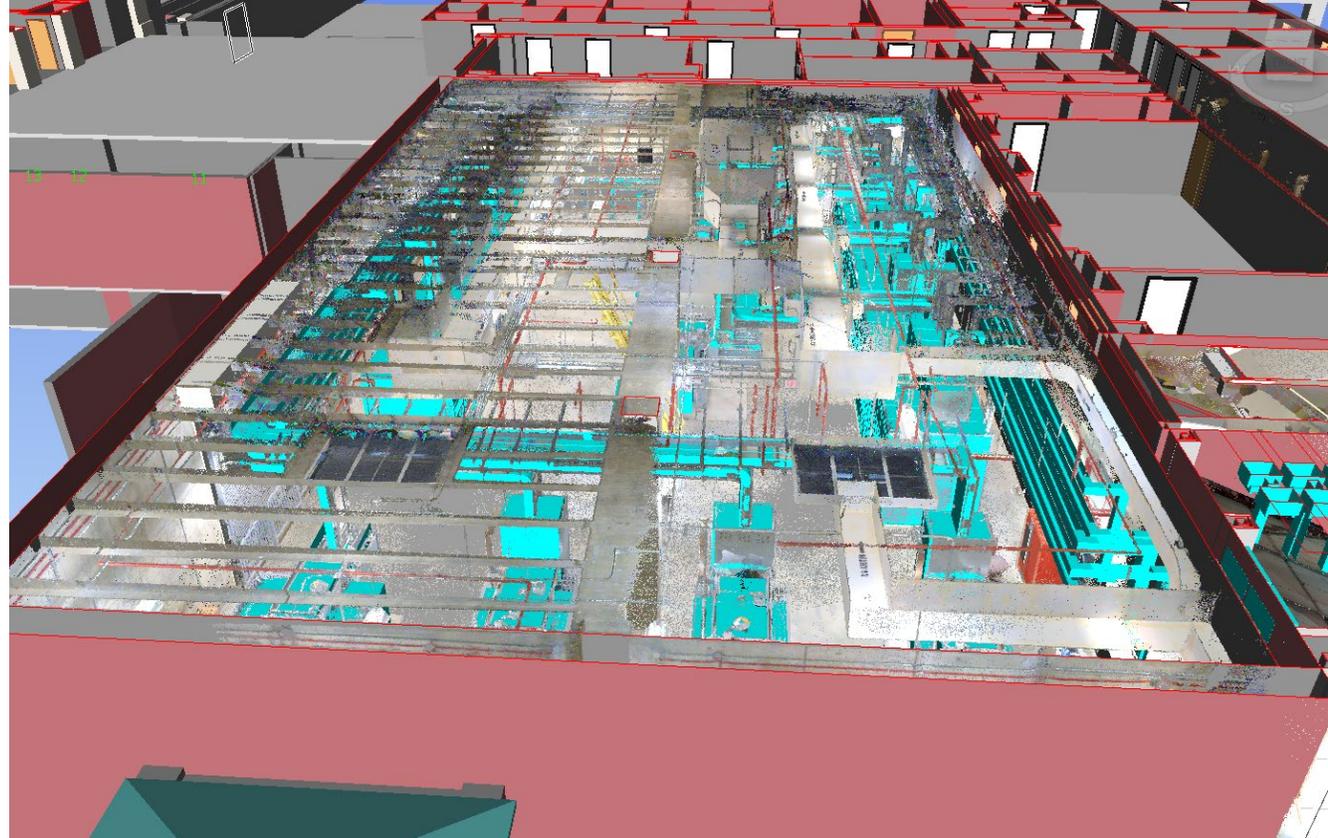
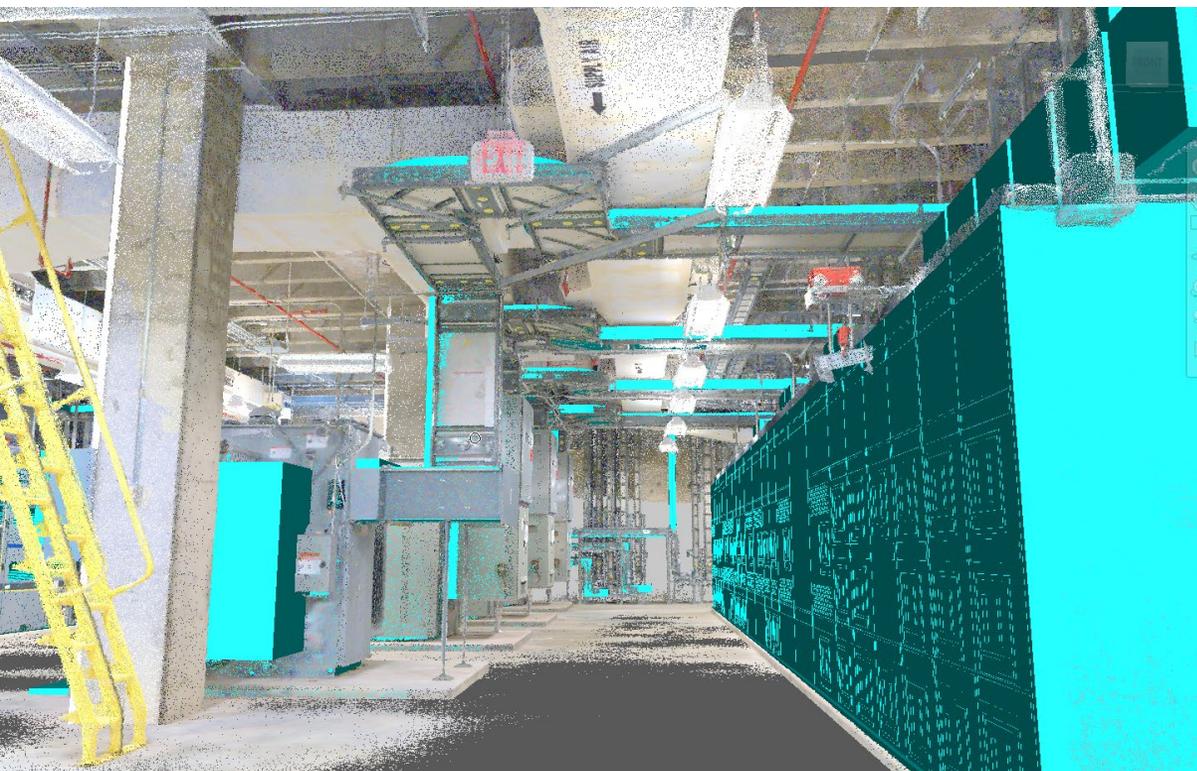
How Can BIM Help You?

Learning Objective 2



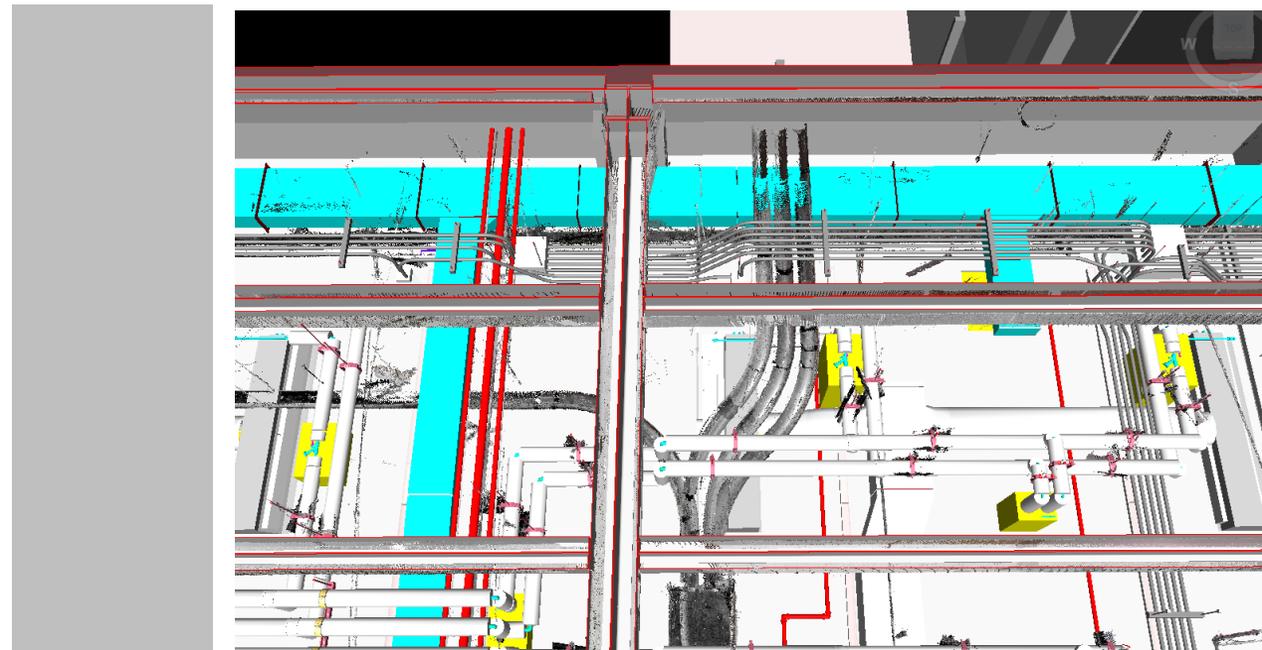
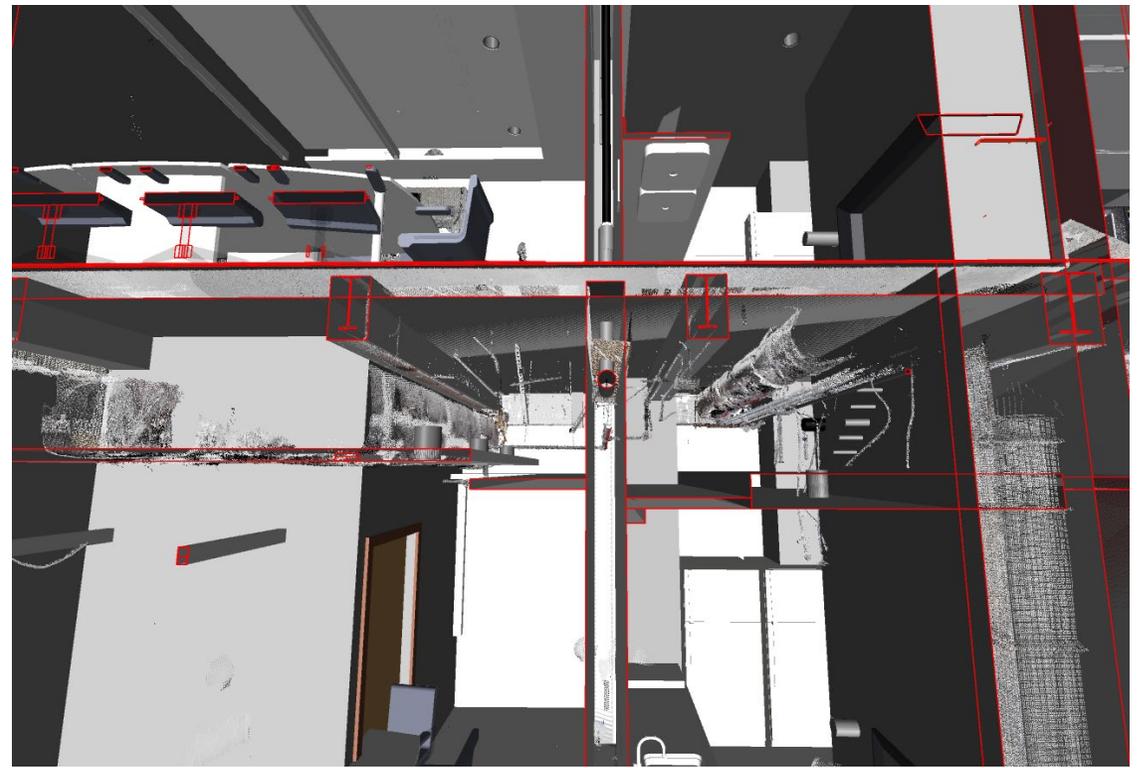
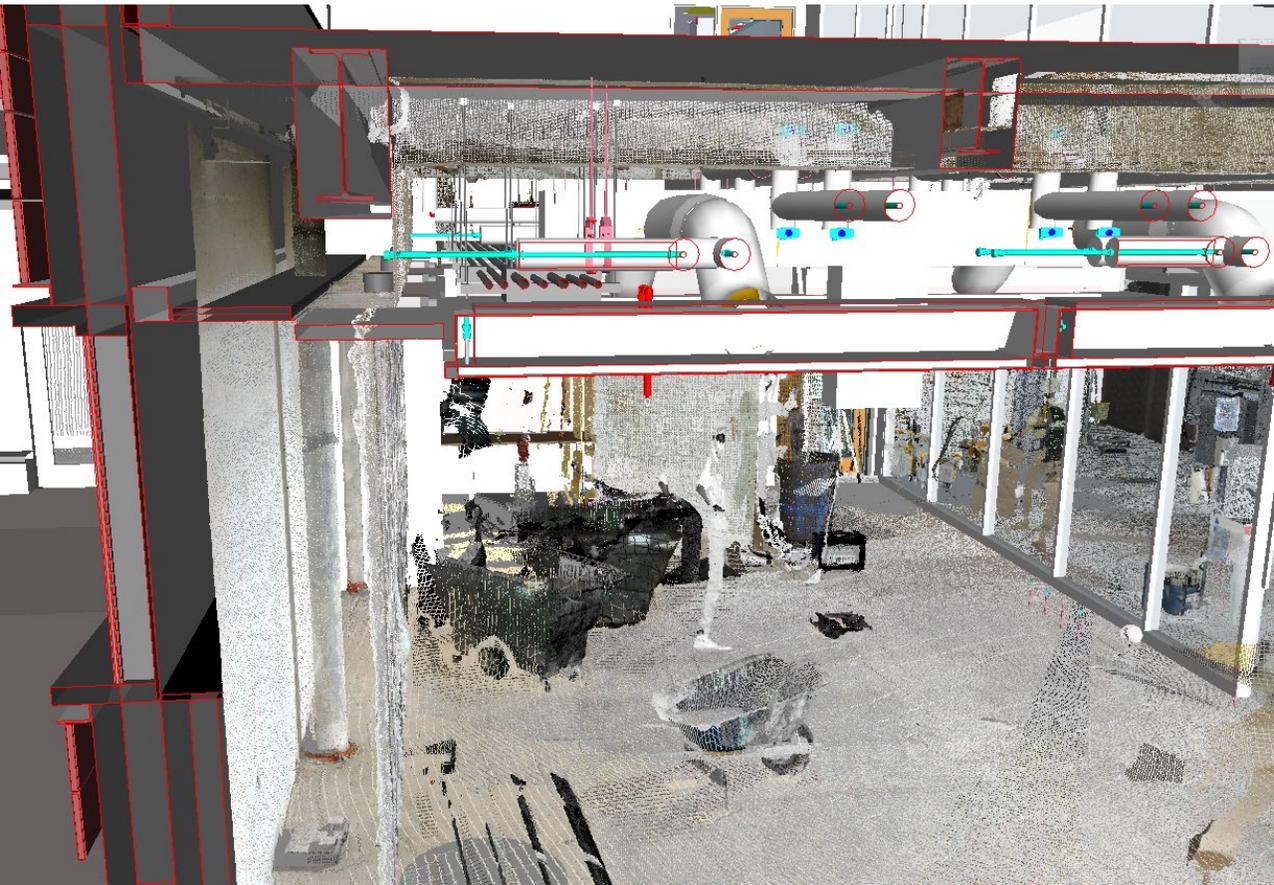
How Can BIM Help You?

Scan Integration



How Can BIM Help You?

Identifying Conflicts



Adaptive Reuse Through BIM

Challenge

Existing Lowes -> Vivarium

Result

Multi-Phase Build of
Vivarium, Mechanical,
and Office Space

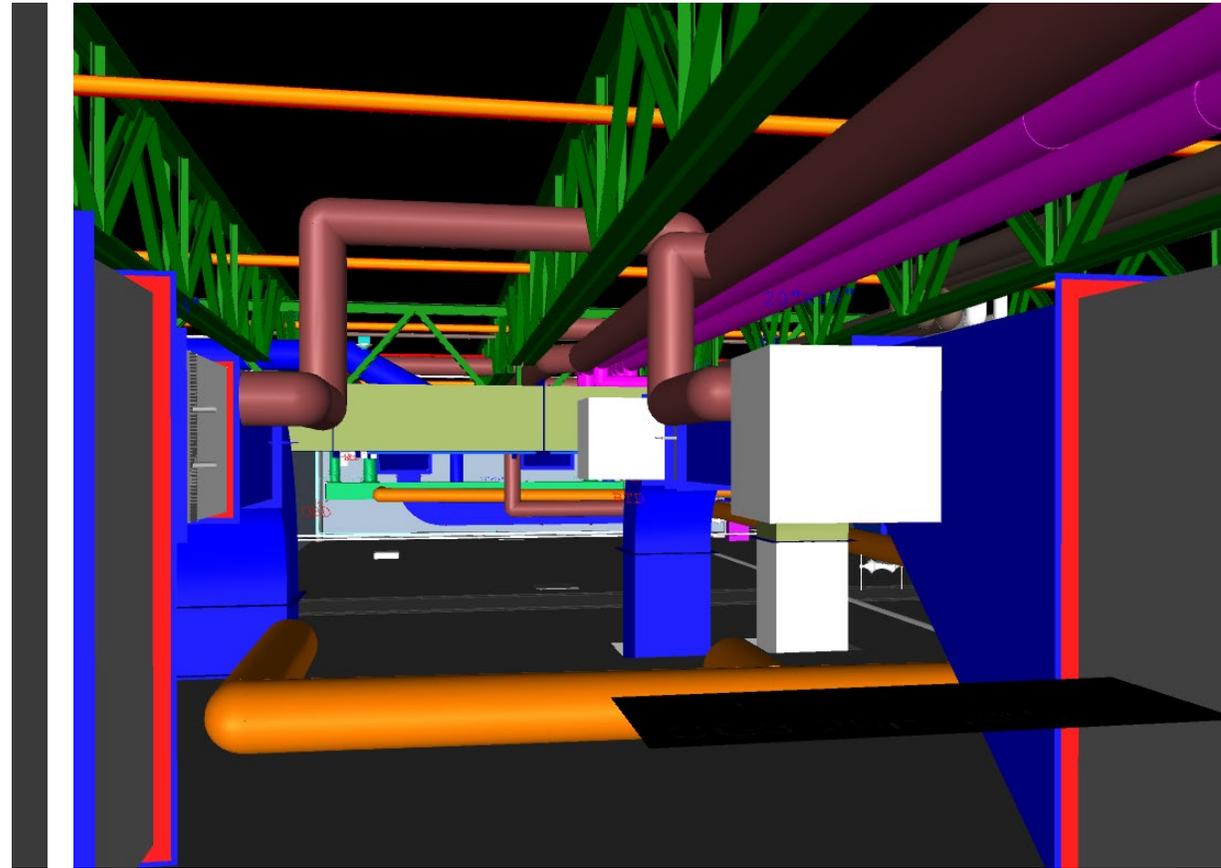
Laser scanning provided critical data on existing conditions

Coordination process allowed for improved efficiency and quality in construction through multiple phases

Adaptive Reuse Through BIM

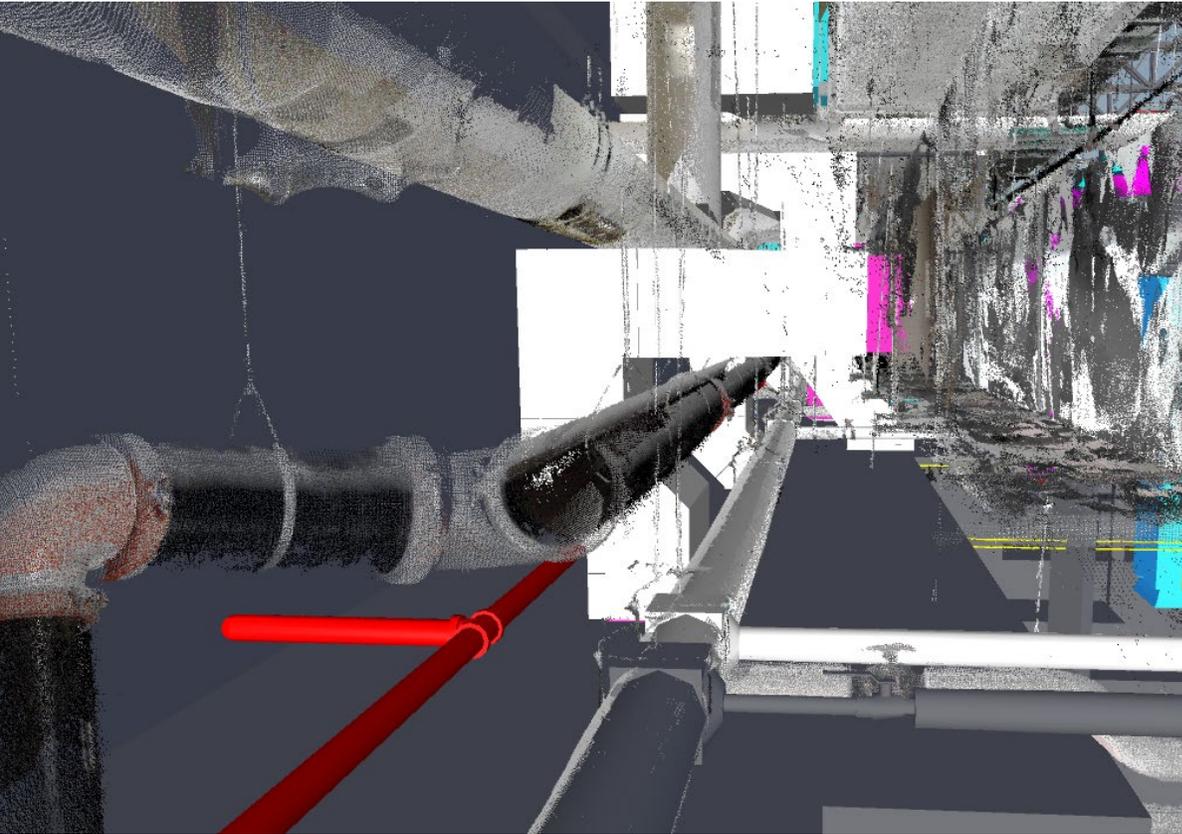


3D Laser Scanning of existing Lowes structure

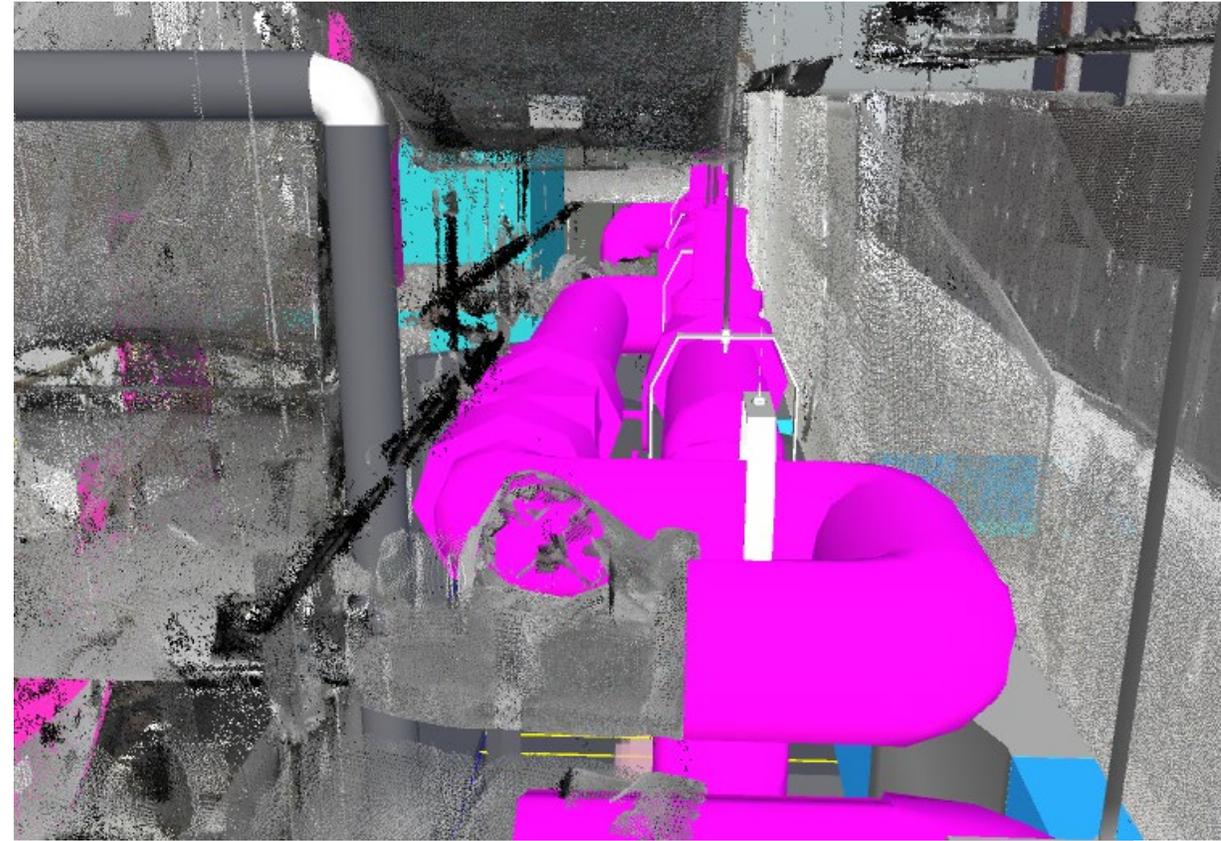


3D Coordination of new mechanical space

Adaptive Reuse Through BIM



3D laser scanning of previous phase install



Coordination around previous phase MEPF

Where Accuracy Meets Efficiency

Learning Objective 3

**Early
Information**
is the
**Key to
Success**

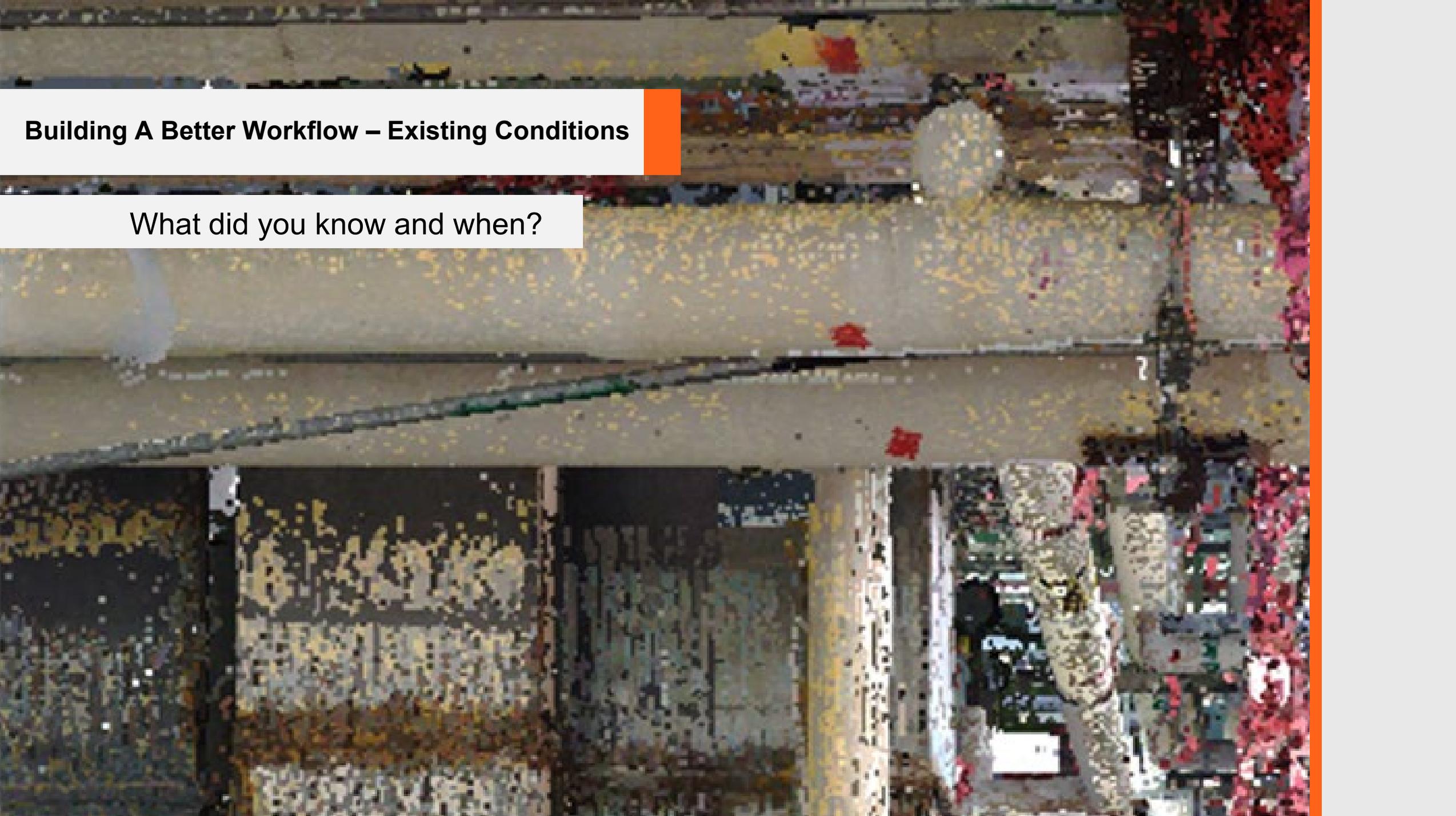
Unlock the full picture of existing conditions and challenges early in the process

Create opportunities for better programming and planning in design

Encourage the beginning of the virtual build process leading to collaboration and improved efficiency from design through construction

Building A Better Workflow – Existing Conditions

What did you know and when?



Building A Better Workflow

Weighing Options

Dense results

Expensive

Scope communication

Early start

Pre-Demo

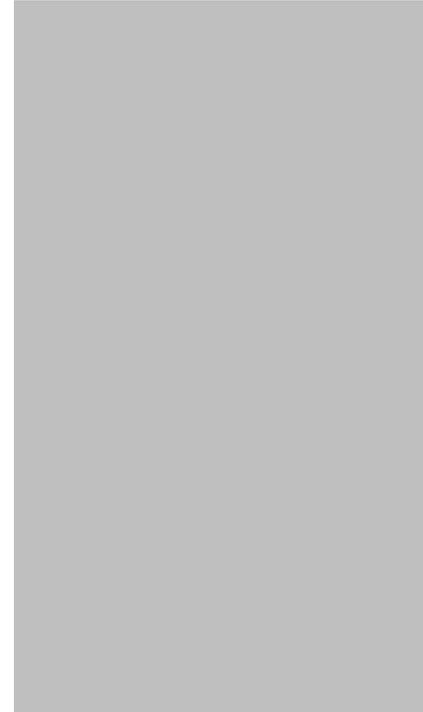
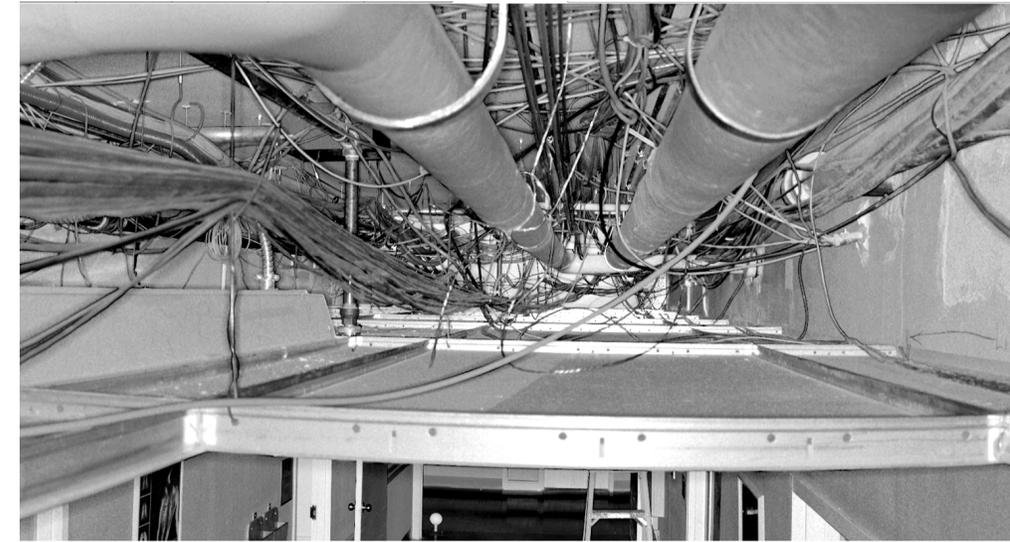
Clarity in results

Cheaper

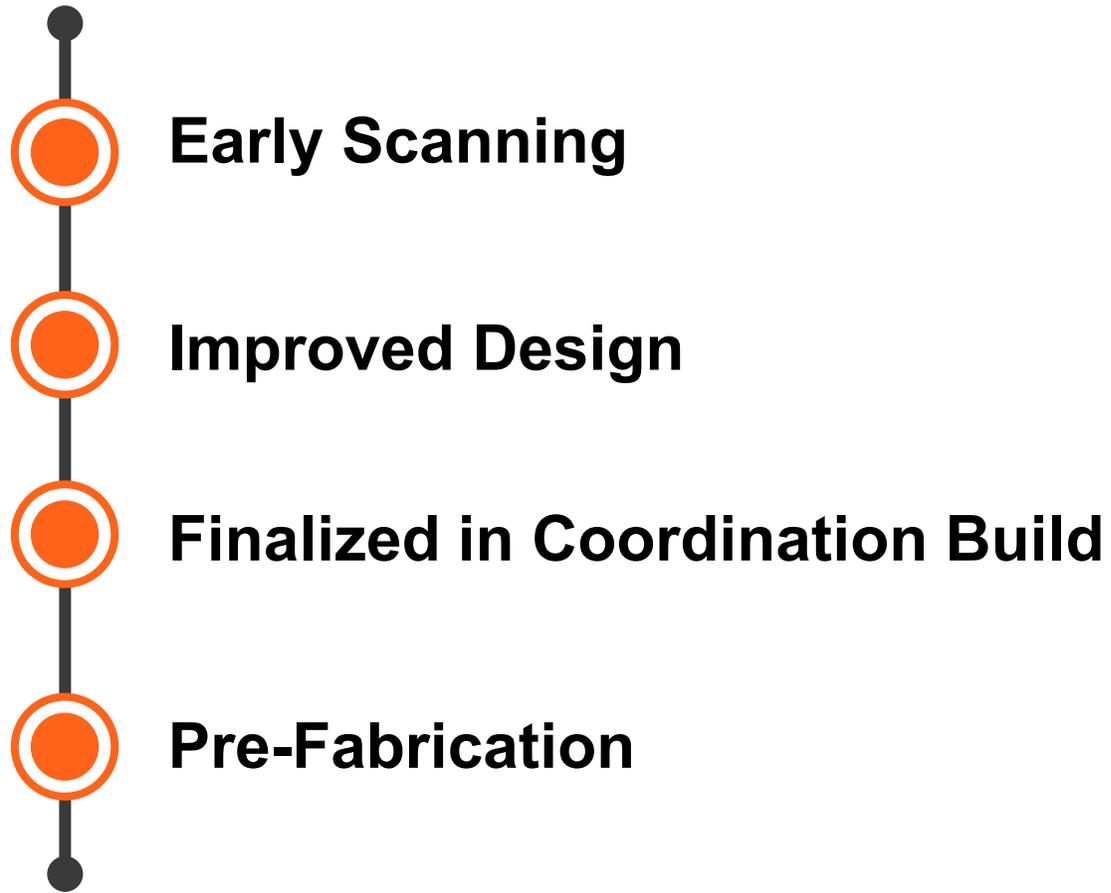
Quicker to perform

Late start

Post-Demo



The "Ideal" Timeline



Precision Fabrication For A Perfect Finish

Learning Objective 4

Prefabrication starts in the model

Design, detail, and plan through the virtual build

Scanning + Virtual Build Effort = Confidence to invest in Prefab

What To Look For

Racks

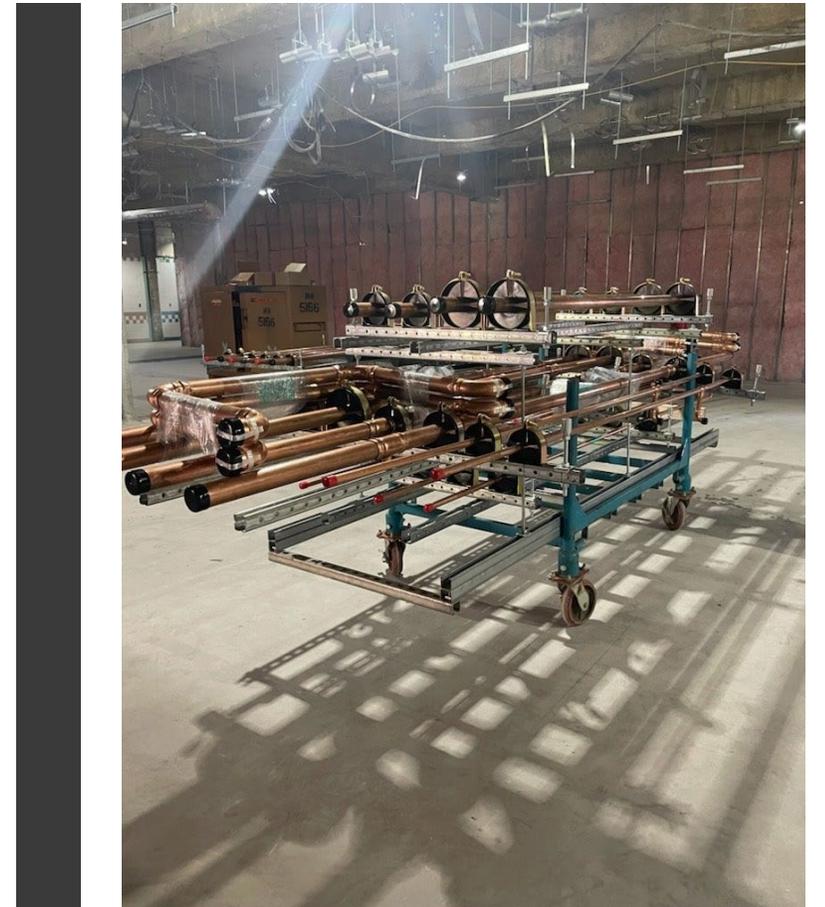
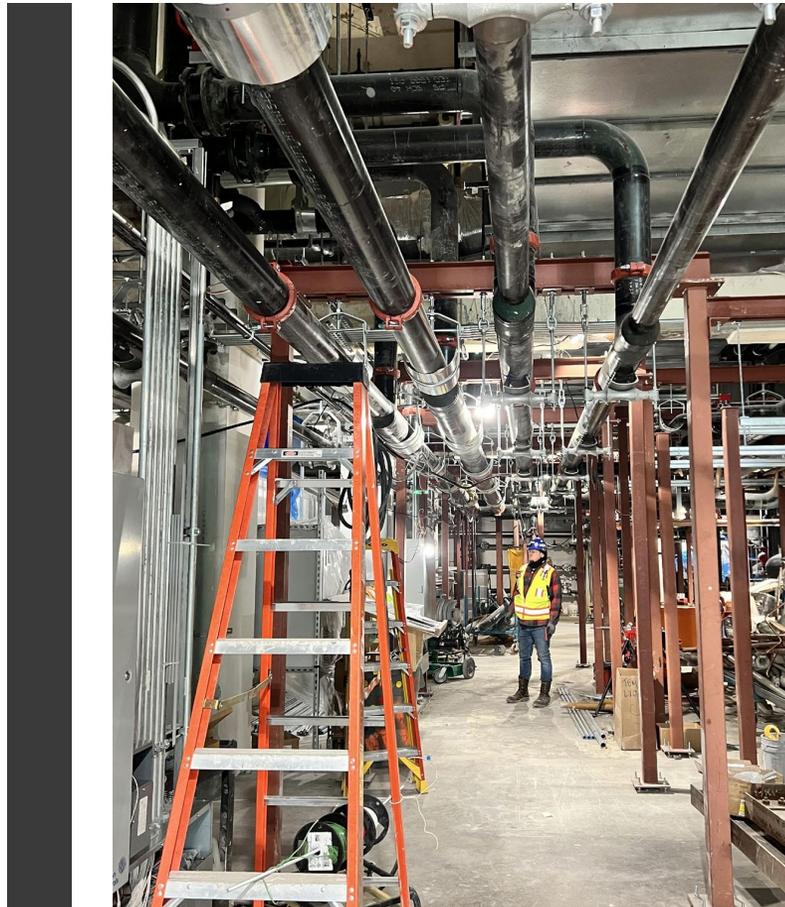
Typical rooms / spaces

Shafts

Repetitive assemblies

Precision Fabrication For A Perfect Finish

Prefab in Action



Questions?

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