Tilt Panel Workflows in Revit: From Design to Detailing

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Class summary

- This class will demonstrate a workflow that will help structural engineers use Revit software to move from a design-level documentation of tilt panels to shop-drawing-level documentation. We will discuss how and when to ratchet up the level of detail in your model to achieve efficient design documentation by splitting walls and adding panel joints, grout beds, embeds, reveals, pockets, and reinforcement and show how to move the design tilt panels to panel shop drawings using Revit assemblies.

Key learning objectives

At the end of this class, you will be able to:

- Determine what level of detail is appropriate for the stage and expected use of the models.
- Use the basic Revit software reinforcement tools.
- Understand effective practices of tilt panel documentation.
- Use Revit software assemblies to create panel shop drawings, including takeoffs.

Full Disclosure

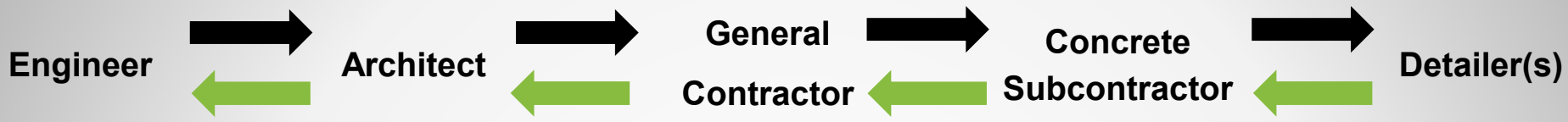
Introduction

Why produce shop drawings?

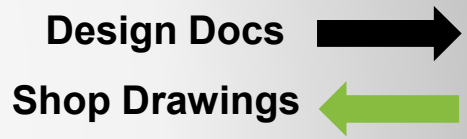
How can you make your business more $?

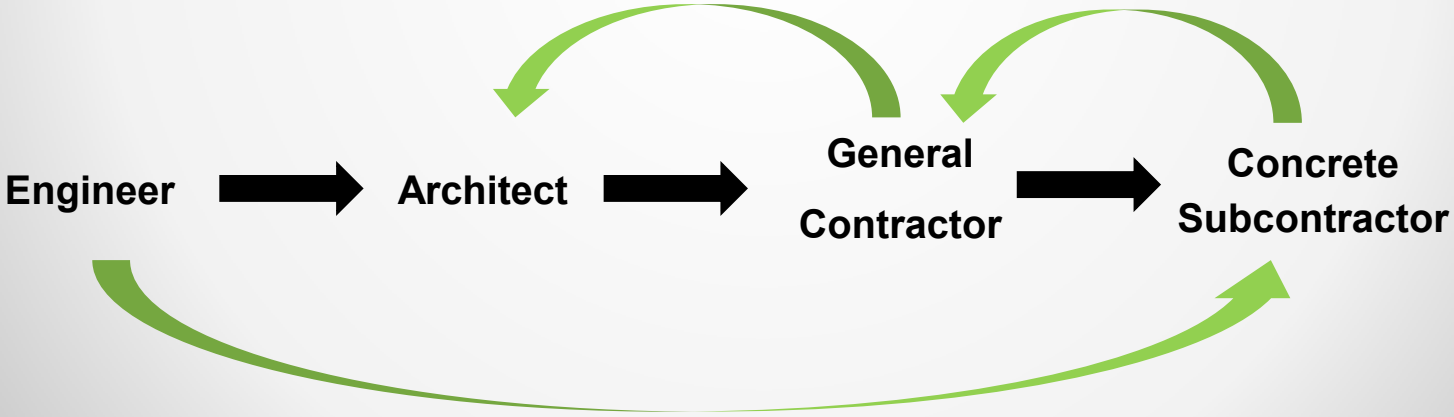
- ~~Do the same work – but get better fees.~~
- Do the same work – but do it quicker.
- ~~Deliver the same work better – gain more work as a result.~~
- Take on more responsibility (& liability) in exchange for more fee.

Of the 4 options above, only 2 are in your c



Two different ways of working





Risks & Rewards

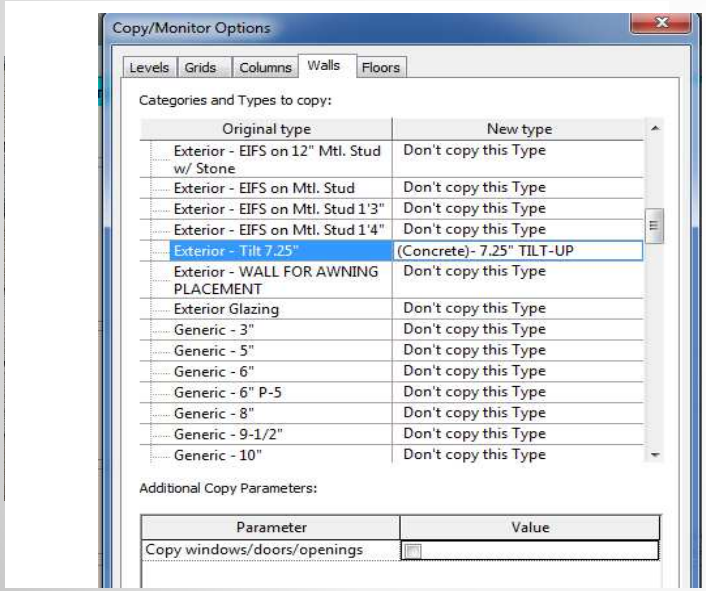
Shop Drawings = Higher LOD = Greater Effort/Risk = More $ to Re-Coup

The question is not only “What” to model, but “When” and “Why” to model.

- Model elements that are certain (or have some element of certainty)
- Model items that are beneficial (to you and/or your clients)
- Model items that are paid for (in your scope and the industry standard of care)

Schematic Design Phase

- Engineering focus should be on providing architect facts for decision-making
- Copy/Monitor concerns
- How to handle openings



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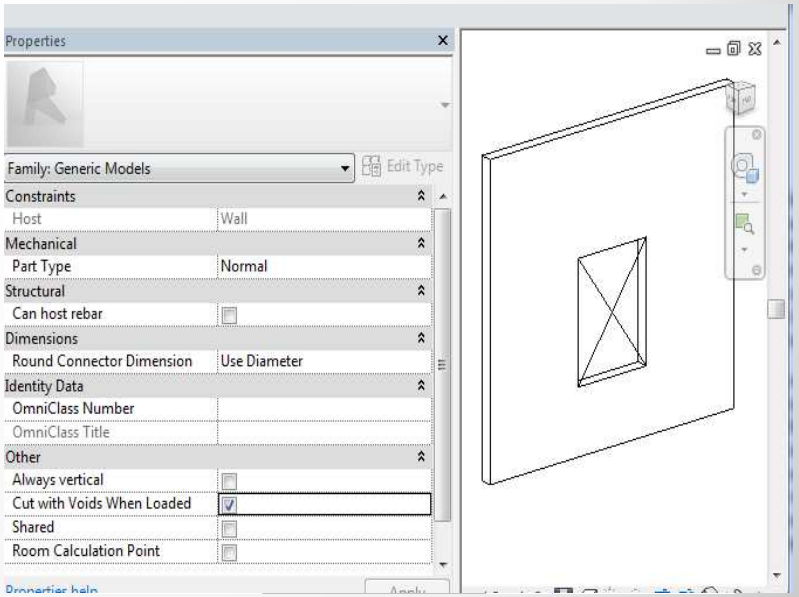
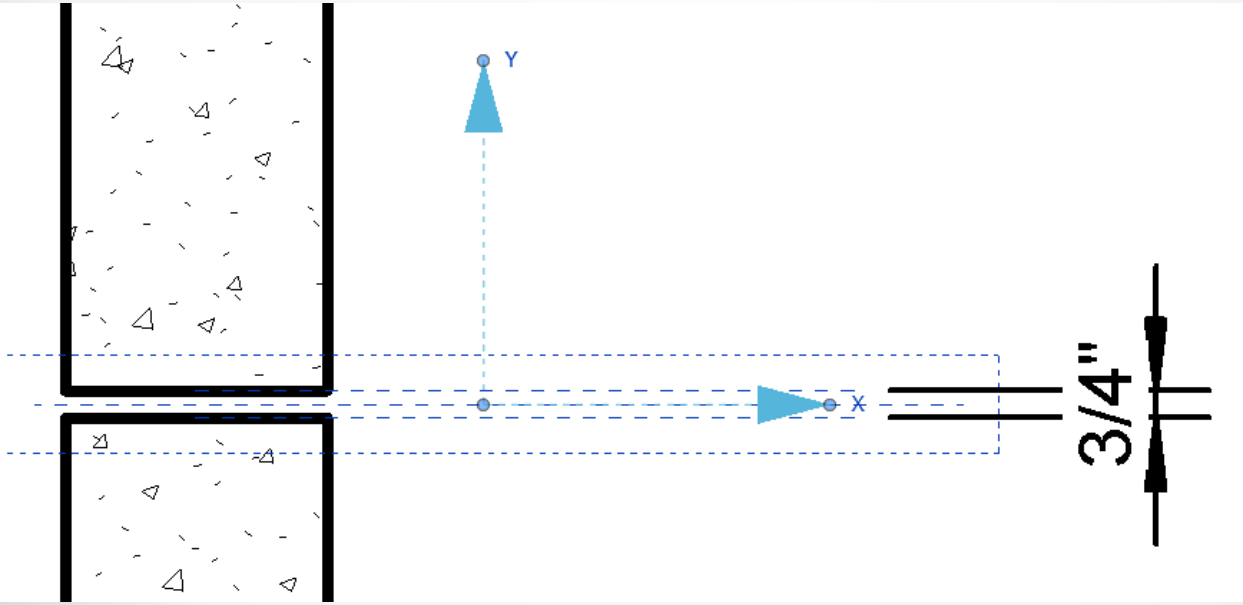


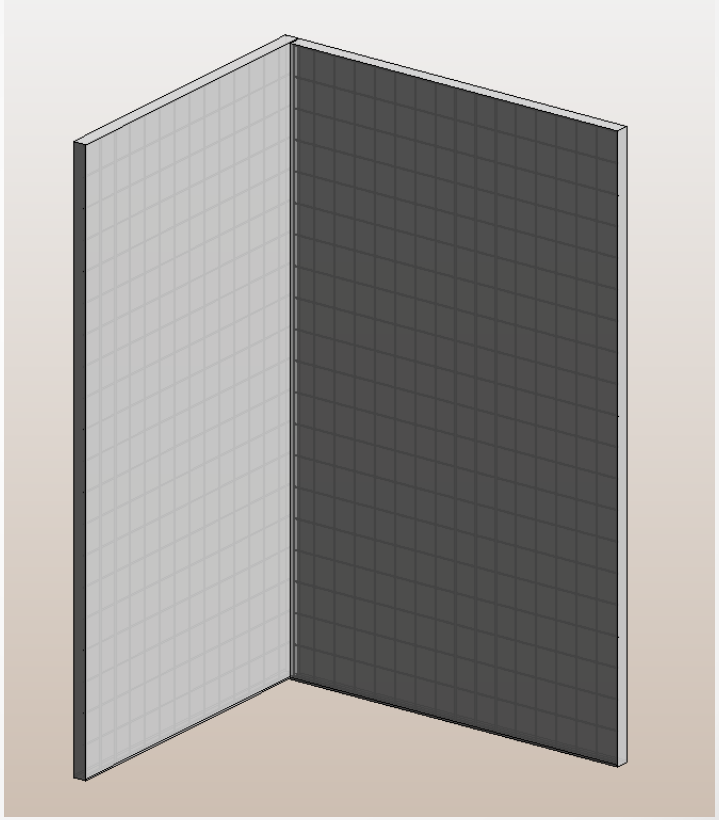
Design Development Phase

- The wall joints should be addressed ASAP with the architect
- Arch can set joints with special grids that can be Copy/Monitored
- Make joints with “Split with Gap” and align to group of Reference Planes



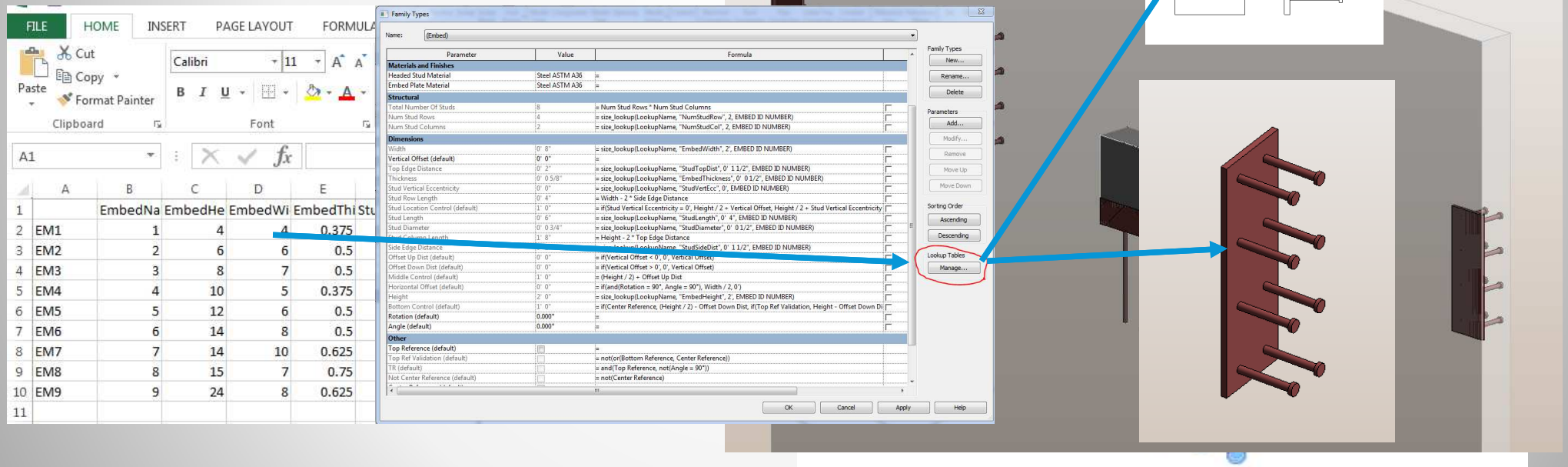
Design Development Phase

- Add typical panel reinforcing using Area Reinforcement
- Placeholder vs Actual



Design Development Phase

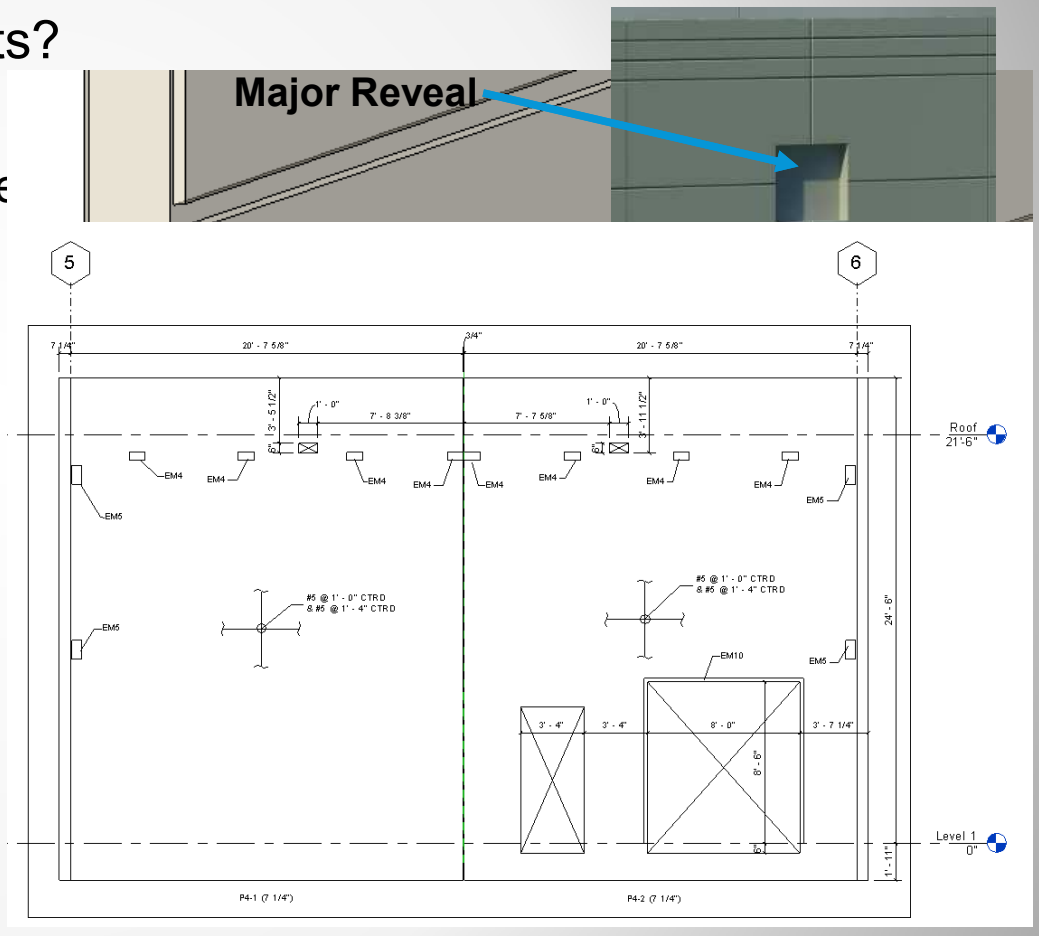
- Modeling Embeds – Is it beneficial?
- Placeholder vs Actual
- Flexibility
- Coordination



	A	B	C	D	E
1		EmbedNa	EmbedHe	EmbedWi	EmbedThi Stu
2	EM1	1	4	4	0.375
3	EM2	2	6	6	0.5
4	EM3	3	8	7	0.5
5	EM4	4	10	5	0.375
6	EM5	5	12	6	0.5
7	EM6	6	14	8	0.5
8	EM7	7	14	10	0.625
9	EM8	8	15	7	0.75
10	EM9	9	24	8	0.625
11					

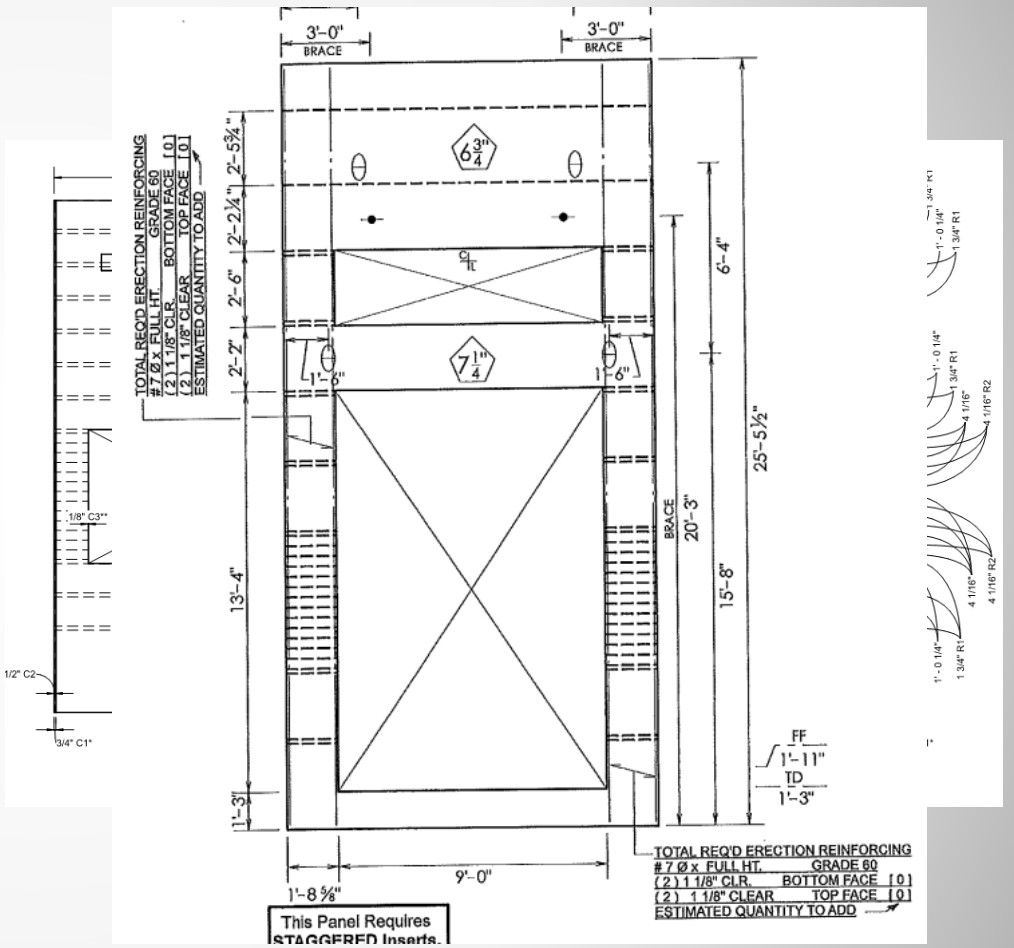
Construction Documentation Phase

- Grout Beds? What are the benefits?
- Major vs Minor Reveals?
  - Do they interrupt/affect reinforceme
  - Generic Models vs Reveals
- Goal is to generate elevations
  - Update Embeds
  - Update Reinforcing
  - Schedule Embeds



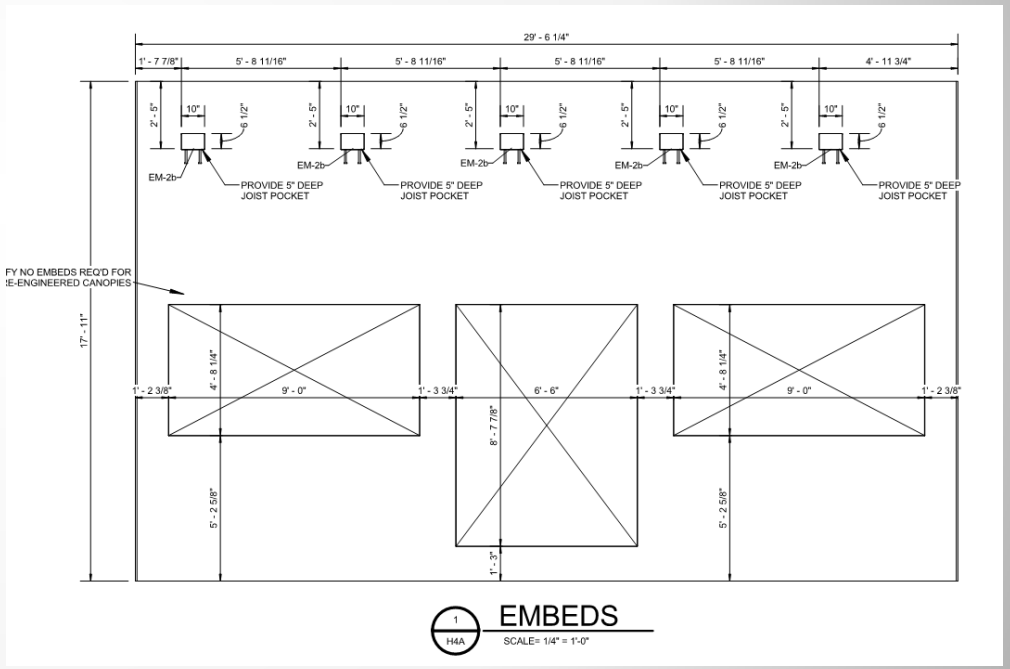
Shop Drawing Phase

- When does this effort begin?
- 4 Types of Shop Drawings
  - Reinforcement
  - Embeds
  - Panel And Reveal Dims
  - Panel Lifting & Bracing*



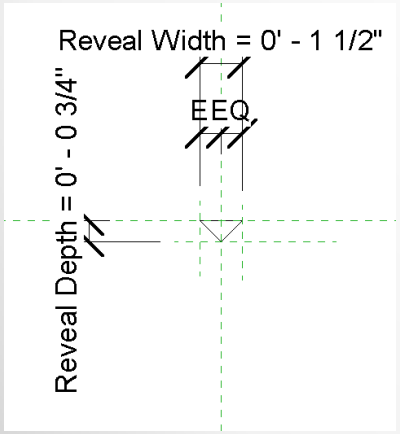
Embed Shop Drawings

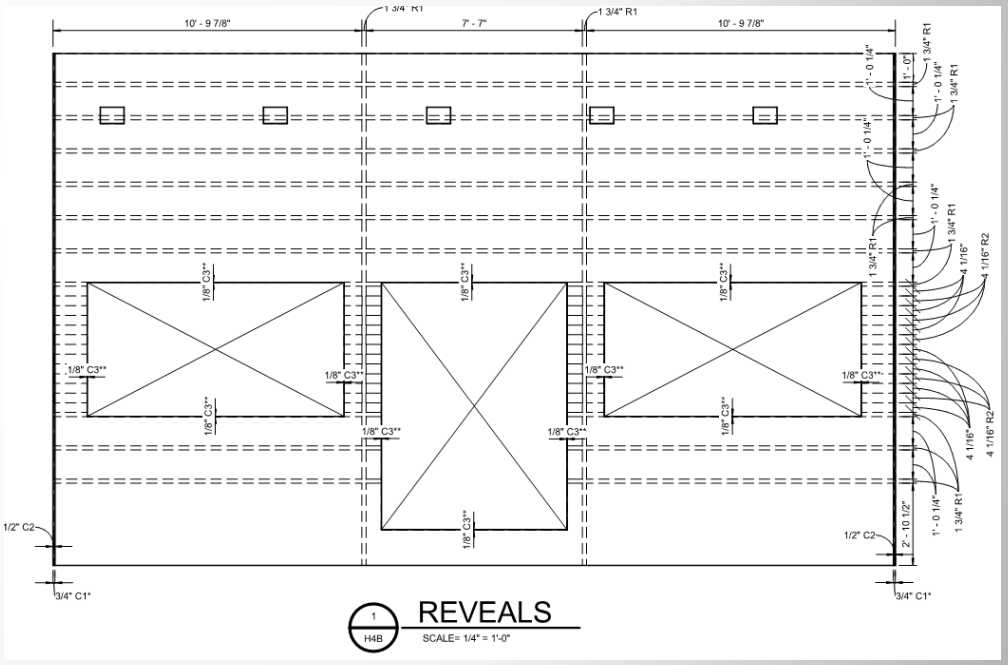
- Embeds are already placed
- Only need to coordinate embeds with steel shop drawings
  - Potential lag while waiting for steel
  - As EOR we can dictate locations



Panel and Reveal Dimension Shop Drawings

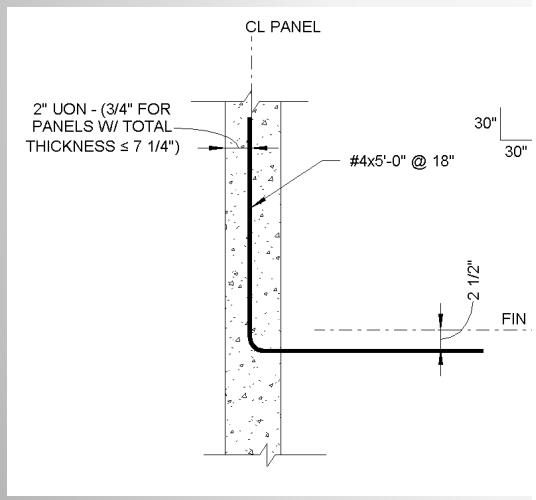
- Generic Models vs Wall Reveals
  - Wall reveals cannot be scheduled, quantified, or shown with hidden lines
- Edge Chamfers and Formwork
- Quantification implications
  - Gross Concrete Vol – 94.35 CY
  - With Reveals and Chamfers– 93.15 CY
  - With Reinforcing – 92.44 cy

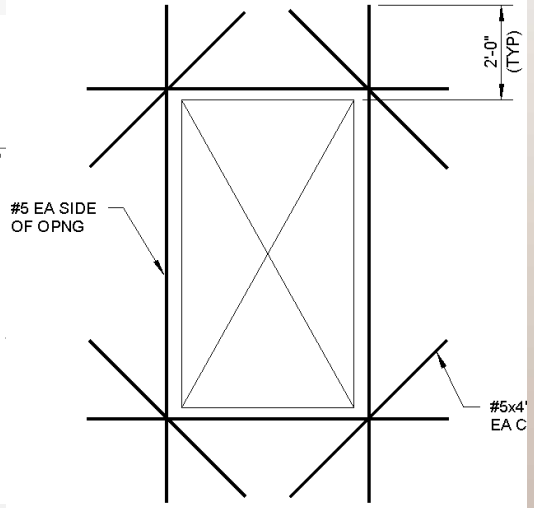


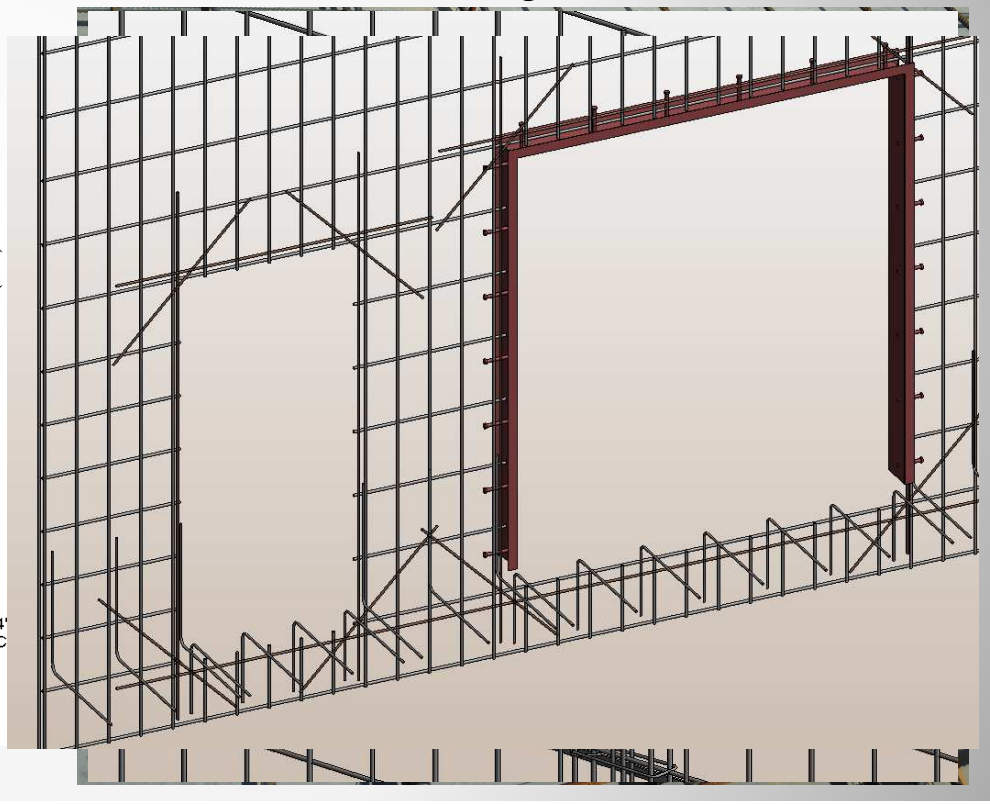


Reinforcement Shop Drawings

- Adjust Reinforcement after the reveals and embeds are done
  - The chamfers and reveals can mess with the cover and hosting of area reinforcing.
- Add Special Reinforcing
- Add Reinforcing per typical details

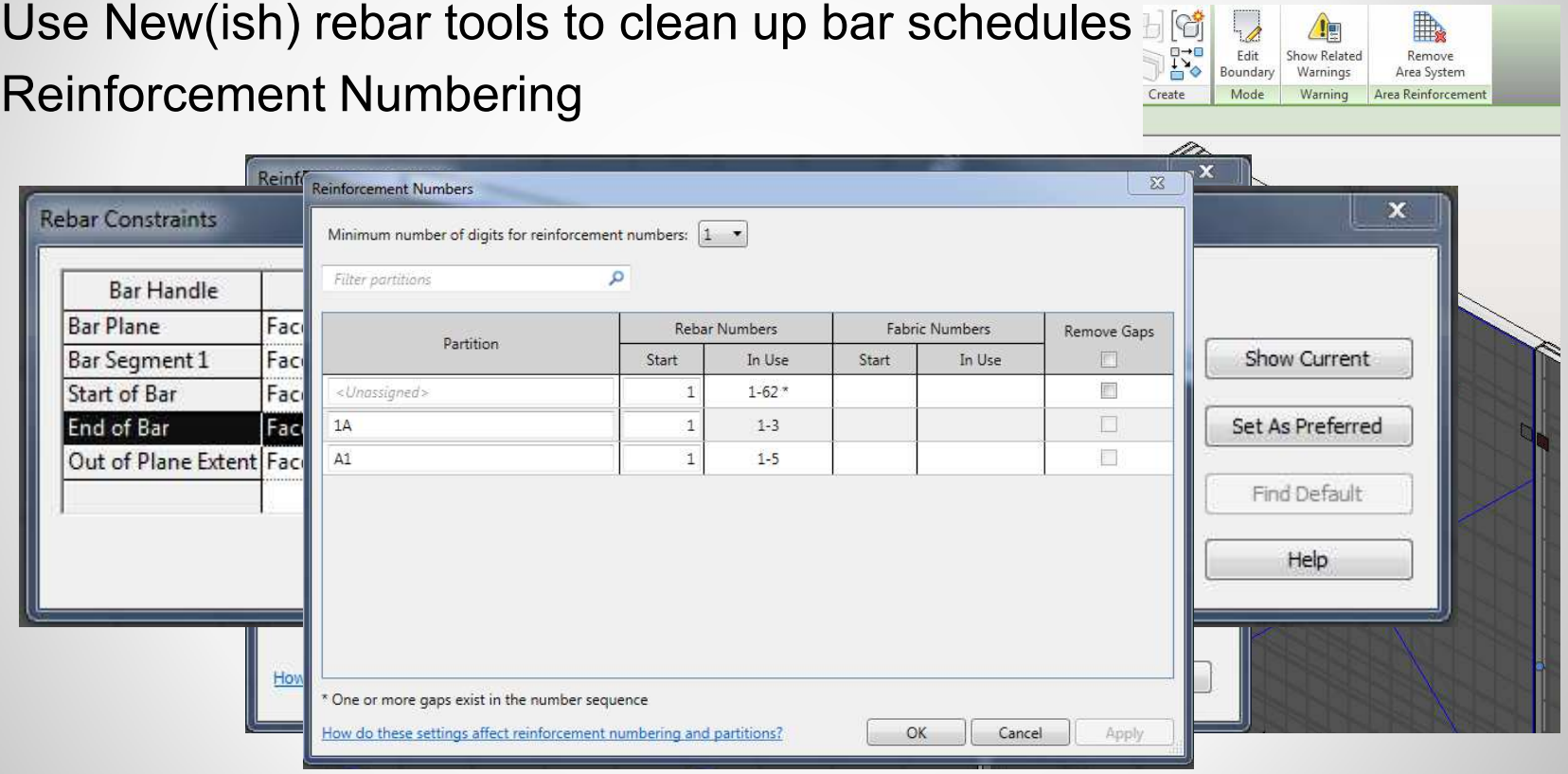






Reinforcement Shop Drawings

- Remove Area and Path Reinforcements to free individual bars for editing
- Use New(ish) rebar tools to clean up bar schedules
- Reinforcement Numbering



Creating Assemblies

- Create Assemblies and Categorize as Walls
- Create Assembly Views
  - Only need 1 Elevation and 1 Sheet
  - Duplicate Elevation
  - Apply View Templates
- Don’t use Assembly Schedules
  - Waste of time
  - Create a Master Schedule
  - Filter by Assembly Name