

Lean Construction Institute

Building Knowledge in Design and Construction

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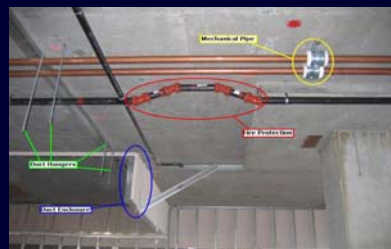
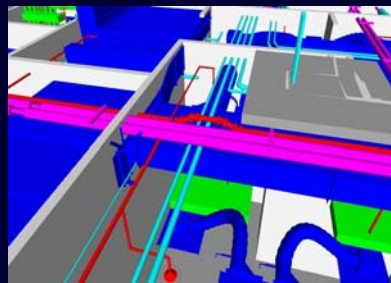
Harborview Medical Center- Case Study

- **Application:**
Project Management – Design Validation (3D Coordination) and Laser Scanning
- **Scope:**
*M, E, P, FP, PT, **Struct, Arch** from 2D Design Documents*
- **Project Phase:**
Construction
- **Modeling by:**
*Arch / Struct by Turner
Contracted into MEP trades*

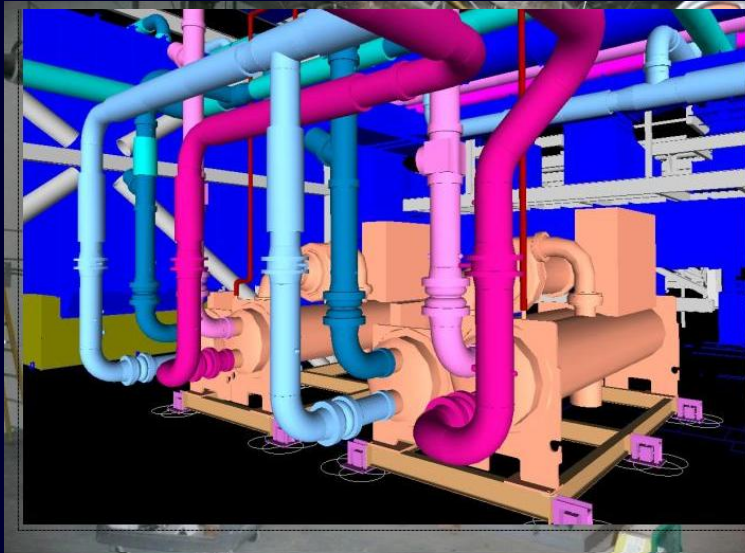


Harborview Medical Center – New Building Coordination

- Navisworks selected as the tool to review and resolve clashes
- Overall coordination process refined as the job progressed
- Coordination procedure is a work in progress but still follows the basic flow proven on this project.
- Teamwork and cross-functional participation was the key to the success



Harborview Medical Center – New Building Coordination



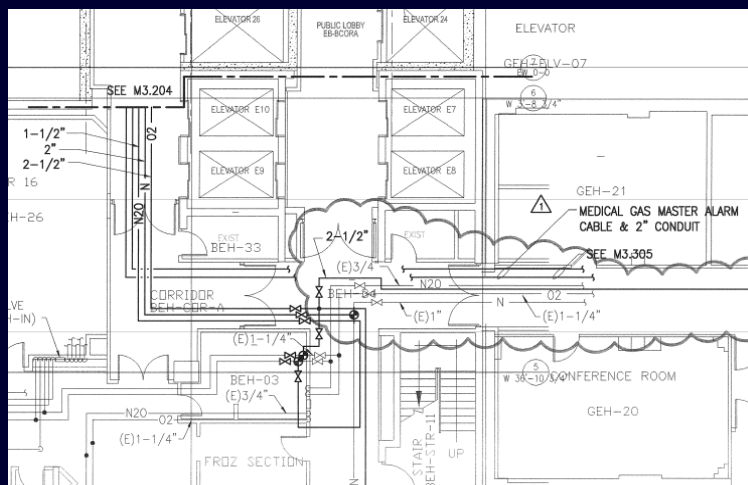
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Harborview Medical Center – Tie in to Existing Areas



Contract Documents were clear that coordination would be difficult.

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Where exactly are we supposed to run that pipe?

- Existing conditions were tight to say the least.
- We only had access for a few hours at a time, at night, on weekends.
- Prefabrication and pre-planning would be crucial



Laser Scan Data used as 3D “background” for new work

- David Evans and Associates employed several types of scanners as well as traditional survey techniques to create a model for us to use.
- Scanning was done in a 4 hour window on-site and the model created within 10 days



Laser Scanning On-Site



The process and equipment looks daunting but the work went smoothly and quickly.

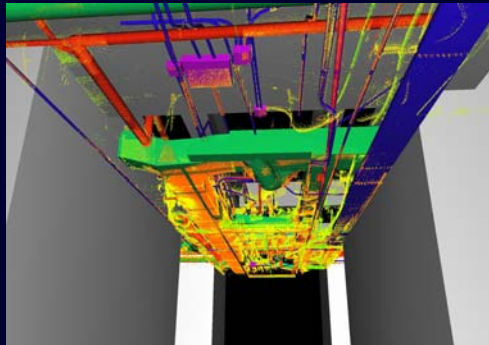


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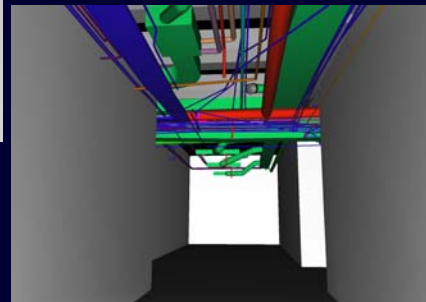
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Point Clouds take shape and yield a useful image.



Human interface needed to omit object not needed (like T-Bar) and to create meaningful color coded objects.

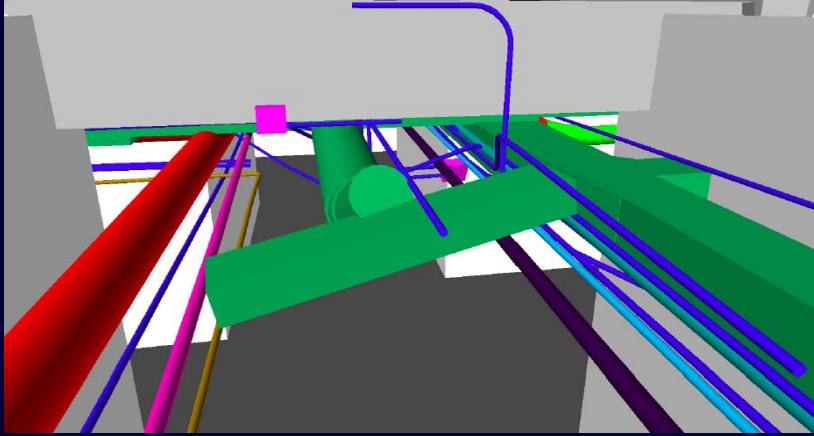


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Some objects appeared to be incorrectly modeled



But upon further review...



Harborview Medical Center- Results

- The model-based coordination effort was a big success.
- Our 3D coordination process is now standard for our projects, including TI's as well as new construction.
- Using the right tools, at the right time, in the right quantity is always a good recipe!

