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Using Revit as a Single Source of Truth for MEP Engineering and Install

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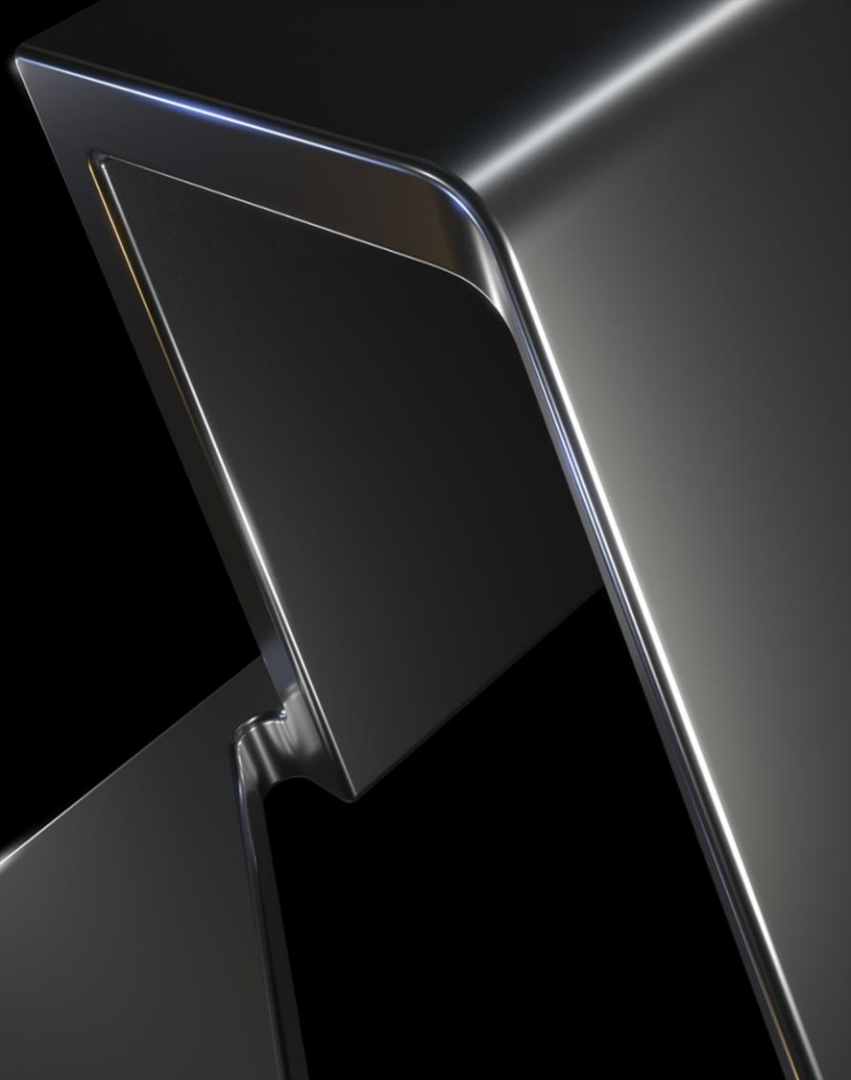
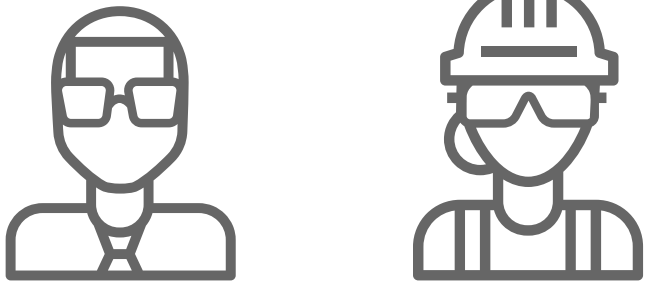


Contractors and Engineers

Contractors and Engineers

Let’s reduce the friction

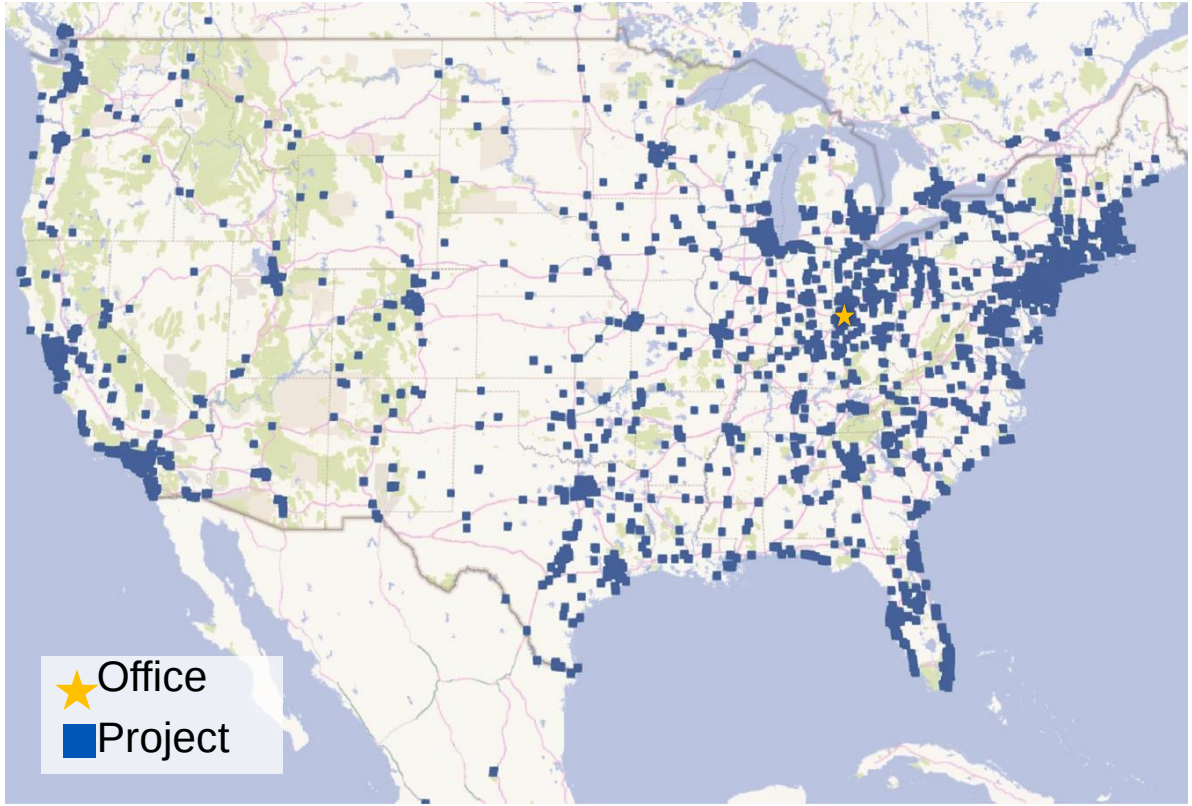
- Our goal is to reduce waste and issues between these two groups
- What are the problems we each face and how can we alleviate those problems?
- Let’s work closely together to solve construction problems before construction begins
- Let’s work hand-in-hand in the same Revit model



KLH Engineers

National Footprint

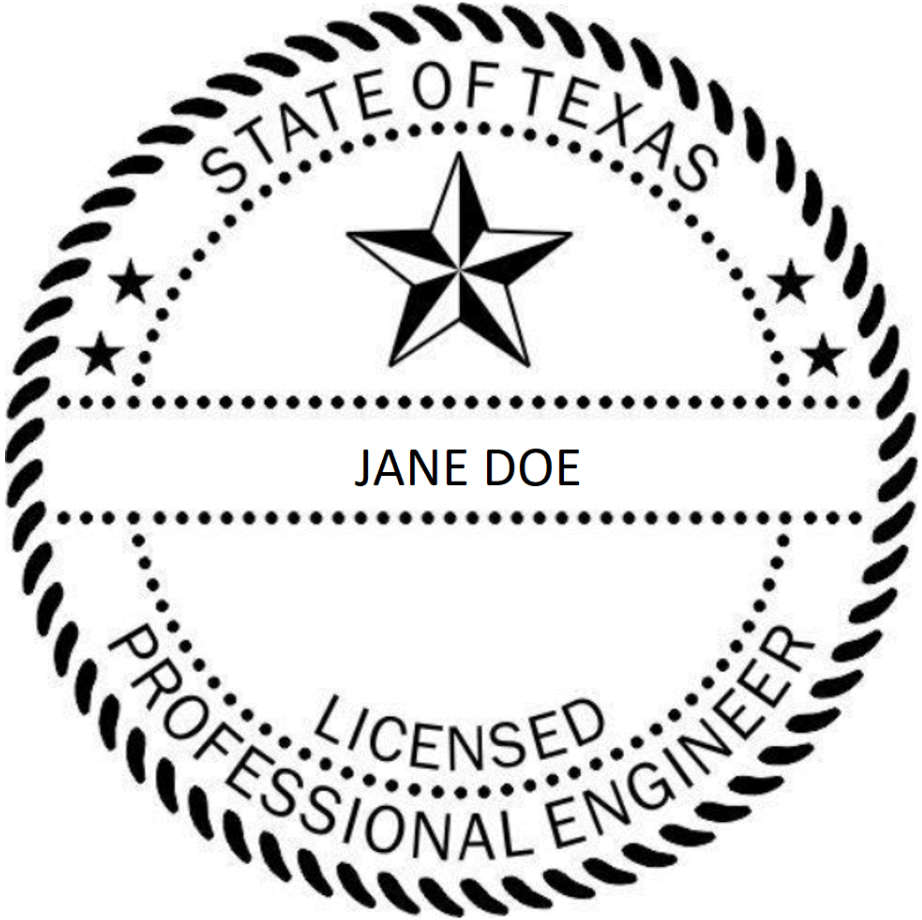
- Experience
  - 66 year history
  - Licensed in 50 states
  - Markets
    - Civic
    - Commercial
    - Education
    - Retail
    - Healthcare
- Locations
  - Main: Ft Thomas, KY
  - Columbus, OH
  - Lexington, KY
  - Louisville, KY
  - New York City, NY



How Contractors view Engineers

Reponses from meetings with contractors

- Necessary evil for permitting
- Arrogant
- Hands-off
- Incomplete drawing packages
- No consideration for constructability or coordination
- CYA notation and pages of details
- Phonebook sized specifications
- Need to build in-house engineering competency



Industry Partners

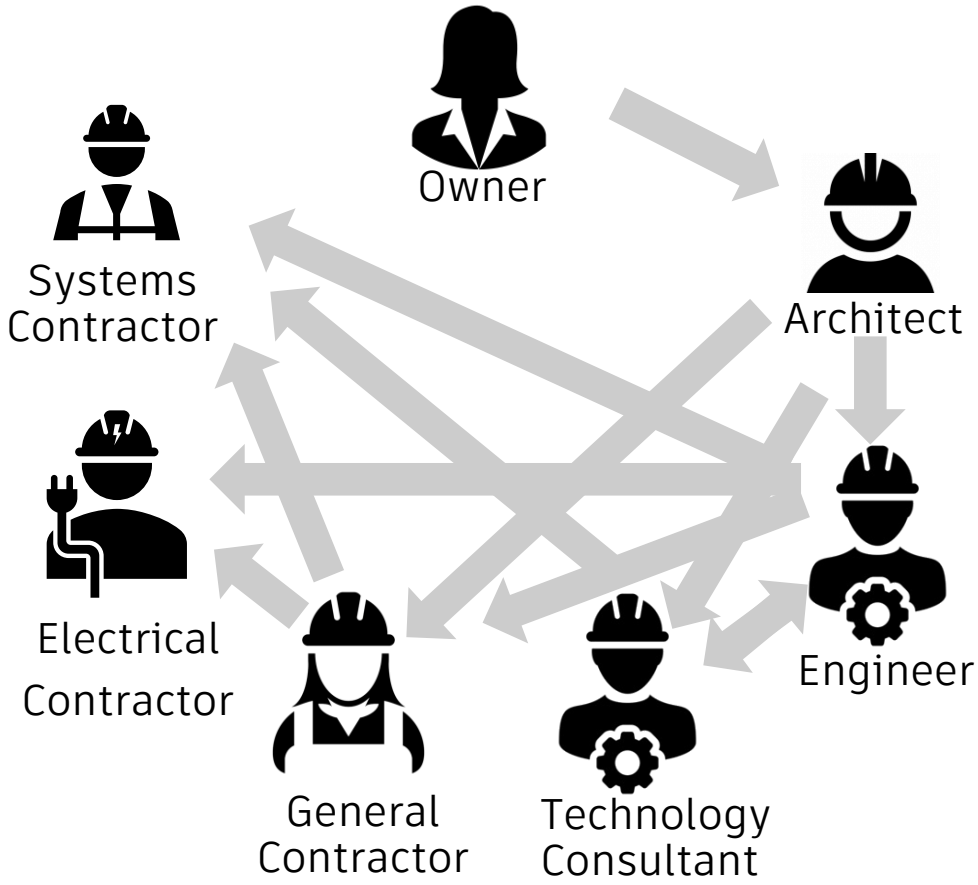
Say it once and say it right

Say it Once and Say it Right

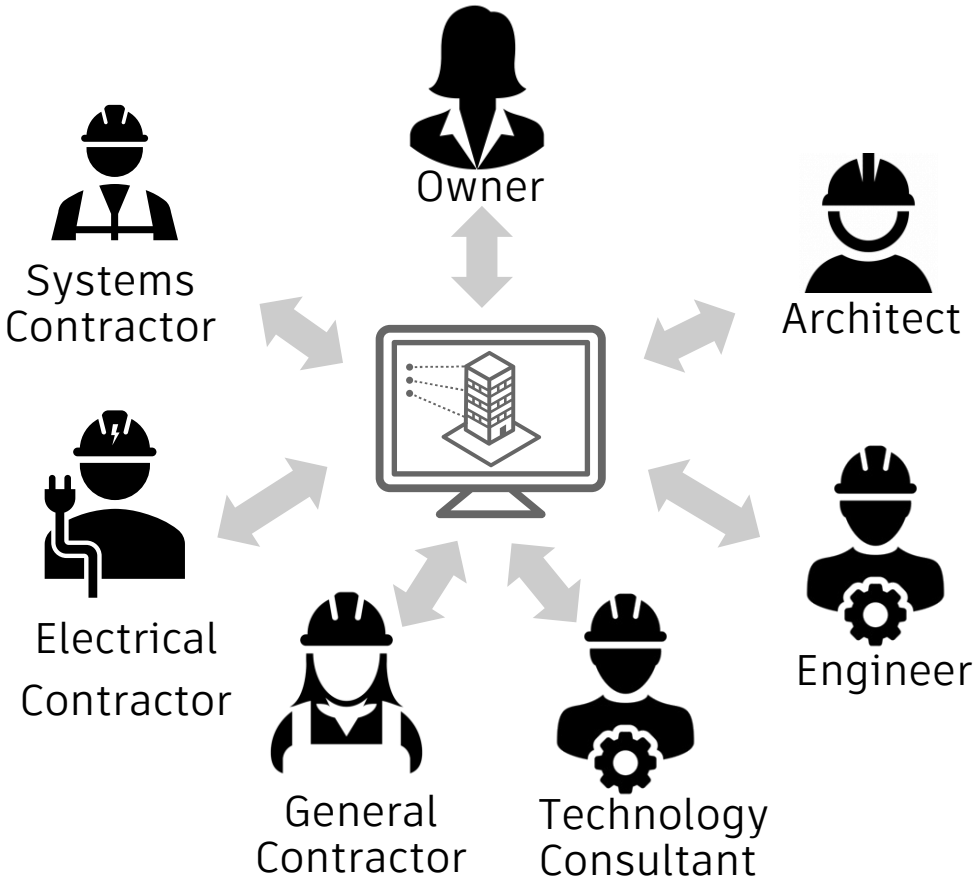
Reduce confusion and mistakes

- Keep information in one, and only one, place
- If changes happen, you only need to make the change once
- That’s easy to do internally, but what about across companies?
- How many times are we repeating information between owner, architect, engineer, and contractor?
- We need a “Single Source of Truth” for all of us

Traditional Project Coordination



Single Source of Truth Project Coordination



Why Revit?

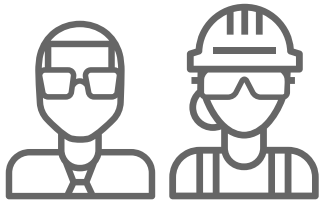
Combining engineering and install drawings

- Already used by many in the industry
- It’s a large customizable database
- Able to take data out of model and use it in other software
- No silos of information
- With BIM 360 it’s easy to collaborate with different offices

What are the challenges?

Combining engineering and install drawings

- You need to plan for a lot more up-front drafting time
- Install design and Permit design have different needs, and sometimes they conflict. Learn to work around those conflicts
- You'll need a great model manager and Revit support staff
- You'll want proficient Revit users leading the modeling efforts



Use your team to their strengths

- Use engineers to create engineering drawings (Design for Permit)
- Use installers to create installation drawings (Design for Install)
- It’s easier to teach someone Revit than to teach someone engineering or install practices
- Both permit and install designers should be familiar with both, and will learn about both while working together

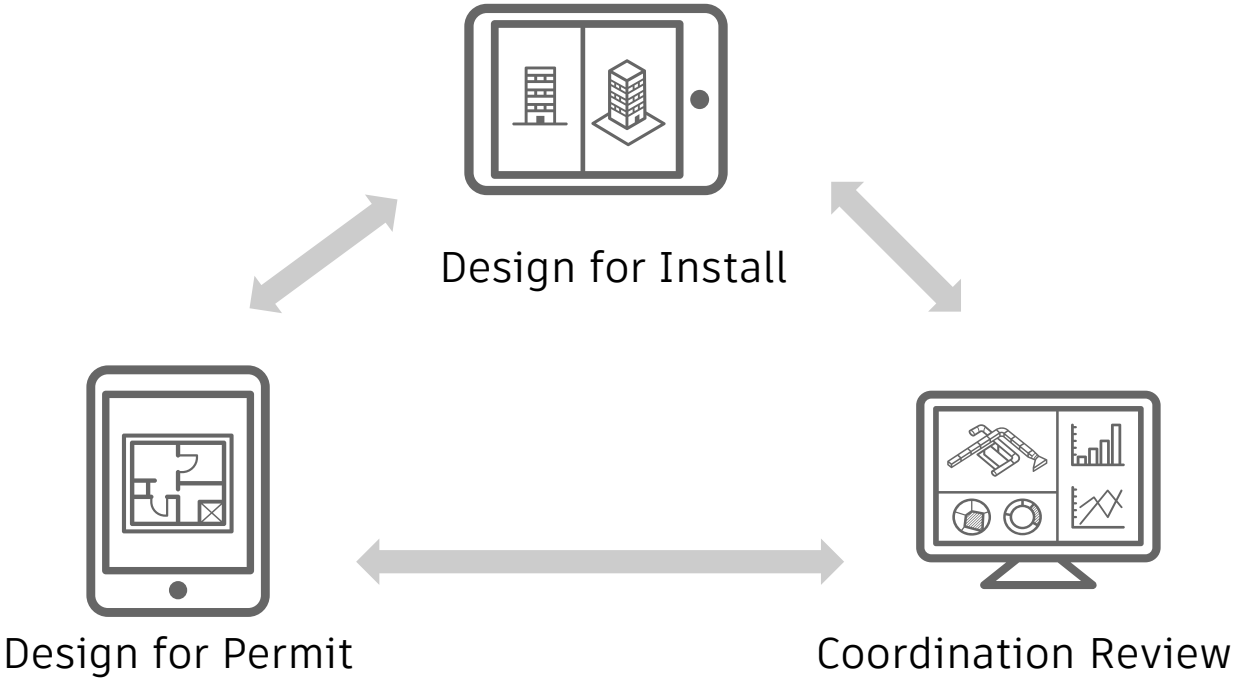
Traditional process workflow

Design for Permit

Design for Install

Coordination Review

Iterative process workflow



Revit keys to success

- Install and permit teams will constantly be stepping on each other's toes. Good standards alleviate that problem
- Put time into Revit templates up-front
- Set up view templates to separate permit and install items
- "Detail level" is a very useful tool for separating install detail out from permit views
- You'll need several custom worksets. What categories and filters can't accomplish, worksets can
- Most of the setup work will be for Revit Families

Revit families

What to do and what to avoid

- Don’t put all the information possible into families
- Understand the informational needs of the design team
- Limit clicks for the designer!
- The more parametric the family, the slower the model becomes
- It’s a balance that must be found
- **Be intentional about what goes into the family!**

What to do with all of this information?

Identify opportunities beyond design

Strategize how to use the model for efficient building

- This model is now the Single Source of Truth!
- Exports of Bills of Material
- Plan on-site construction logistics
- Find *kitting* opportunities
- Find *pre-manufacturing* assembly opportunities
- Document as-built conditions for future records
- Utilize as-builts for *asset management*
- Get more than just engineers and installers into the model
- Engage with those downstream from you, understand and help solve their problems
- Build relationships with vendors, manufacturers, other trades, and other industry partners, then share data with them

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