Course ID: CS501355

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Miron Building Excellence

Model Coordination or Navisworks for BIM Coordination: How to Leverage Both

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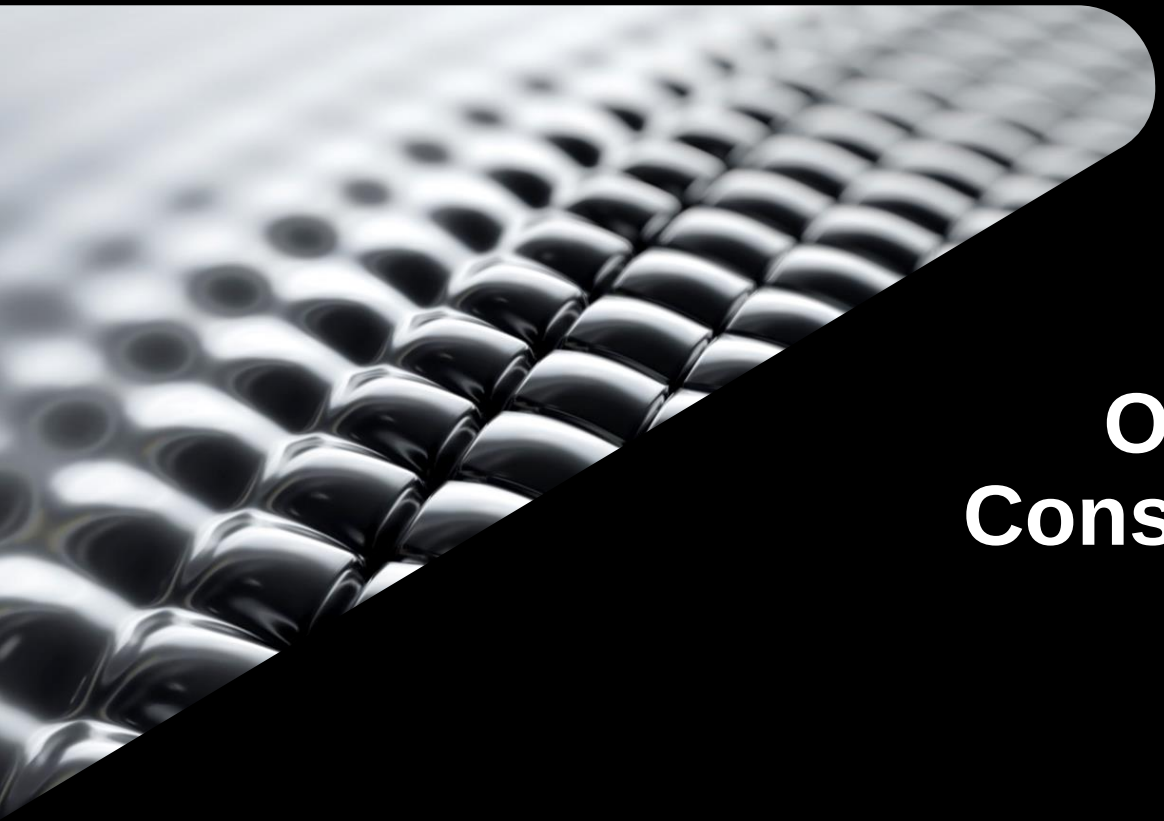
Course ID: CS501355

Agenda

- Overview of Miron Construction
- Model Coordination or Navisworks?
- Design Model Reviews
- Full Coordination
- Setting up the model in Navisworks
- ACC Build and Model Coordination
- Closeout and getting BIM to the Field



Overview of Miron Construction Co., Inc.

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Company Overview

- 100+ year heritage
  Fourth generation
  Family-owned corporation
- One of the largest builders in the Midwest
- $1.3 Billion in Revenue in 2021
- 1,500+ employees
- Committed to “Building Excellence”

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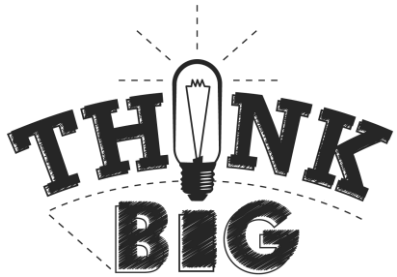
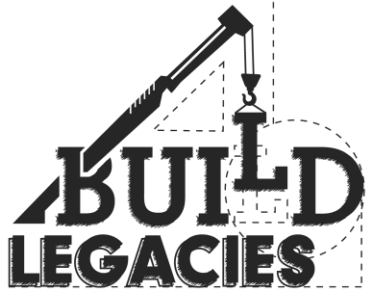
OUR VISION & VALUES

Our commitment reaches beyond construction;
our passion brings dreams to life.





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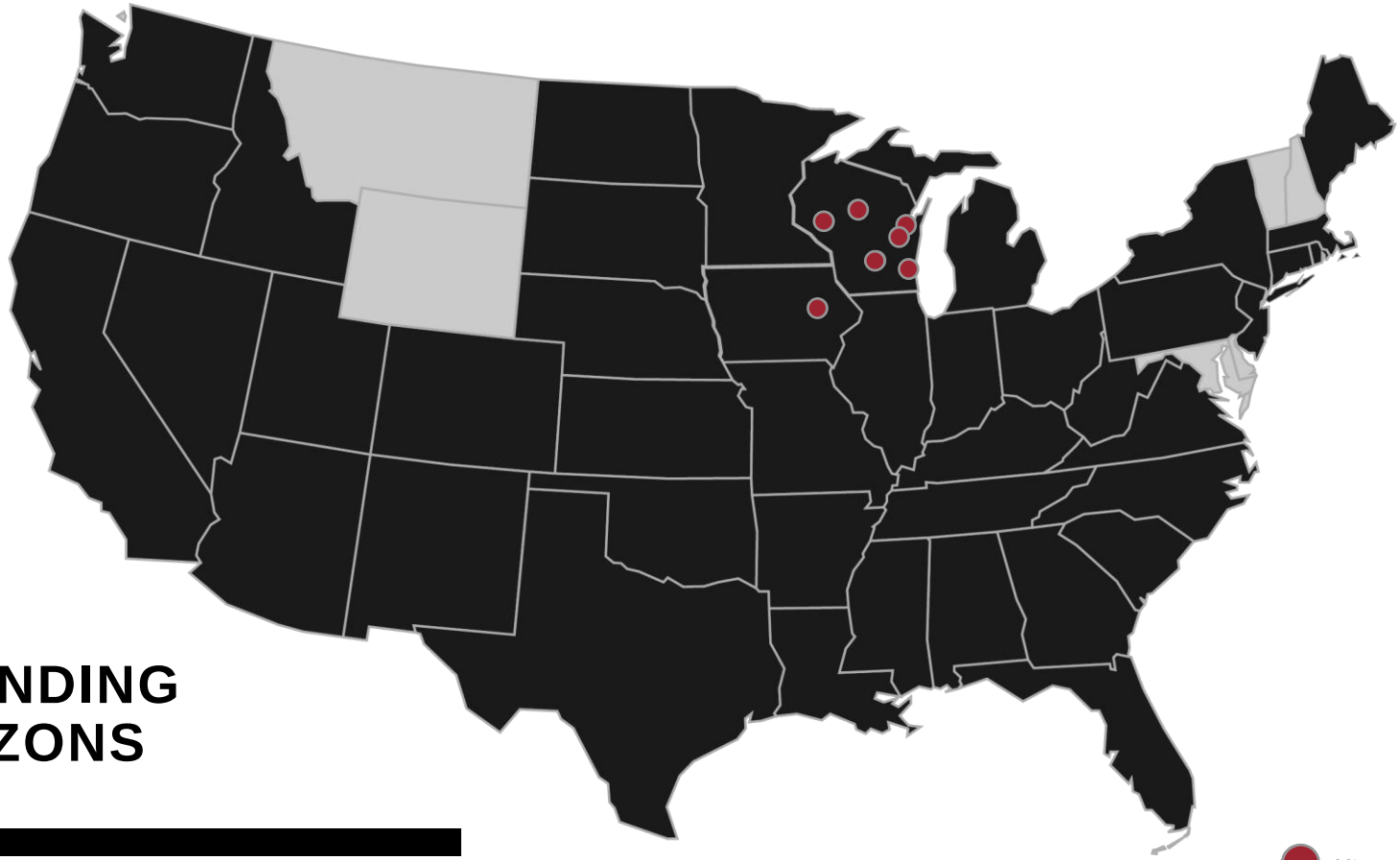
EXPANDING HORIZONS



- MIDWEST BASED

Question:

What Works Better for BIM Coordination – Model Coordination or Navisworks?

*We answer this question from the contractor perspective

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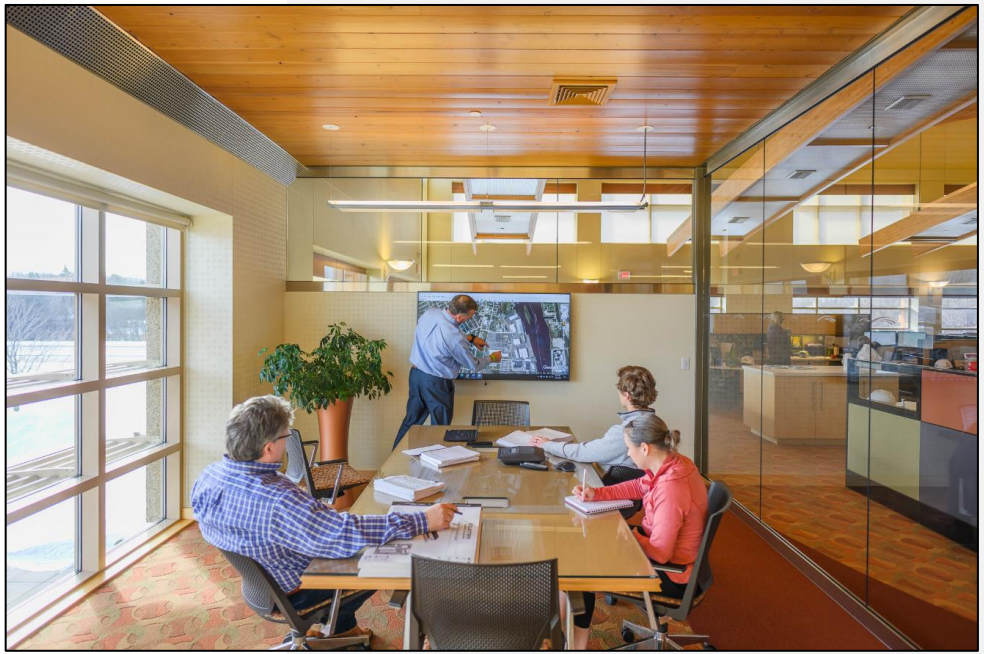
Project Startup

- Set up the Federated Model
- Develop the BIM Specification
- Start the BIM Execution Plan
- BIM Kickoff Meeting
- Gain Buy-in from A/E and Ownership



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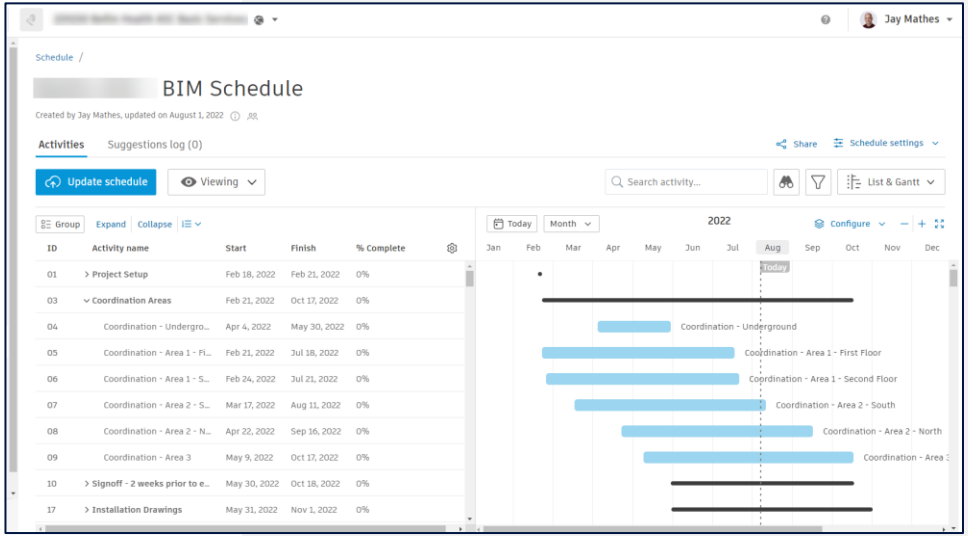
First things first: determine when you need to be done…

Build Module - Schedule

Include time for:

- Model development
- Underground coordination
- Sequence areas
- Development of installation drawings
- Fabrication and delivery



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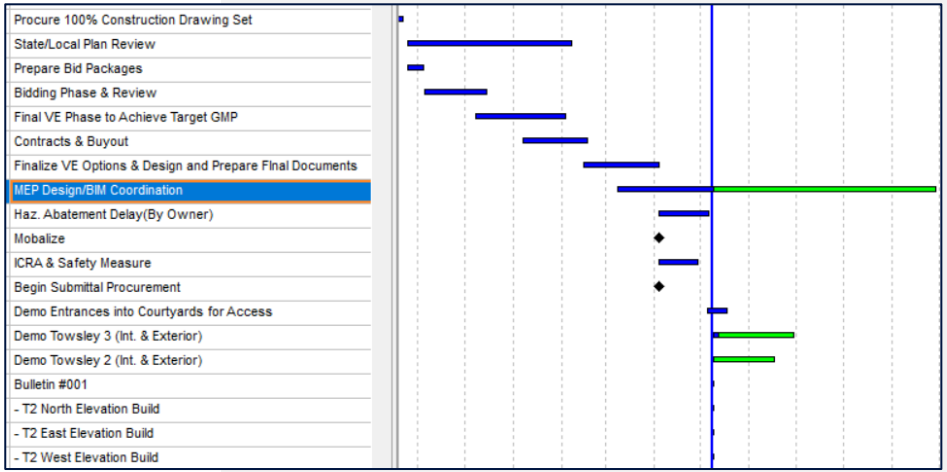
Build Module - Schedule

- Understand the sequencing of the project and respond to the needs
- Start simple, and add complexity as you know more about the project

P6 Schedule



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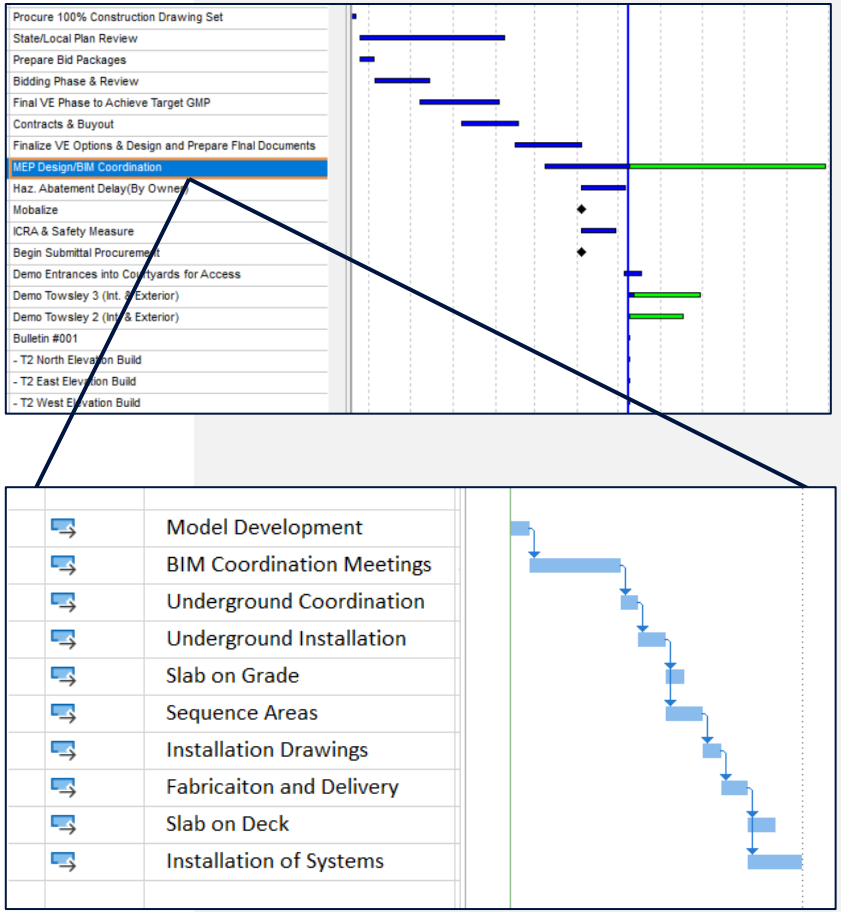
Build Module - Schedule

- Unexpected activities will end up driving the BIM Coordination effort
- Automate your BIM schedule updates
- Connect BIM activities to construction activities



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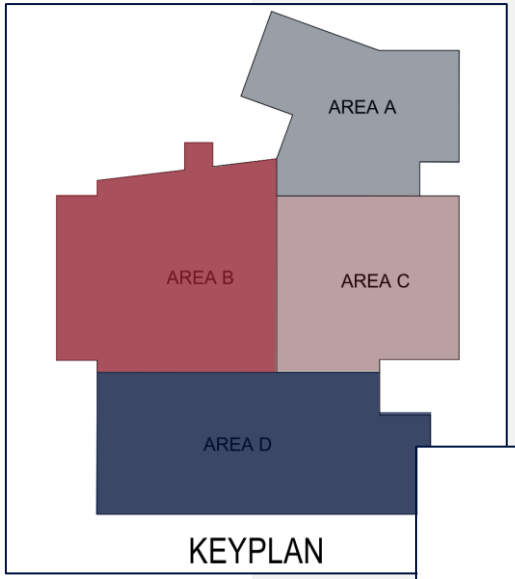
First Major Decision

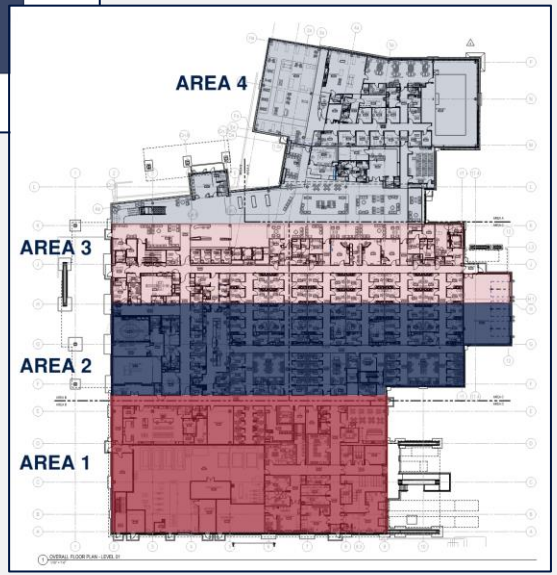
-Coordination Areas-

- How are you going to set up your coordination areas?
- Set up your coordination in a way that balances file size and context of the overall project
- The overall project schedule will drive your signoff dates, so they should drive your signoff areas



Design Plans

Final Coordination Areas



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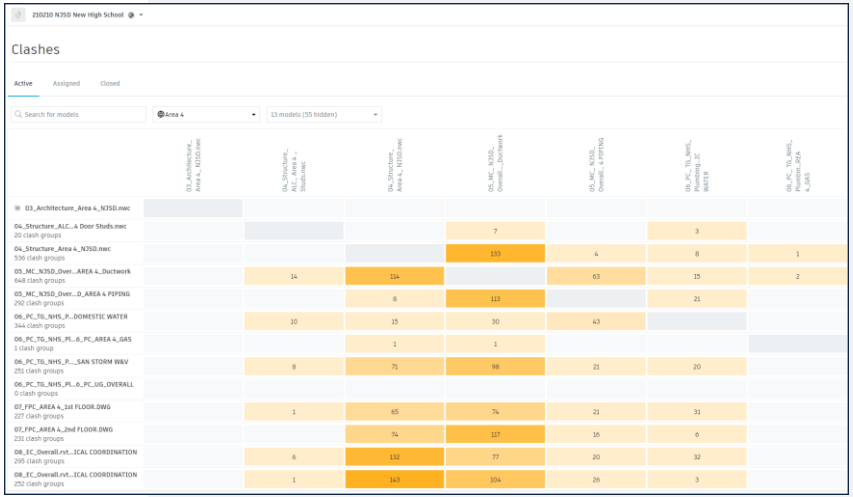
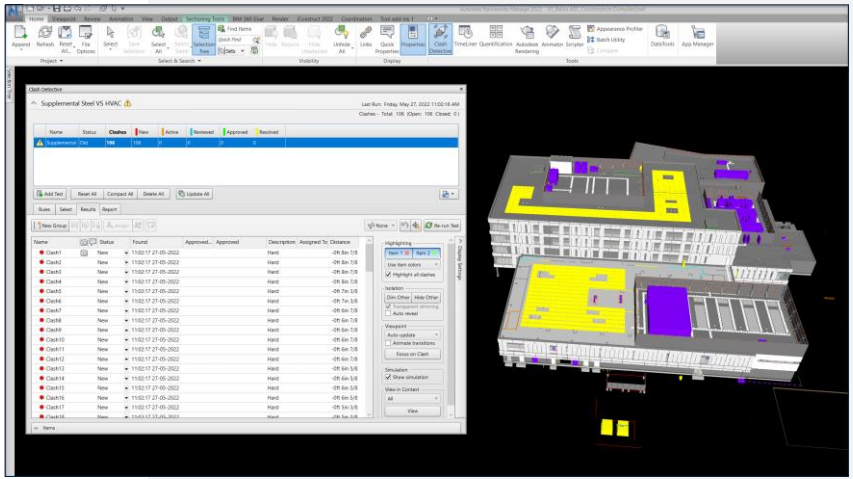
Second Major Decision

-Clashes-

- How are you going to manage your clashes and clash reporting?
- Navisworks – much more involved, but can use a third-party plug-in
- Model Coordination – automated clash matrix





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Third Major Decision

-*Model Viewing*-

- How do you want others to view the model?
- Navisworks – locally cached files, smooth navigation
- Model Coordination – live viewing in the cloud from anywhere
- Revit – do not have to wait on processing time in Model Coordination; once saved to the cloud and refreshed by the user, links are live
- Issue resolution is key – what is the easiest way for your subcontractors to resolve issues?

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Fourth Major Decision

-Meetings-

- How will you navigate models during meetings?
- Navisworks – smooth model viewing, easy to append on the fly, easy to make issues with the Coordination plug-in
- Model Coordination – good for small projects, struggles with large files

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Answer:

Do as much as you can in the ACC environment.

When you bump up against the limitations of the cloud environment, use outside resources that connect.

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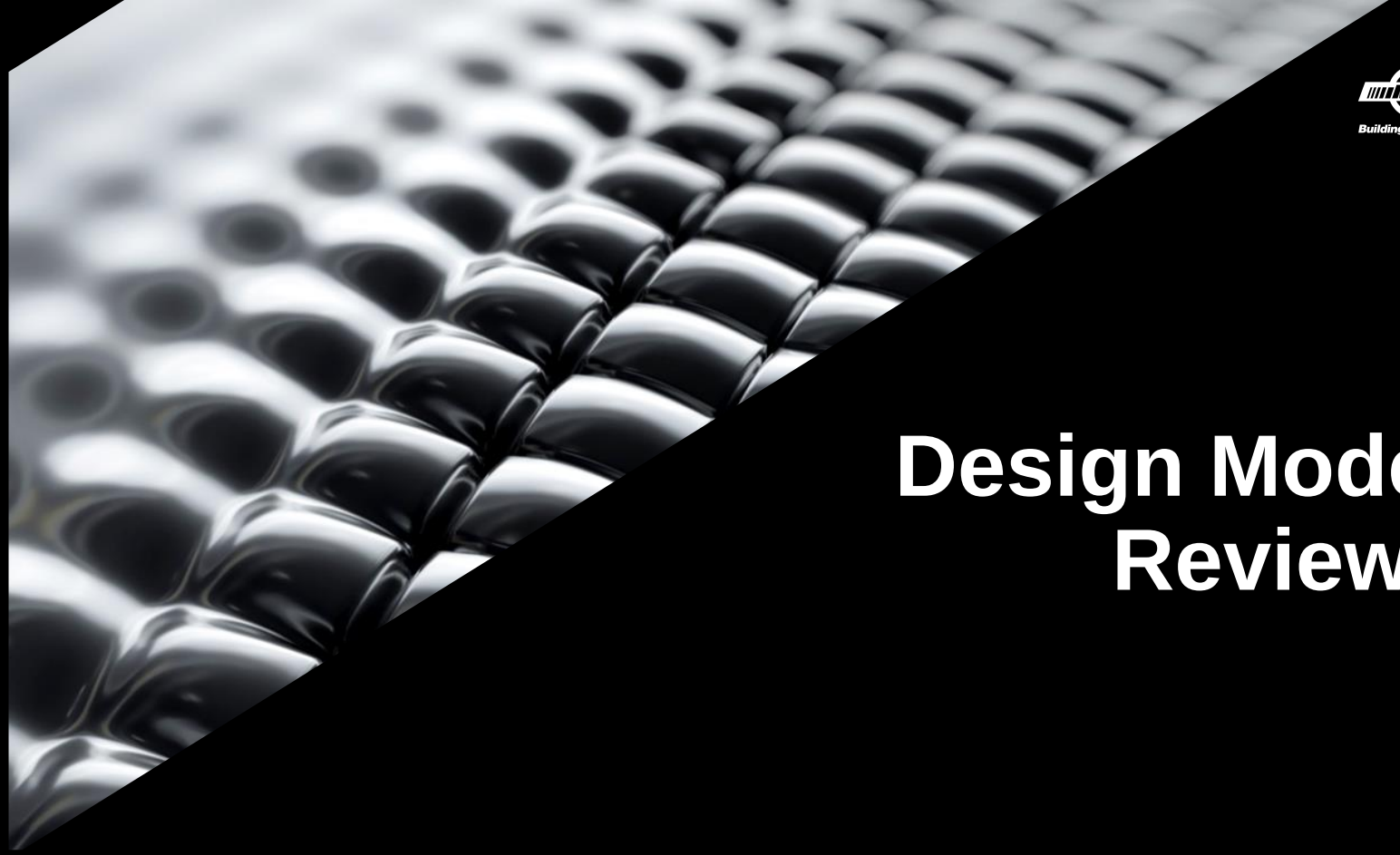
Model Coordination

- Can access from anywhere
- State of the art
- Updated interface
- Automated Clash Grouping with minimal setup
- Tightly integrated into other ACC modules

Navisworks

- A proven standard for BIM Coordination
- Rock-solid model navigation experience
- Not as dependent on internet connection
- More robust viewing and model manipulation features
- Vast third-party plug-in capabilities



Design Model Reviews

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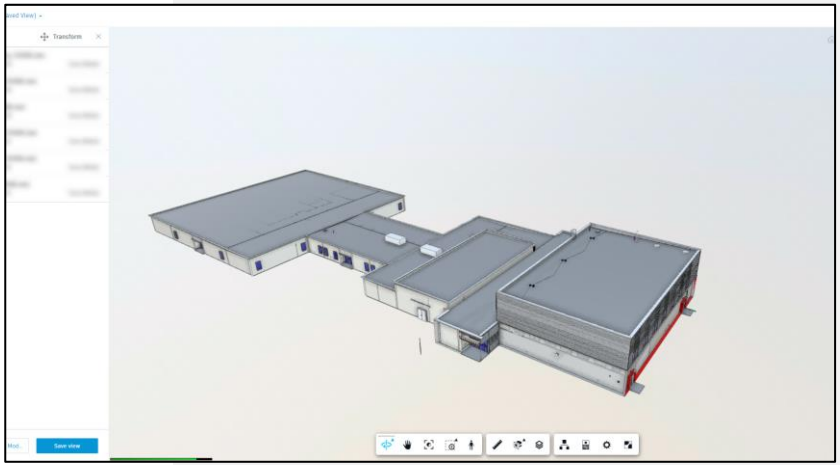
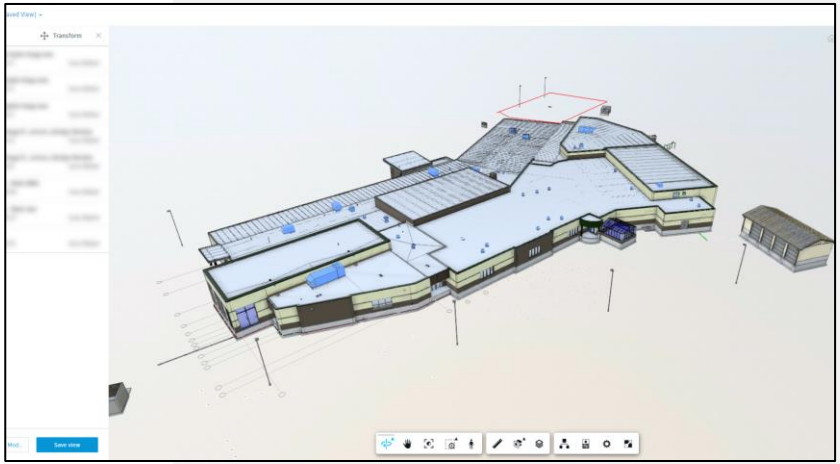
Design Model Reviews

- Prior to subcontractors
- Set up your lines of communication and file sharing
- Set your models up with BIM coordination in mind
  - How will the issues live on and how will they be communicated?
- This can all be done in Model Coordination





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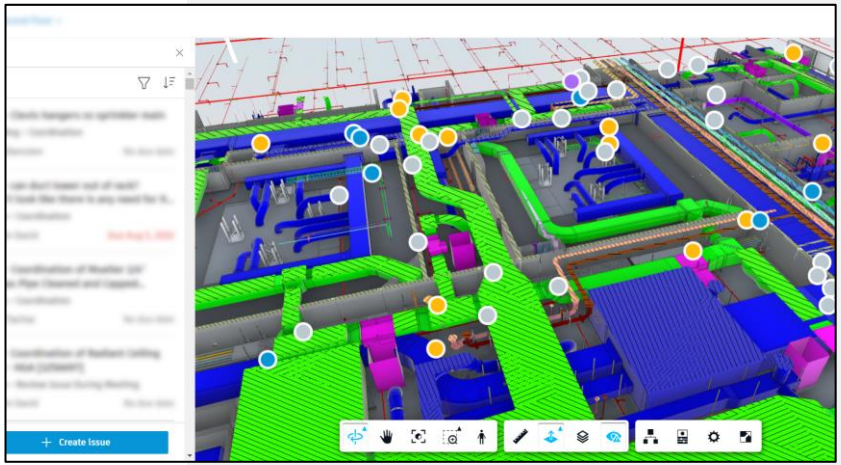
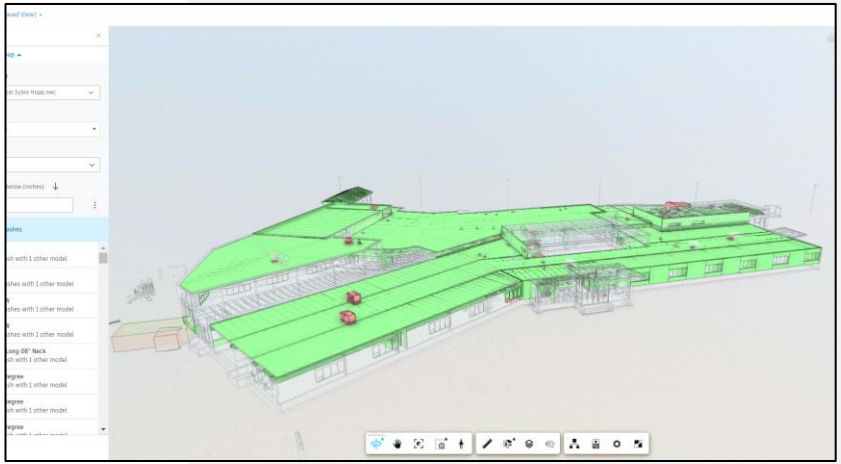
Design Model Reviews

- When is a Design Model Review appropriate?
  - A/E team who is willing to share models
  - Low-complexity project
  - Additions and renovations
- Keep it simple
  - May be working with contractors who have never used a 3D model in construction
  - Patience and Training





Full Coordination

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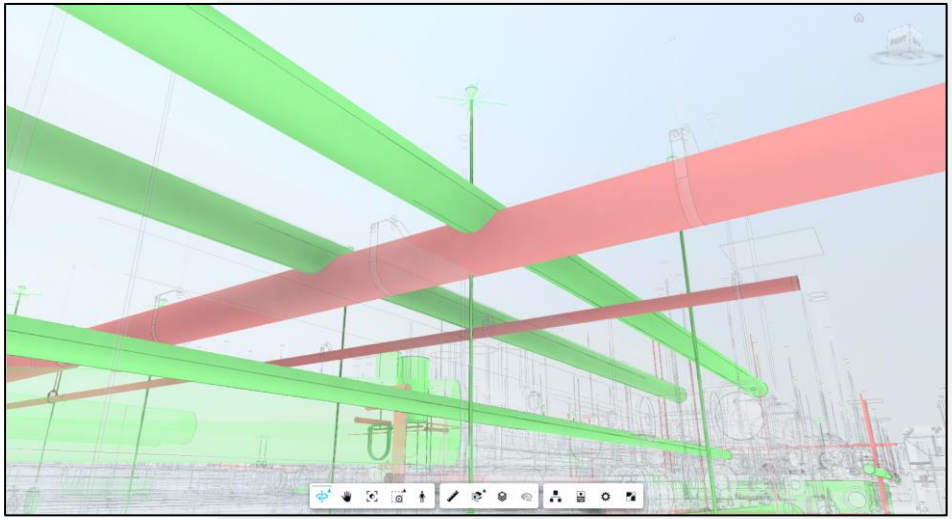
Full Coordination and the Journey to a Clash-Free Model

- Heavy subcontractor involvement
- Buy-in, both contractually and through more informal agreements
- Many more avenues that can be traveled down
- Need a robust process in place that is still capable of being flexible



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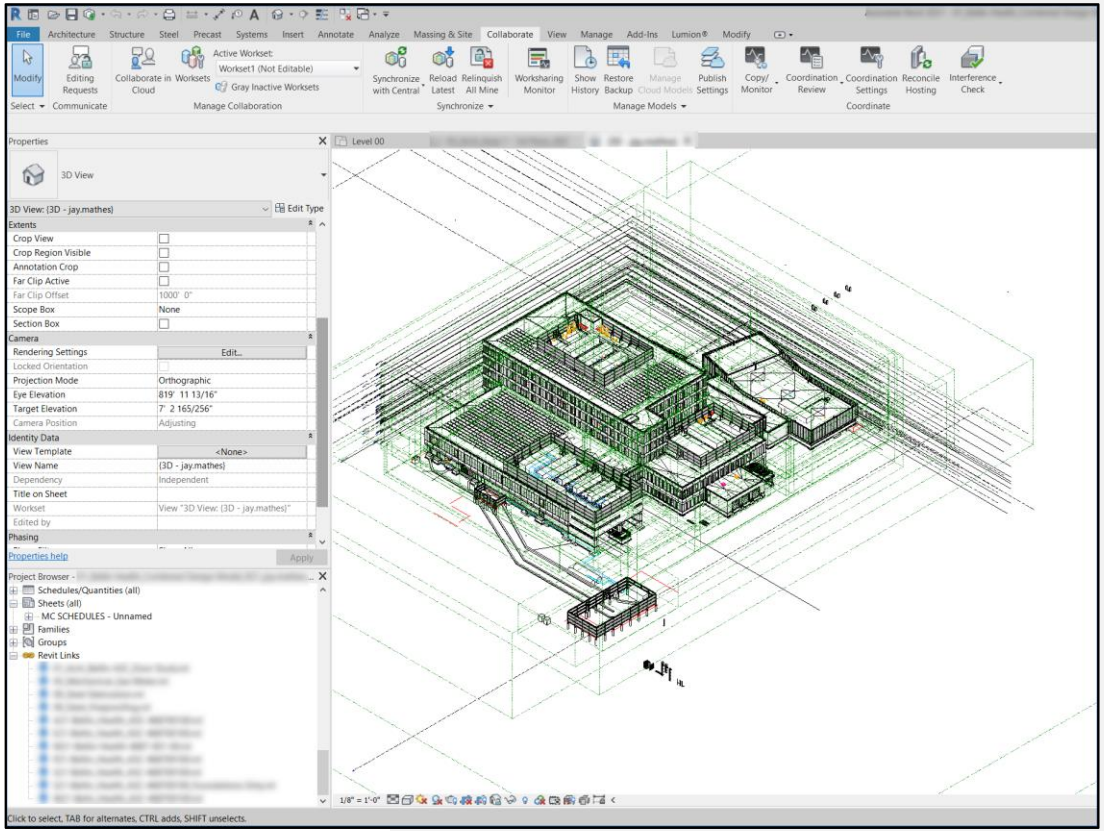
Revit

- Set up the Federated Model
  - Mix of design, fabrication, and subcontractor models
    - Links to models stored on ACC, either via desktop connector or the cloud
  - Gap model setup



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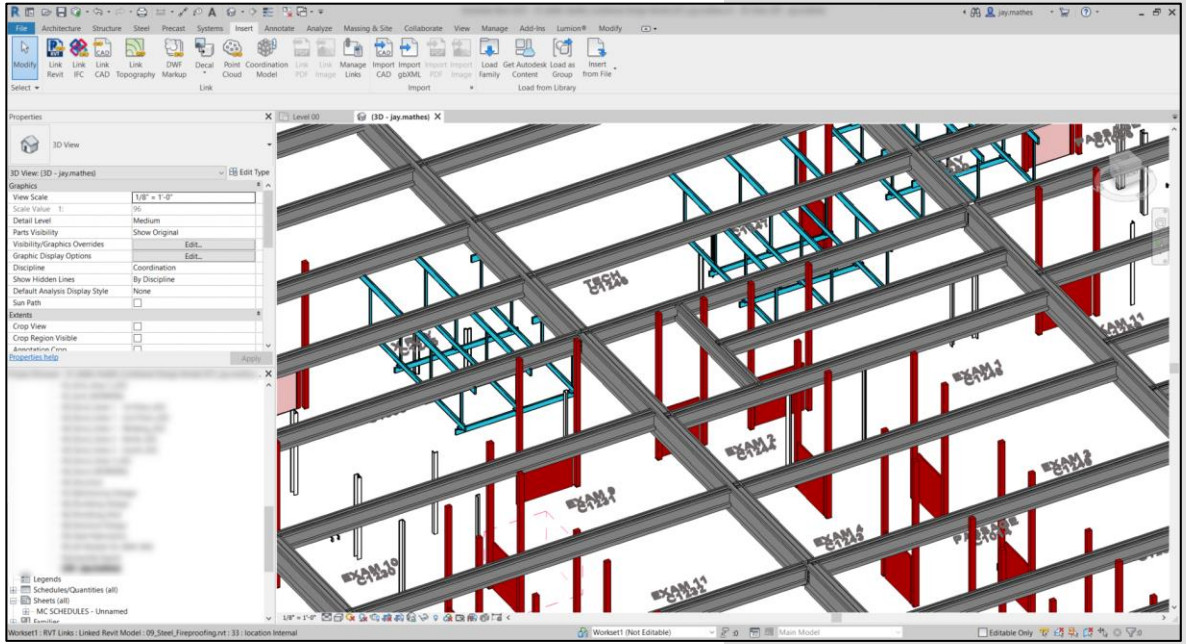
Gap Model Setup

- Fireproofing on steel
  - Editing design steel families
- Supplemental steel
  - Subcontracted out
- King studs for doors
  - Editing door families
- 3D room tags
  - Dynamo
- Site models
  - “Tracing” site utility plans



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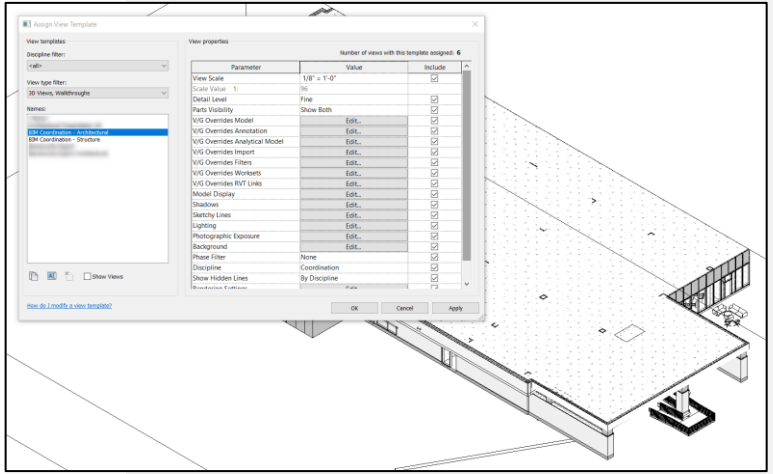
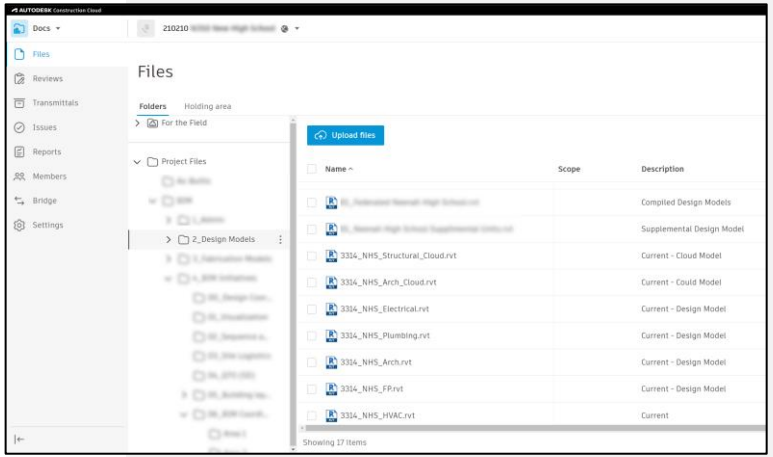
Revit

- Use View Templates to easily apply and adjust your views
- Host subcontractor authoring files in ACC





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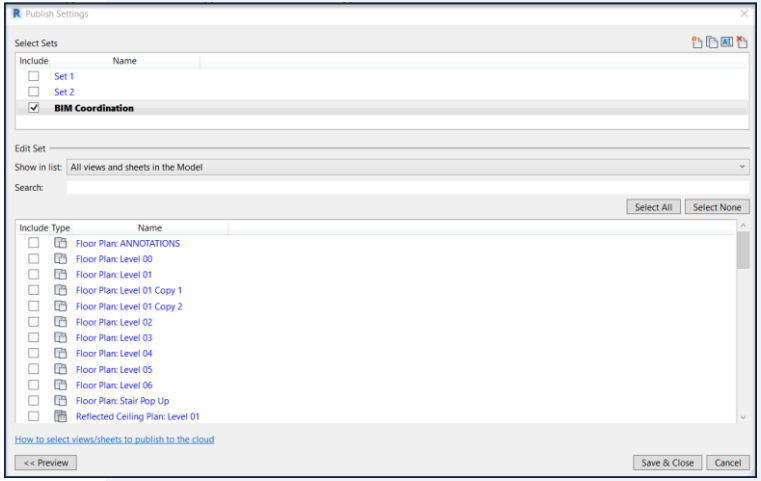
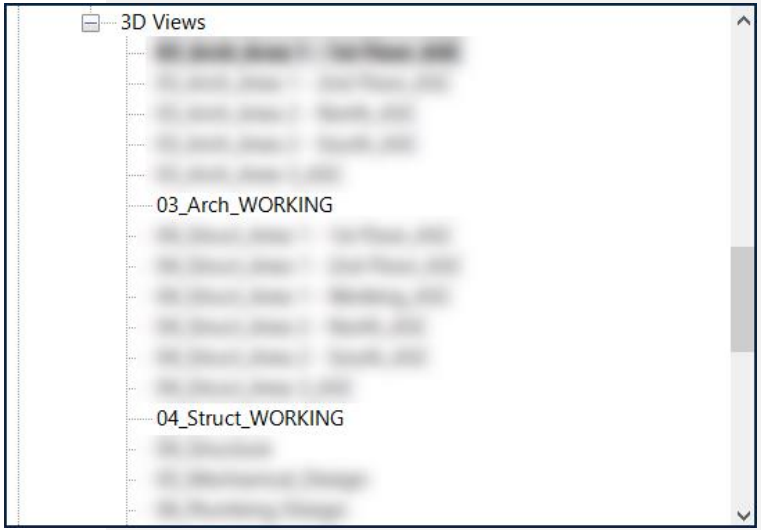
Revit

- Set up views for publishing and views for working
- Push subcontractors to link each other's live models





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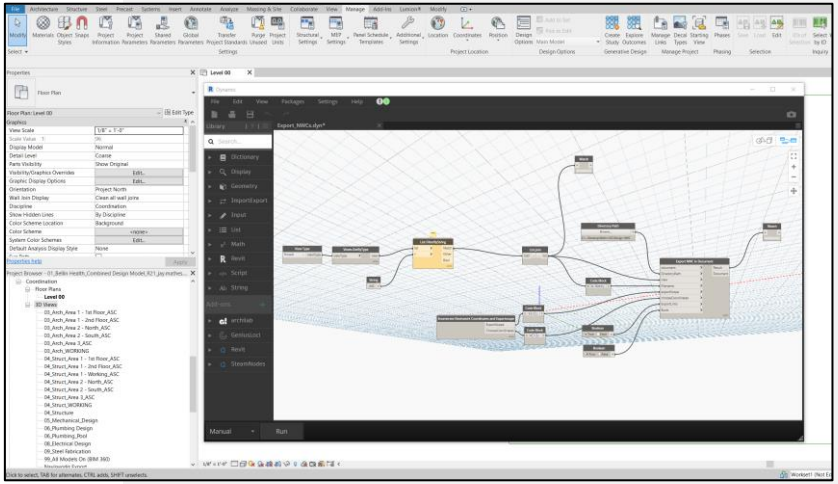
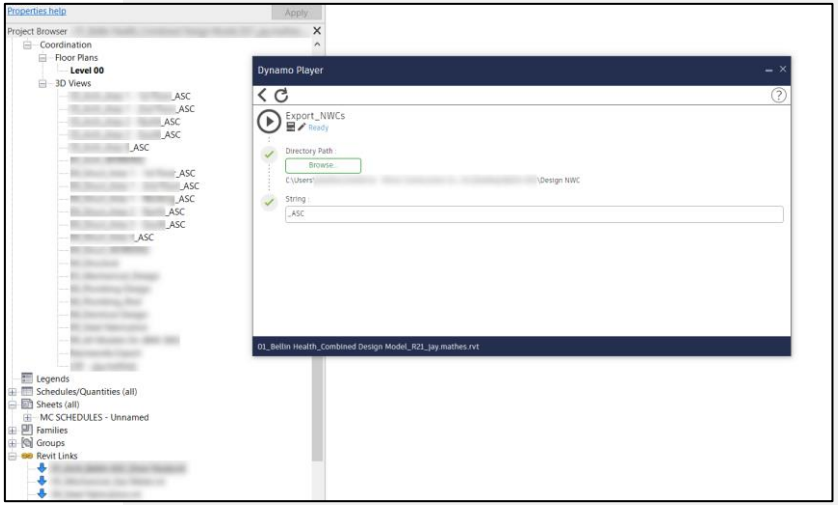
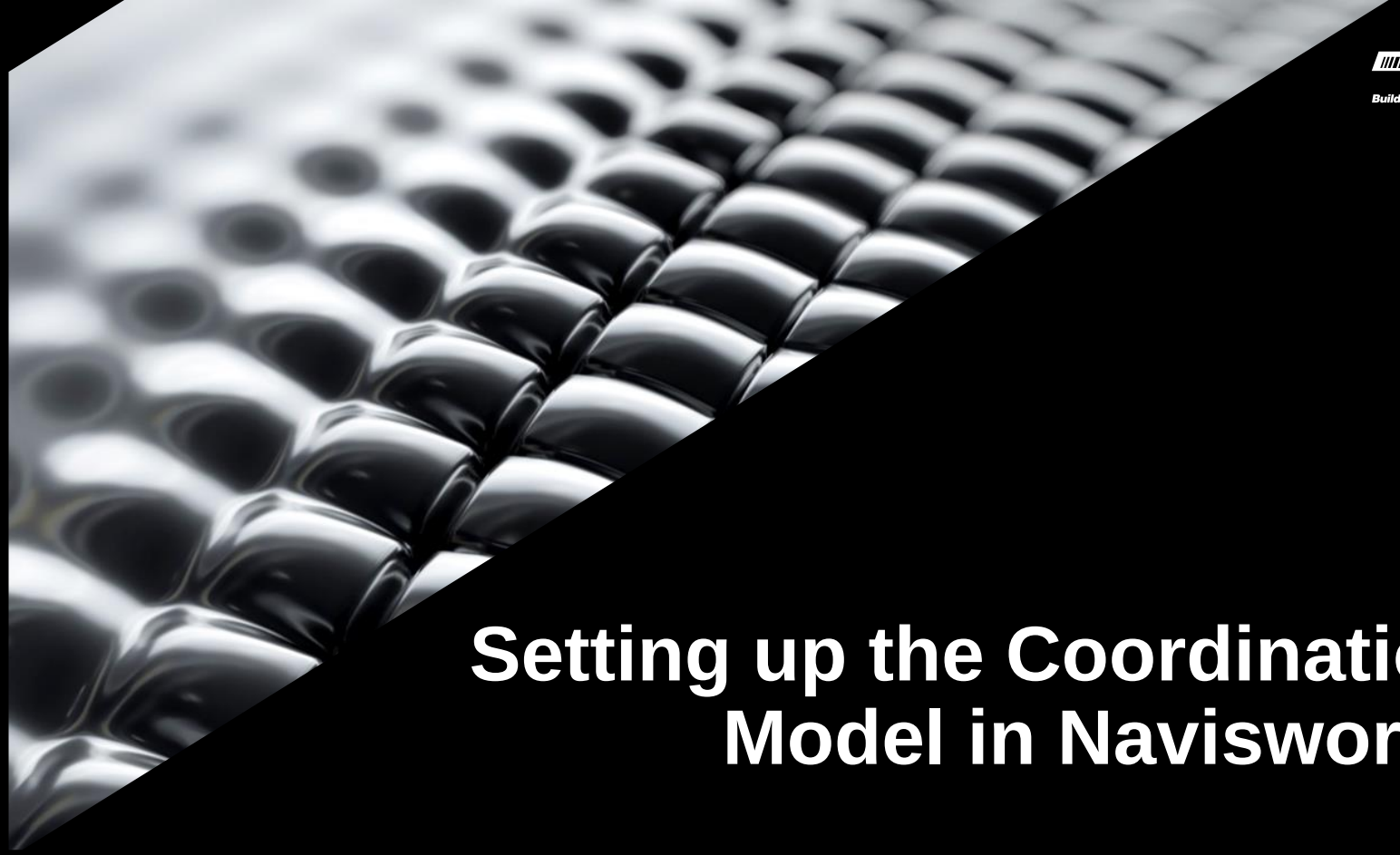
Revit

- What happens when you get updates?
- Design models constantly changing, but the design team is not publishing directly to your coordination space
- Automated NWC exports to desktop connector using Dynamo
  - Using your file naming scheme agreed upon in the BIM Execution Plan, set up views that can be easily identified for your automated exports
  - Set up the Dynamo player to execute these exports







Setting up the Coordination Model in Navisworks

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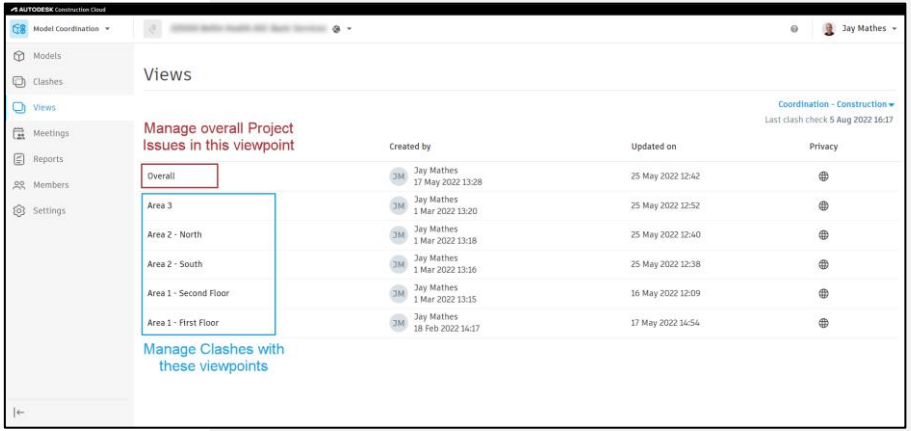
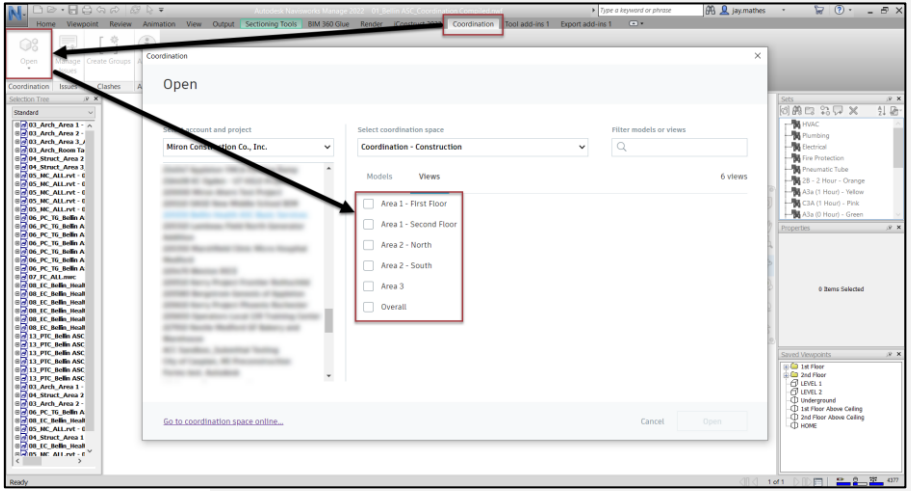
From Model Coordination to Navisworks

- After 3D Viewpoints have been published:
  - Set up and save viewpoints, encourage subcontractors not to re-name their viewpoints
  - Set up an overall viewpoint to manage project-wide issues and discussion topics
  - Set up Area viewpoints to match construction sequences
  - Finally, start pulling viewpoints into Navisworks





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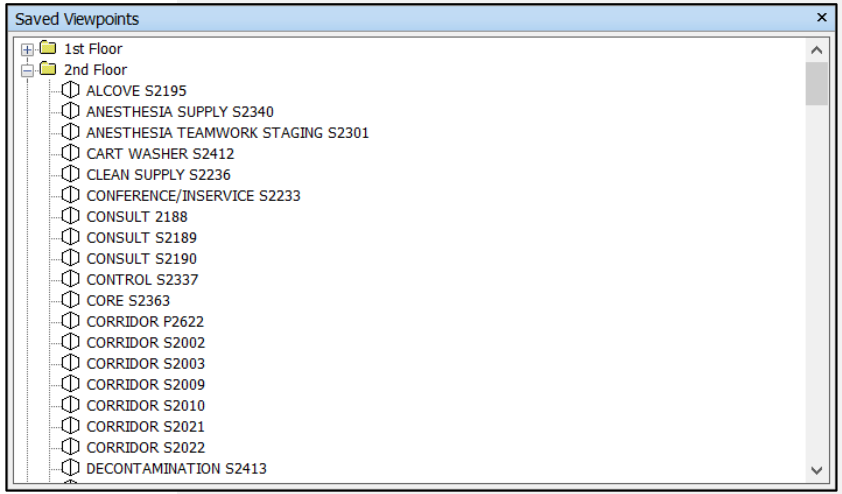
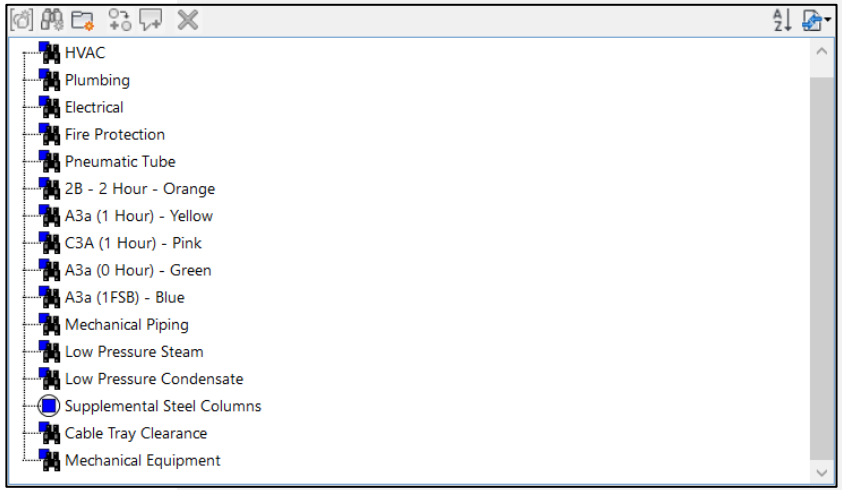
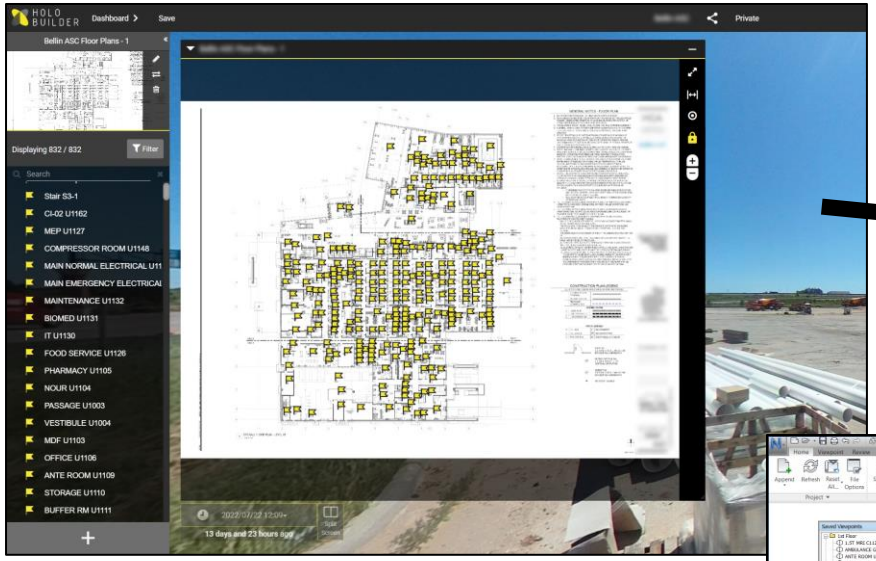
Navisworks

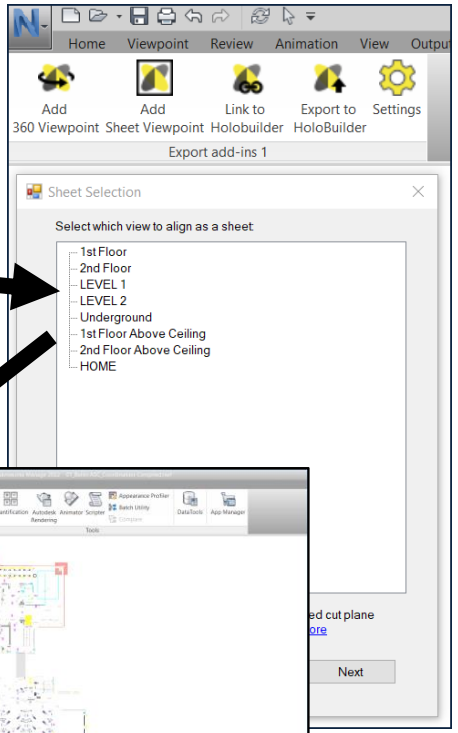
Enhancing the BIM Coordination Process

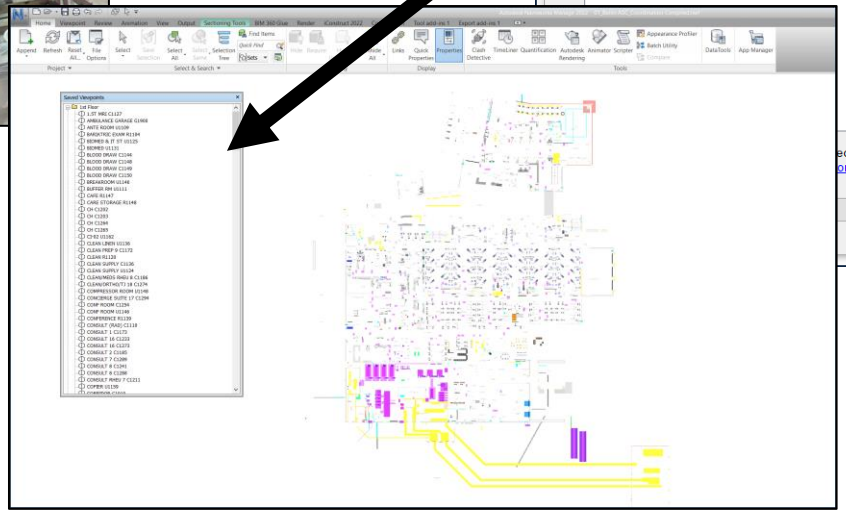
- Saved Viewpoints
  - Allows for end-users to drop right into the space
- Search Sets
  - Helps to organize the model and easily adapt the viewpoints you would like to share
- Appearance Profilers
  - Establish your own standards
  - Use industry standards
  - Communicate this standard to the end-user











Saved Viewpoints and HoloBuilder

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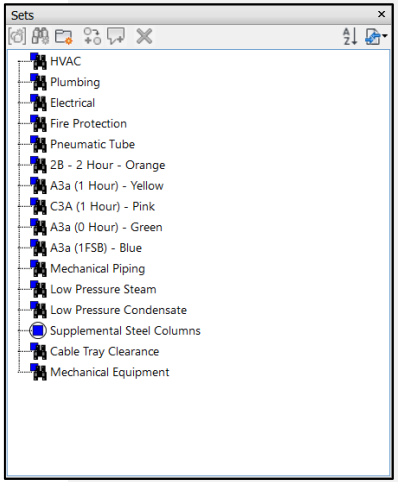
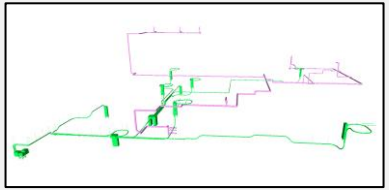
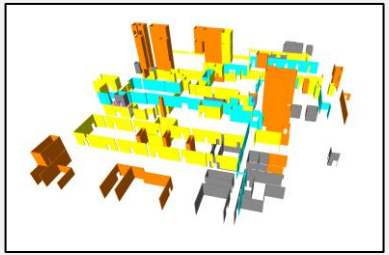
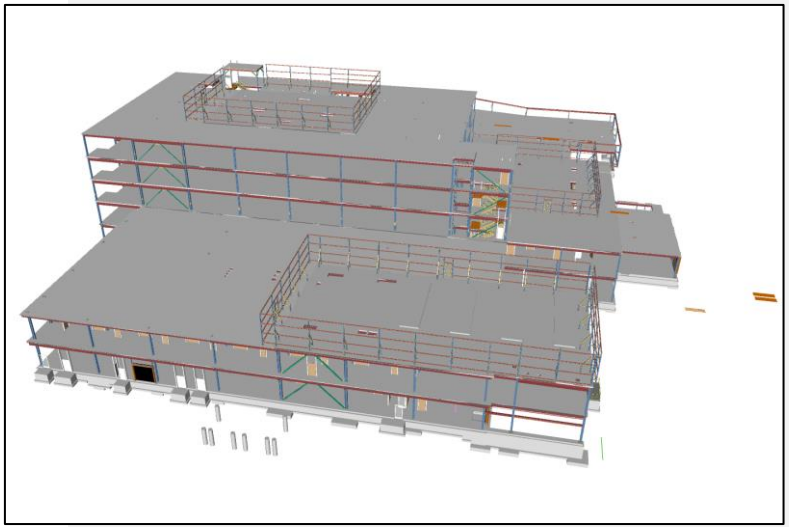
Search Sets in Navisworks

- Search sets are an investment
- The more thorough you are during model setup, the more these search sets will pay off
  - Makes meetings more efficient
  - Visualization of issues improves dramatically
  - Isolating systems in real-time becomes simple
- Search sets vs. selection sets
- Standardize across projects for your company when possible









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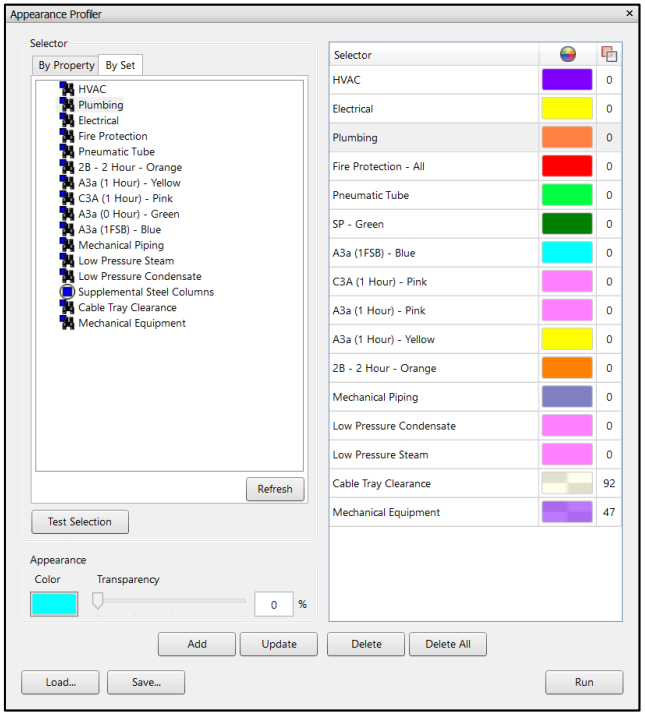
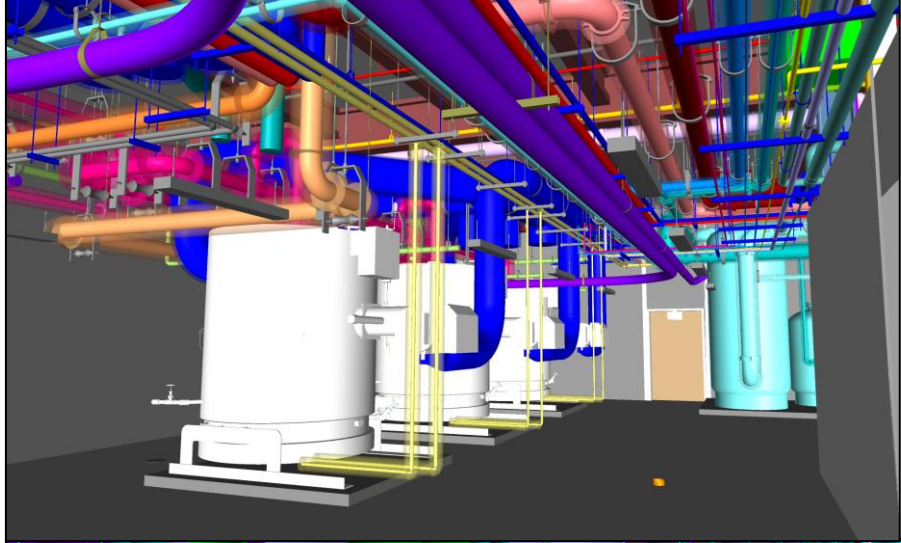
Appearance Profilers in Navisworks





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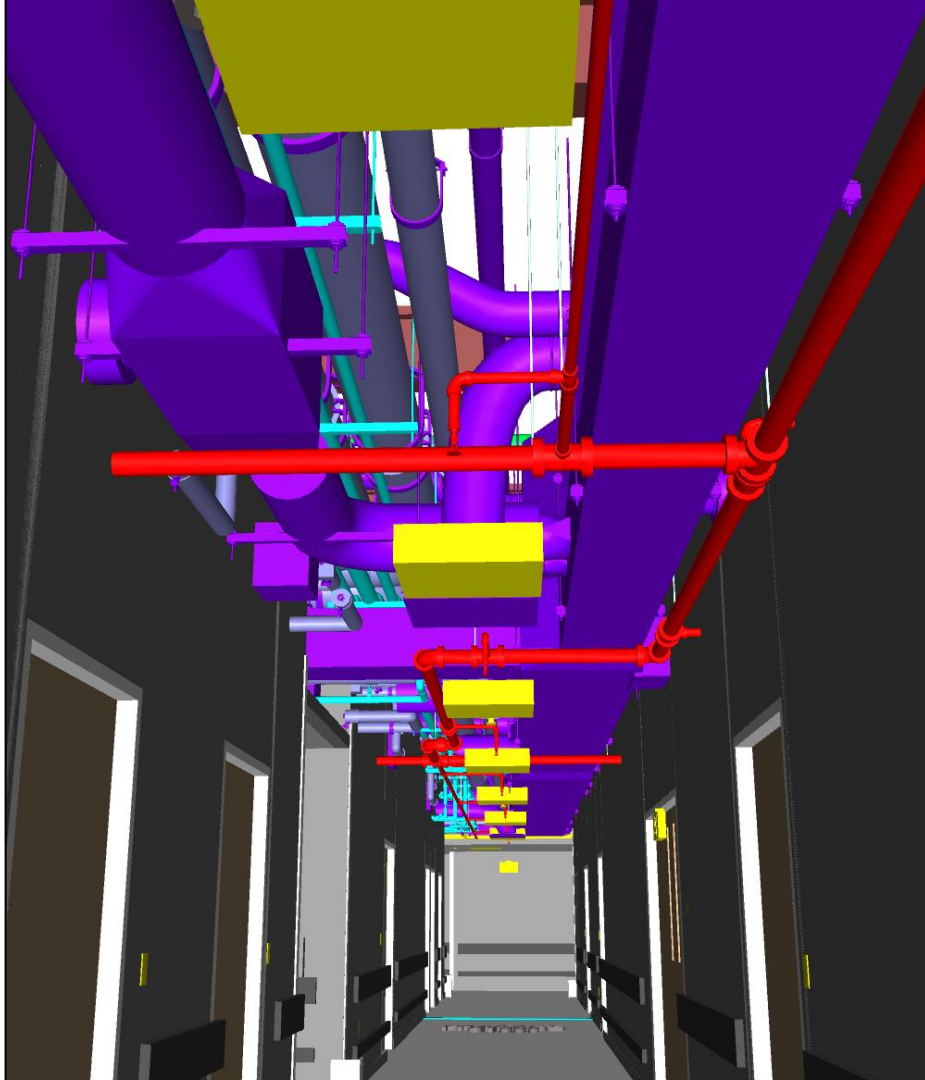
Appearance Profilers

- Simple Profilers per trade allow for ease of access
  - Lowest level end-users understand what they are looking at
  - First time users know what they are looking at



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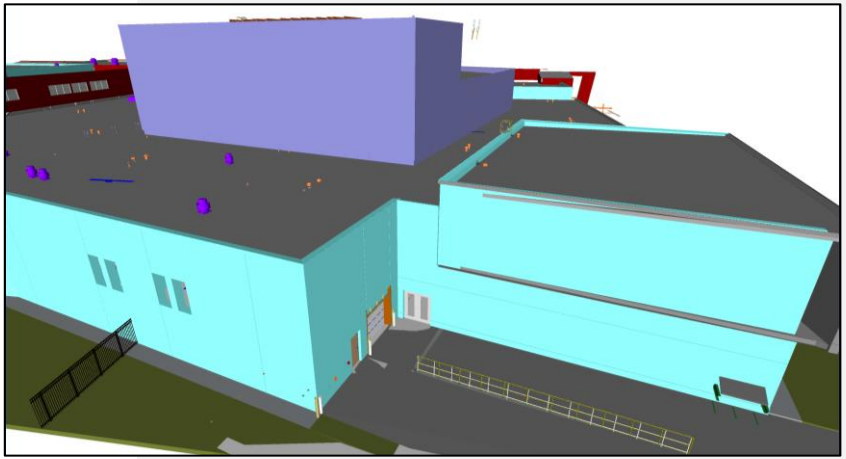
Appearance Profilers

- Complicated Profiles show the nuances of the job
  - By system rather than trade per national and international standards
- Save these along with the project search sets so that others can re-create your project setup
  - Could make sense to have more than one appearance profiler; would suggest still only using one set of search sets



ACC Build and Model Coordination

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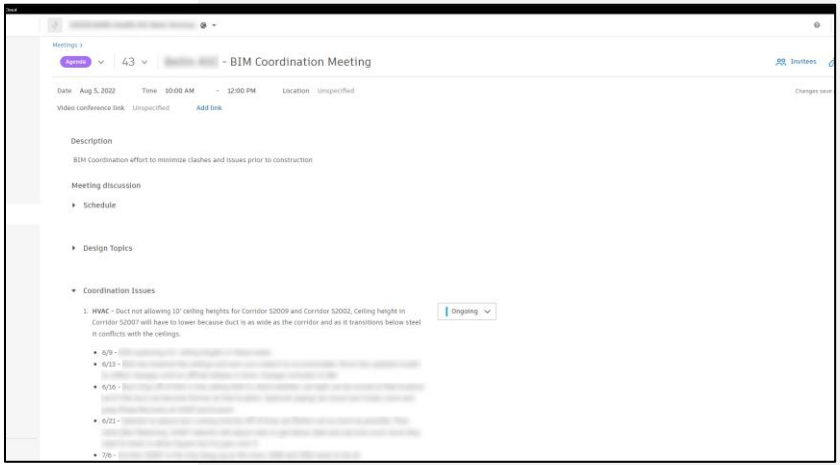
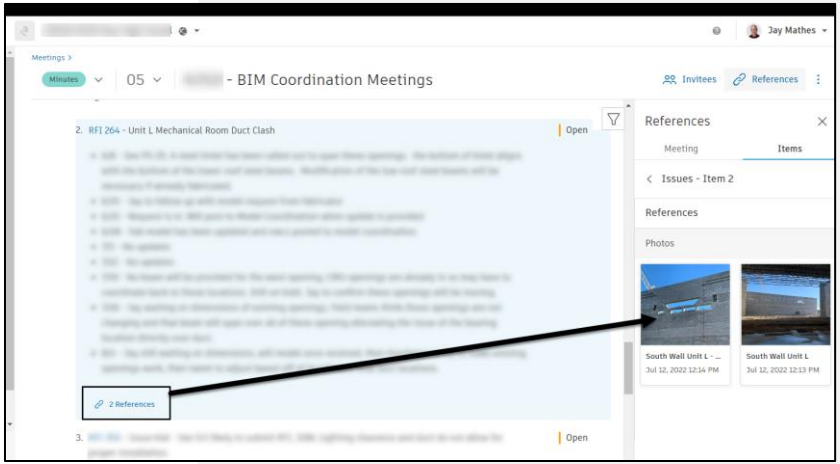
Meeting Minutes

- Identify major issues early
- Document, document, document
- Clear, concise, meaningful topics
  - Leave the small items for subcontractors to figure out amongst themselves outside of meeting times
- Link in progress photos
- Link issues to meeting topics
- Record meetings for outside parties to view later





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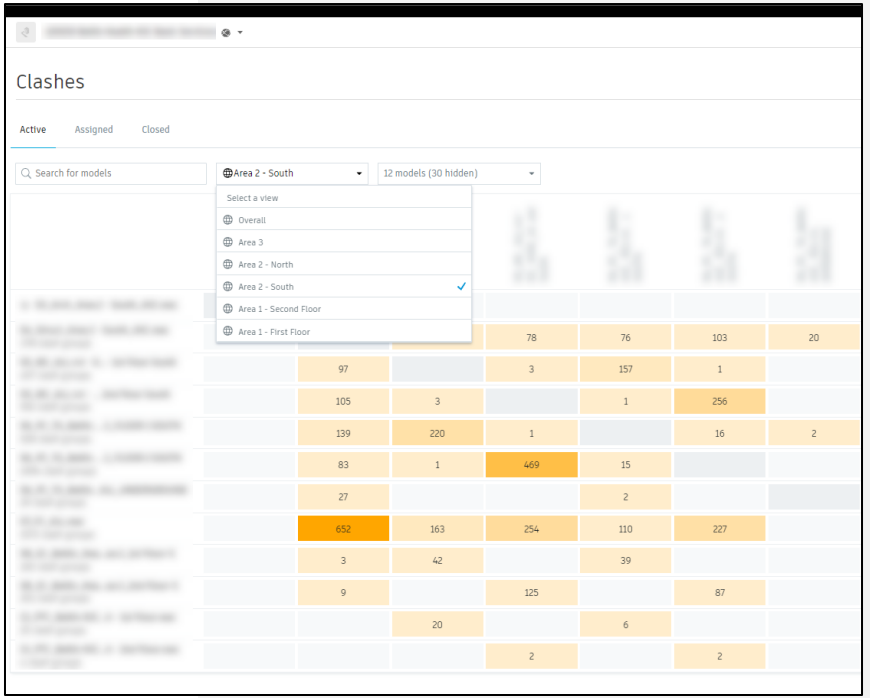
Clash Resolution

- Start in Model Coordination
- Utilize issue assignment
  - Empower subcontractors to create, assign, and update issues
- Set up issue types that are intuitive and easy to filter
- Gap model and specific system clashes
  - Handle these in Navisworks



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Signoff

- Utilize reports to push the project over the “goal line”
  - Extra level of accountability
  - Track clash and issue numbers over time
  - Utilize reports in ACC
- As a part of the BIM Execution Plan, set expectations for what this model should look like and how it will be delivered to the rest of the team at the end of the project

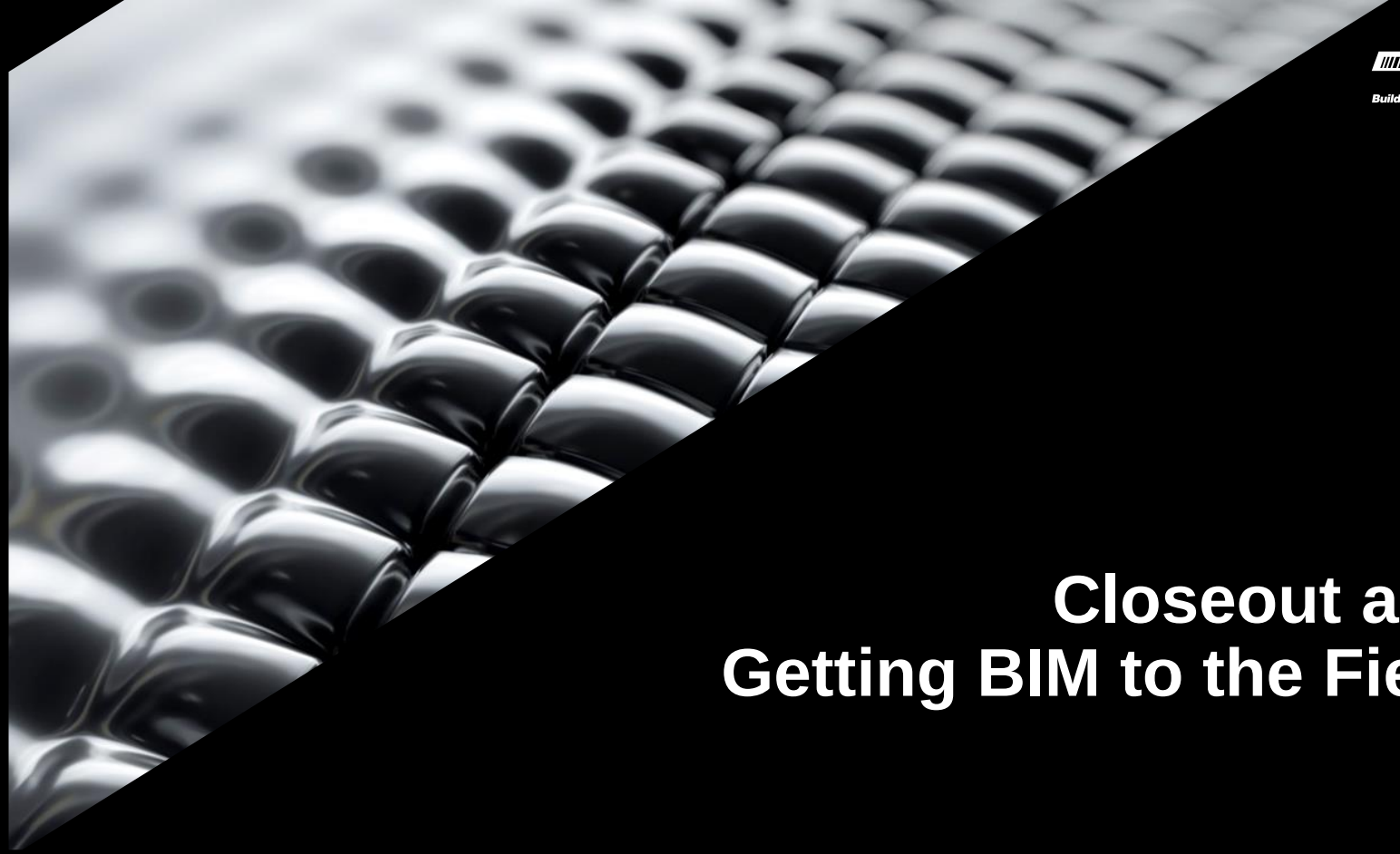
Area 1 - 1st Floor

Trade	Date 5/9/2022	5/16/2022	5/23/2022	5/30/2022	6/6/2022	6/13/2022	6/20/2022	6/27/2022	7/4/2022	7/11/2022
Structure	106	136	84	63	45	25	22	27	41	11
Mechanical	577	464	489	392	316	280	276	175	167	154
Plumbing	418	385	383	367	266	121	153	158	150	109
Plumbing Underground	177	172	76	28	2	0	3	7	1	3
Fire Protection	314	266	237	183	250	225	183	182	174	147
Electrical	288	283	121	50	34	28	32	41	41	50
Electrical Underground	304	279	52	26	0	6	3	2	2	2
Pneumatic Tube	48	42	57	59	34	29	33	30	37	30
Actual	2232	2027	1499	1168	947	714	704	622	613	506
Goal (150 per week)	2232	2027	1627	1227	827	714	564	414	264	114

Area 1 - 2nd Floor

Trade	Date 5/9/2022	5/16/2022	5/23/2022	5/30/2022	6/6/2022	6/13/2022	6/20/2022	6/27/2022	7/4/2022	7/11/2022
Structure	120	134	202	85	73	138	135	115	122	67
Mechanical	848	906	972	977	992	850	876	804	866	834
Plumbing	877	1102	1000	994	871	783	792	702	677	683
Fire Protection	876	785	1029	851	858	724	739	643	666	602
Electrical	157	237	176	168	140	100	151	142	150	148
Pneumatic Tube	3	5	5	5	5	5	5	5	6	6
Actual	2881	3169	3383	3080	2939	2600	2698	2411	2487	2320
Goal (1000 per week)							2698	2248	1798	1348

Company	Unresolved	Overdue
[redacted]	9	6
[redacted]	33	30
[redacted]	7	0
[redacted]	9	7
[redacted]	2	2
[redacted]	40	19
[redacted]	0	0
Total	100	64



Closeout and Getting BIM to the Field

Accessibility of the Coordinated Model to Your On-Site Teams

- Publish “For Record” models for historical documentation, but encourage subcontractors to continue adding detail to the overall BIM
- Publish subcontractor installation drawings when available
- Train field personnel on how to view models on the iPad in Plangrid-Build, and utilize the viewpoints created in HoloBuilder to help them navigate models more efficiently

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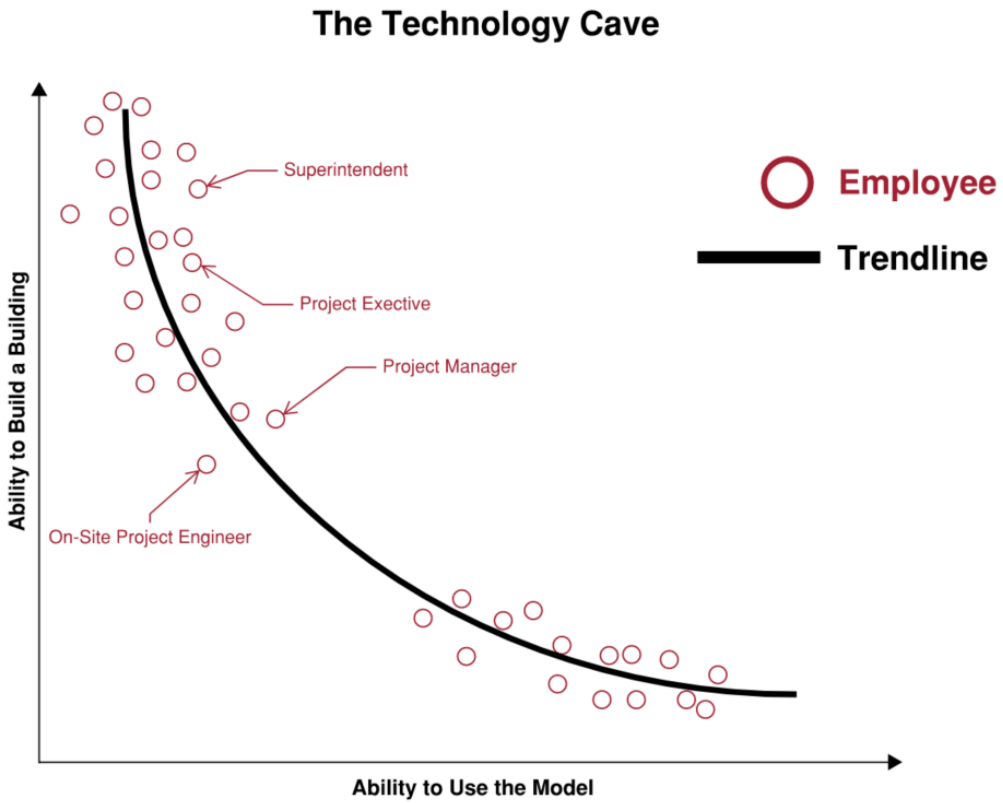
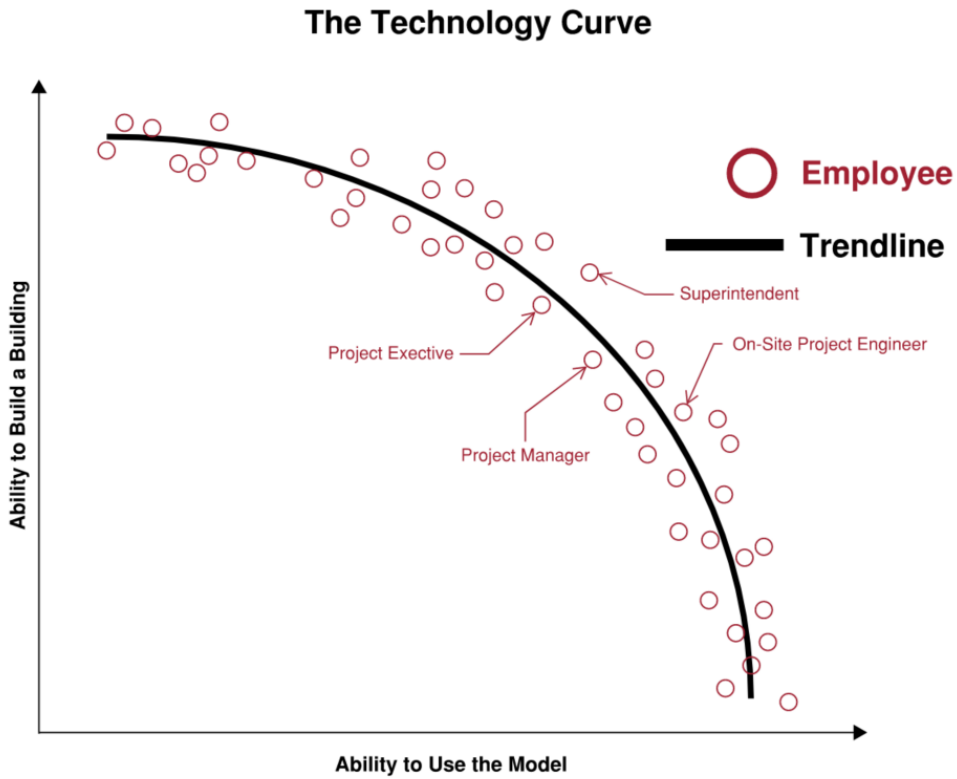
Accessibility of the Coordinated Model to Your On-Site Teams

- Set up easy, one-click solutions
- Utilize desktop connector
- Utilize the project links and save to your browser favorites
- Encourage feedback from your teams
  - “It would be really nice if I could just see _____ in the model”
- Get people out of the “technology cave”

Create company policies that discourage the “Technology Cave”

- Large gaps in abilities
- Few well-rounded individuals
- Information is lost in translation from BIM team to Field teams
- Get your company out of the technology cave





Get your employees on the “Technology Curve”

- Everyone is speaking the same language
- More people know a “good model” from a “bad model”
- More BIM decisions get communicated to the field
- Encourages collaboration and **feedback**

Special thank you to the Miron Virtual Construction Team







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