

24TH ANNUAL



24TH LCI CONGRESS
OCTOBER 18-21

TH5C: Moving the Needle with Modular Construction: Hyper Collaboration with Owners & AHJ's as Integrated Team Members

Karen Mckenzie (Advocate Aurora Health, Owner)

Kyle Weisman (HGA, Architect)

Scot Lauwasser (Boldt, BIM/VDC)

Jenny Han (Boldt, Design Integration)

LEAN GUMBO: THE RIGHT INGREDIENTS FOR PROJECT SUCCESS

OCTOBER 20, 2022

INTEGRATED TEAM REPRESENTATIVES



KAREN MCKENZIE

Director
Planning, Design & Construction
Advocate Aurora Health



KYLE WEISMAN

Associate VP
Project Manager
HGA Architects & Engineers



SCOT LAUWASSER

Senior VDC Manager
The Boldt Company

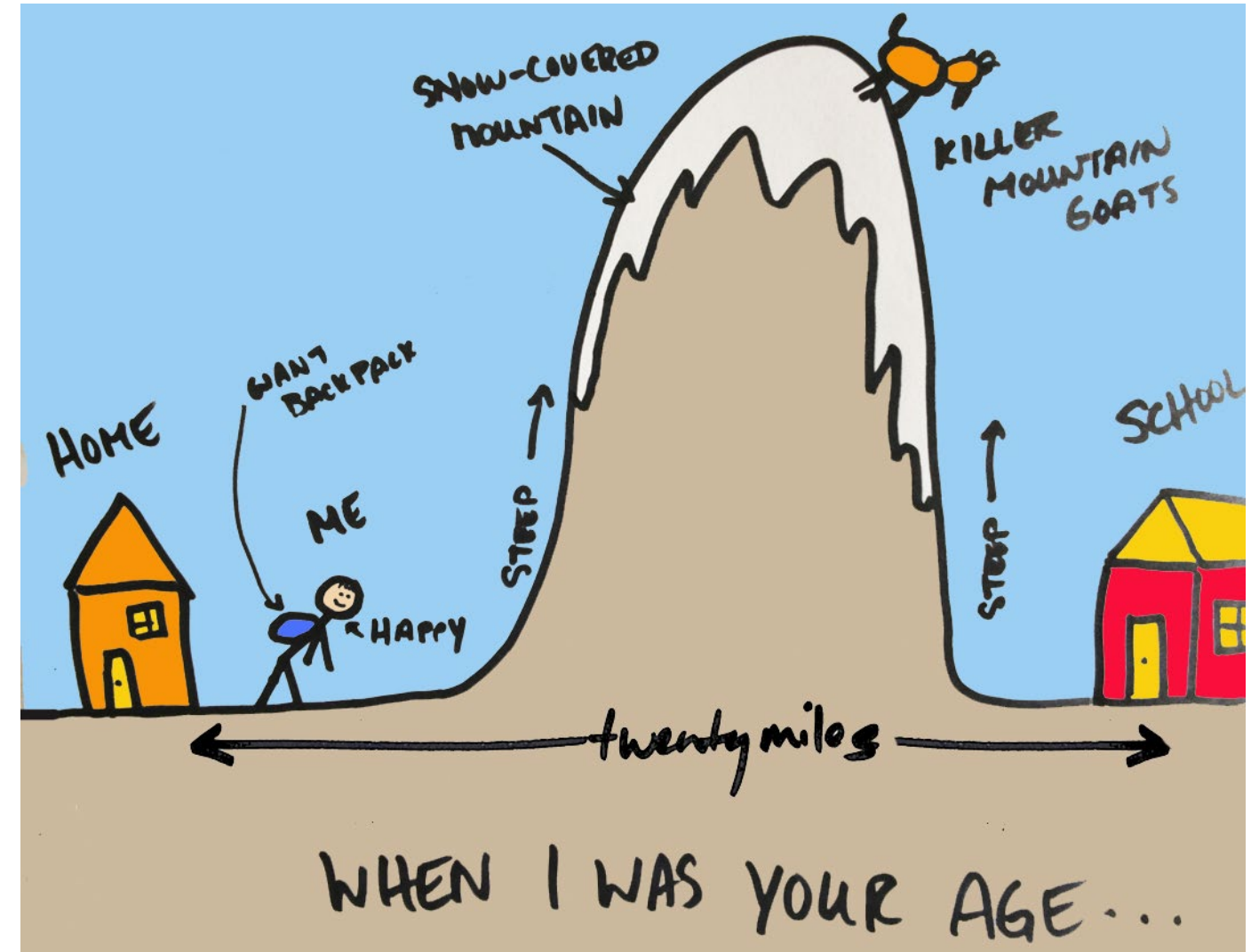


JENNY HAN

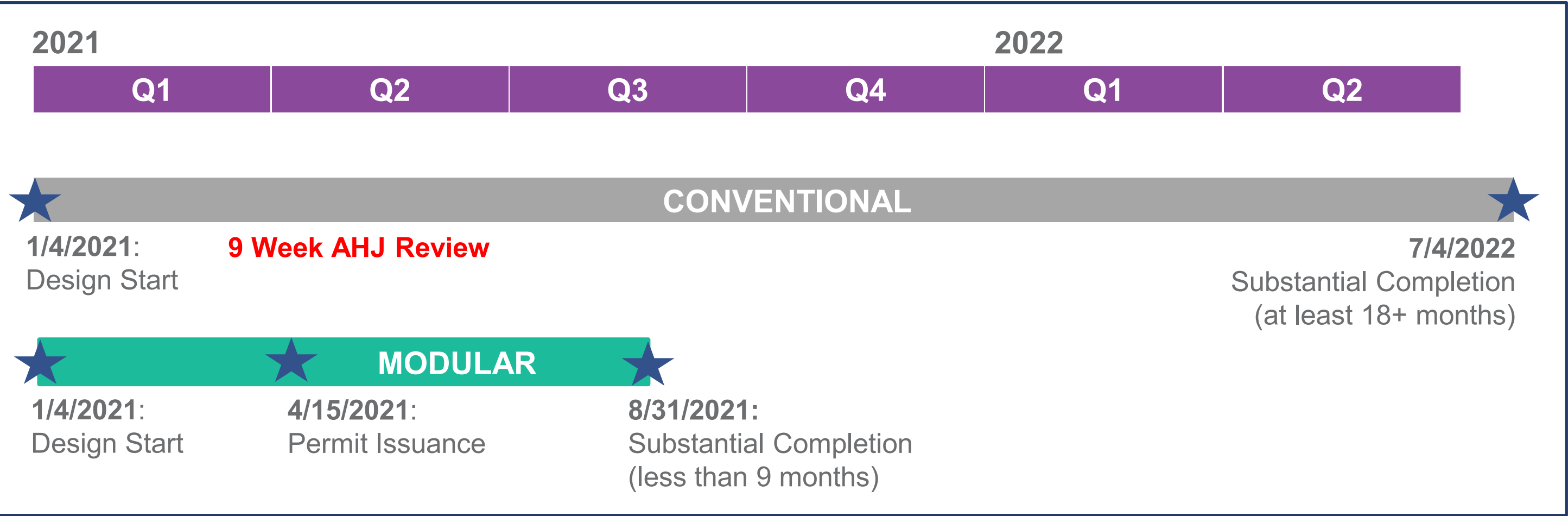
Director
Design Integration
The Boldt Company

PROBLEM STATEMENT

How do you design and build a 16-bed hospital expansion in an 8-month hyper-escalated schedule without sacrificing quality or cost during a Covid Pandemic.



WE'VE GOT THE NEED: THE NEED FOR SPEED



SOLUTION: LEAN FOCUS AREAS



**FULLY
INTEGRATED
TEAM**



**PROCESS FOCUSED
PLANNING**



**LEVERAGING
TECHNOLOGY**



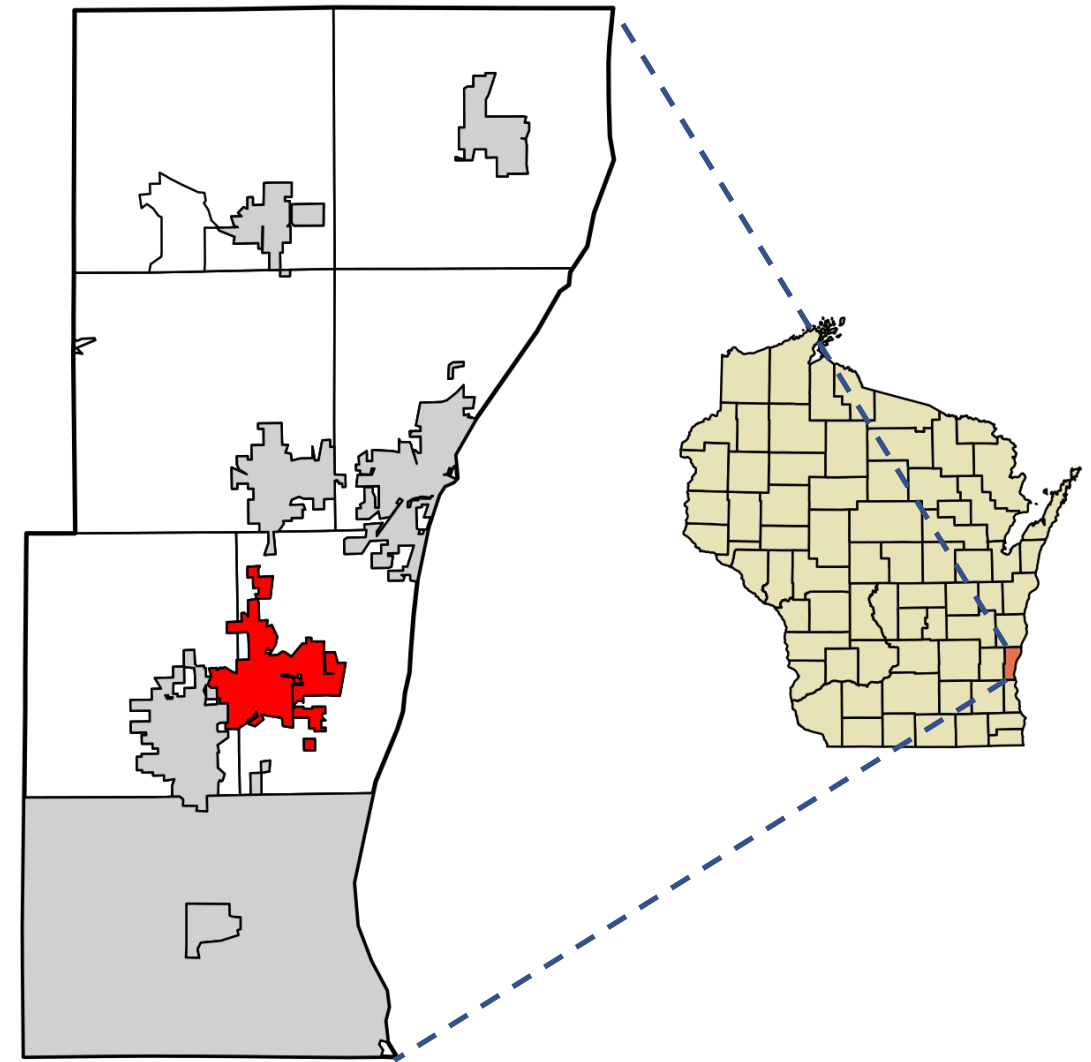
**AGILITY &
ADAPTATION**

THE PROJECT



ADVOCATE AURORA HEALTH - GRAFTON

- Growing Community
- Access to Care
- High Census
- Pandemic
- Speed to market



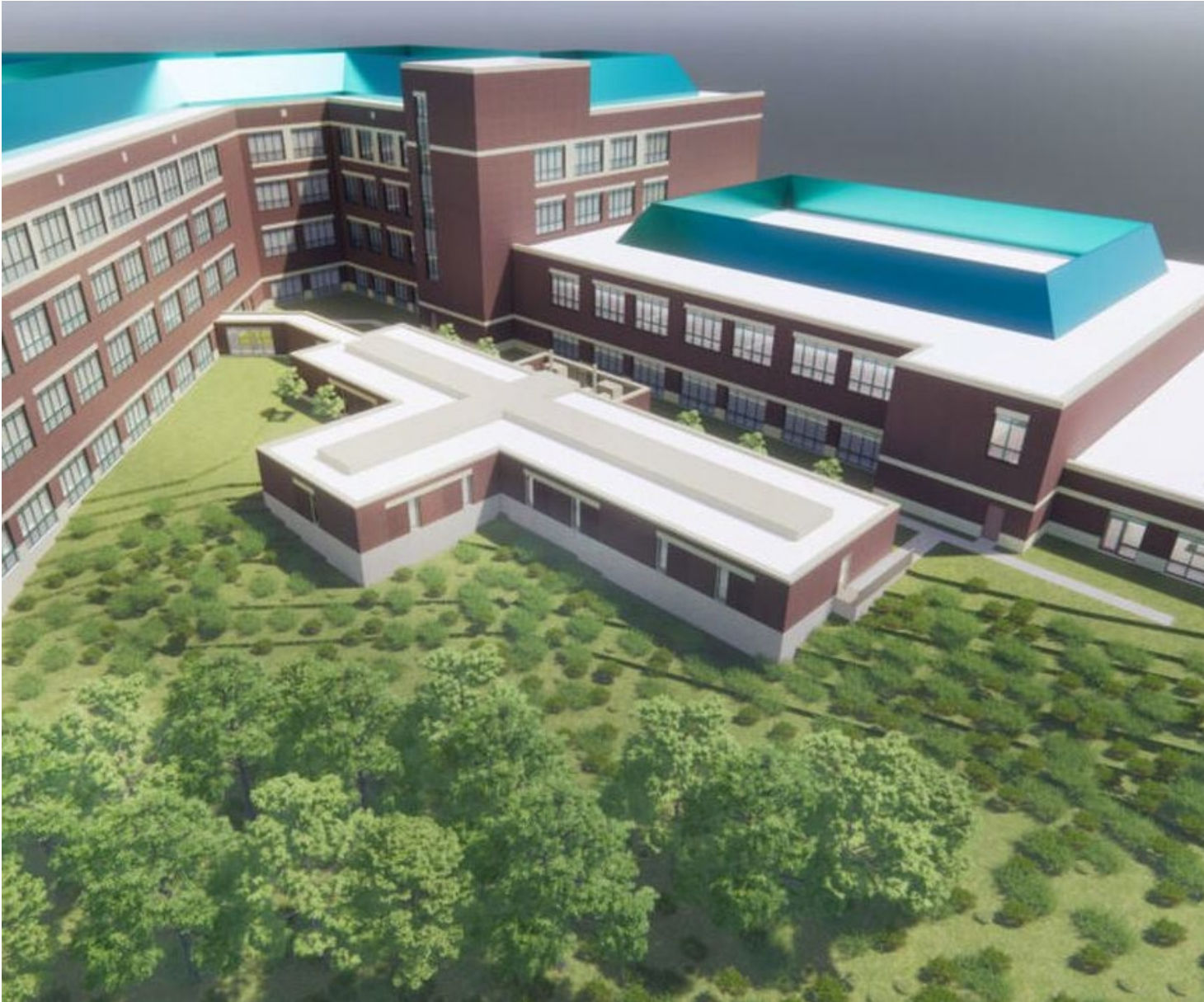
ADVOCATE AURORA HEALTH - GRAFTON



SITE CHALLENGES

- TOPOGRAPHY
- EXISTING HOSPITAL
- NESTLED POSITION

ADVOCATE AURORA HEALTH - GRAFTON



PROJECT PROGRAM

- HEALTHCARE BUILDING
- 16 OBSERVATION BEDS
- I-2 CONSTRUCTION
- 8,700 S.F.

THE ASK: MODULAR DELIVERY



THE SOLUTION: ENGAGED STAKEHOLDERS



**FULLY
INTEGRATED
TEAM**

**PROCESS FOCUSED
PLANNING**

**LEVERAGING
TECHNOLOGY**

**AGILITY &
ADAPTATION**



COLLABORATE, REALLY COLLABORATE



THE SOLUTION: INTEGRATED TEAM – OWNER/AHJ



HGA

BOLDT

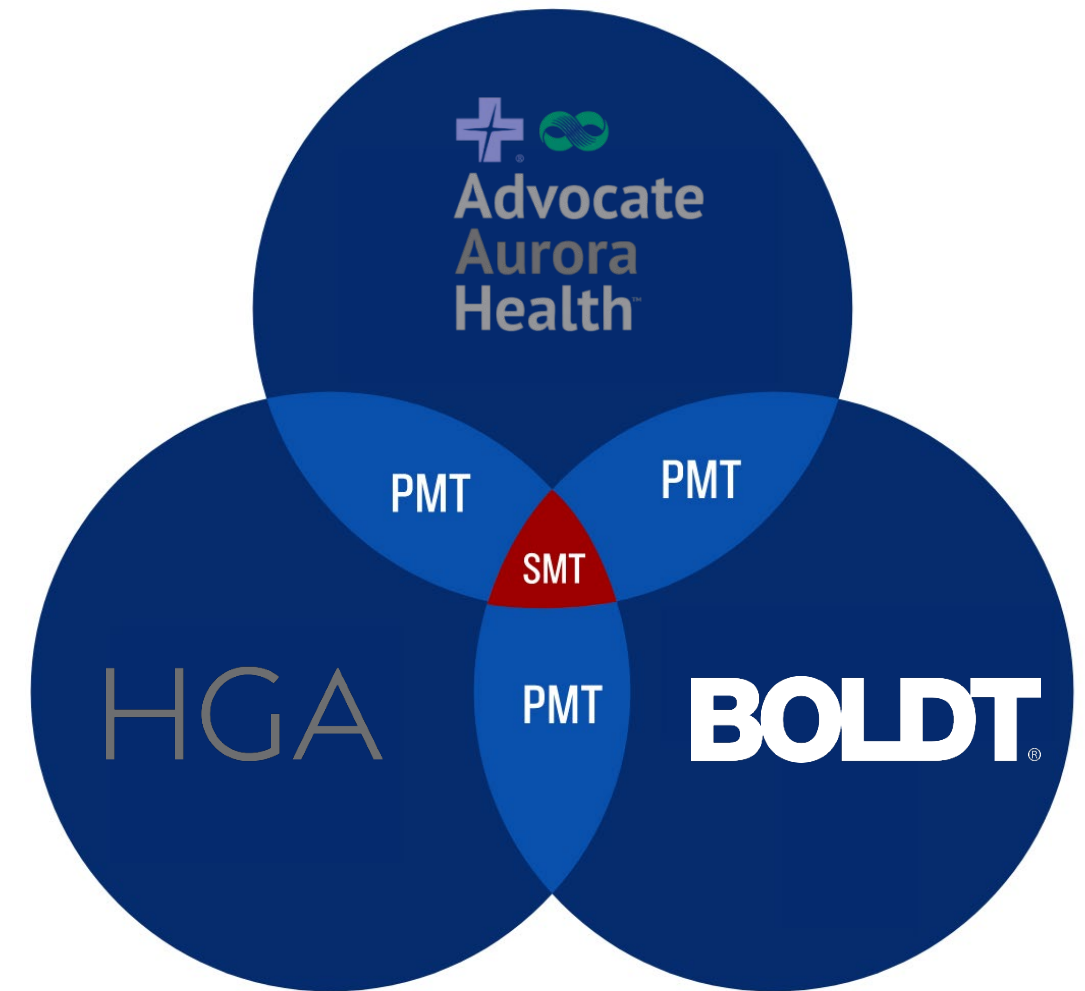
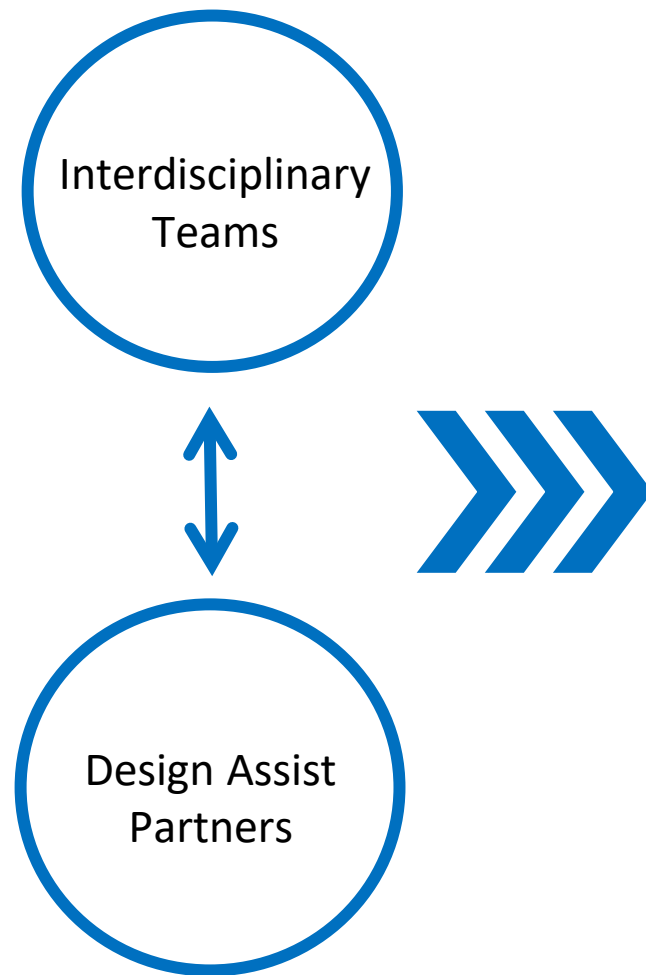
kpff

tweetgarot
mechanical

STAFF ELECTRIC

DIRTT
Build better.

THE SOLUTION: FULLY INTEGRATED TEAM



**DAILY HUDDLES &
WORKSHOPS**

**M. W. F.
PMT MEETINGS**

THE SOLUTION: GO SLOW TO GO FAST



**FULLY
INTEGRATED
TEAM**

**PROCESS FOCUSED
PLANNING**

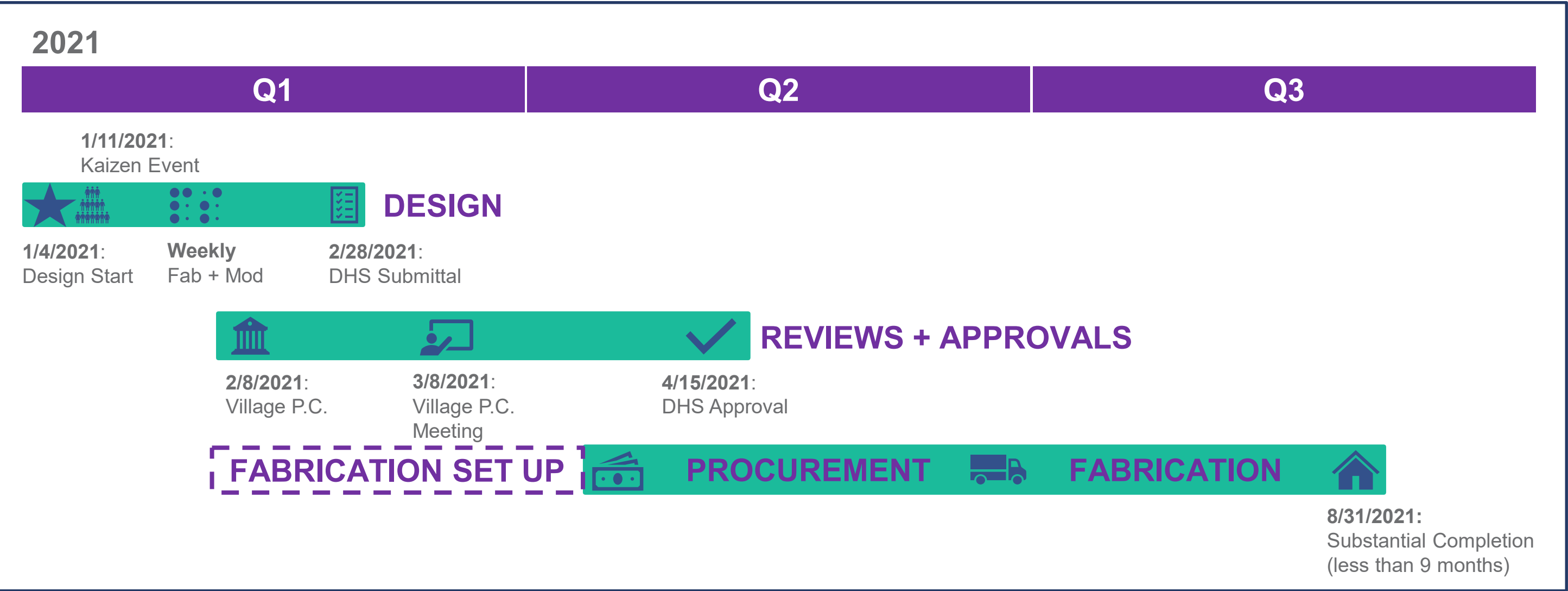
**LEVERAGING
TECHNOLOGY**

**AGILITY &
ADAPTATION**



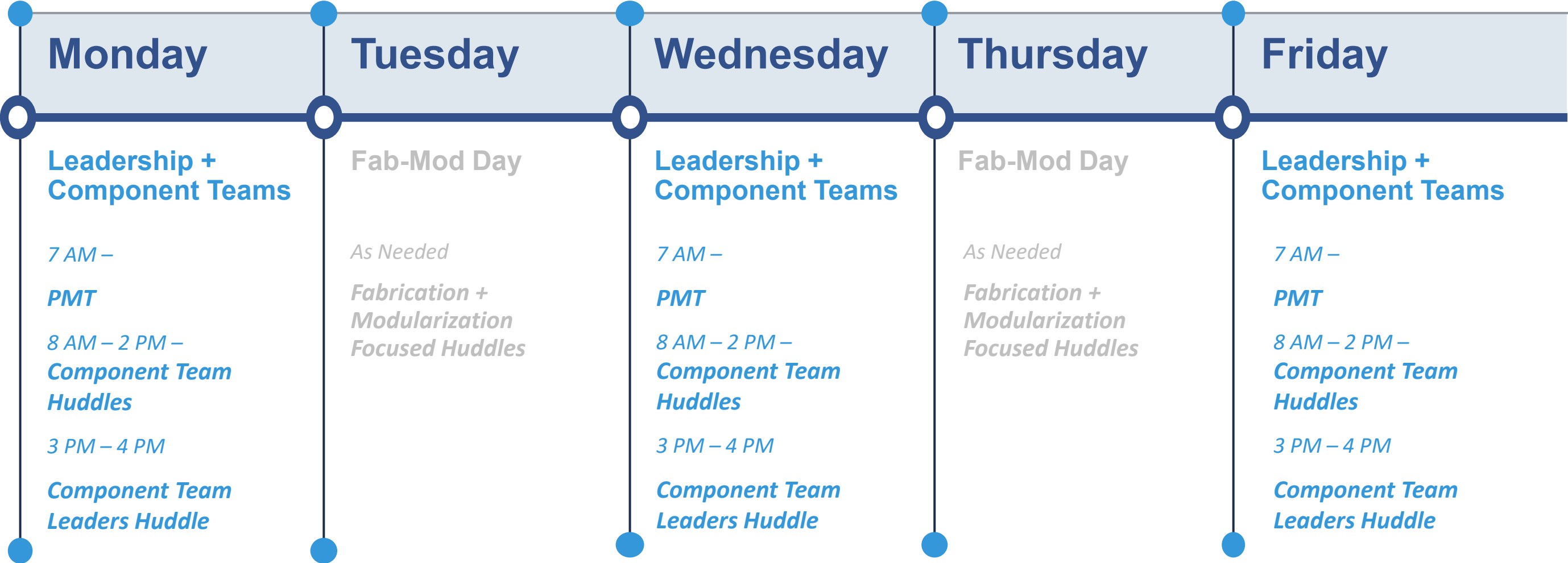


OVERLAP FOR SPEED





WEEK AT A GLANCE



Monday

**Leadership +
Component Teams**

7 AM –

PMT

*8 AM – 2 PM –
Component Team
Huddles*

3 PM – 4 PM

***Component Team
Leaders Huddle***

Tuesday

Fab-Mod Day

As Needed

***Fabrication +
Modularization
Focused Huddles***

Wednesday

**Leadership +
Component Teams**

7 AM –

PMT

*8 AM – 2 PM –
Component Team
Huddles*

3 PM – 4 PM

***Component Team
Leaders Huddle***

Thursday

Fab-Mod Day

As Needed

***Fabrication +
Modularization
Focused Huddles***

Friday

**Leadership +
Component Teams**

7 AM –

PMT

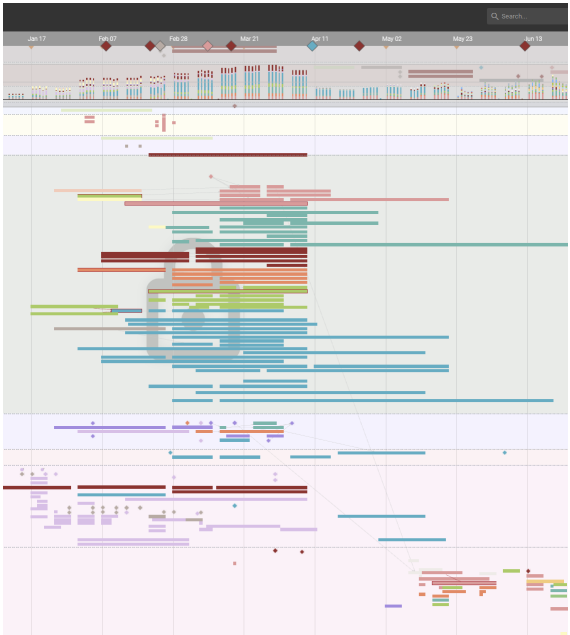
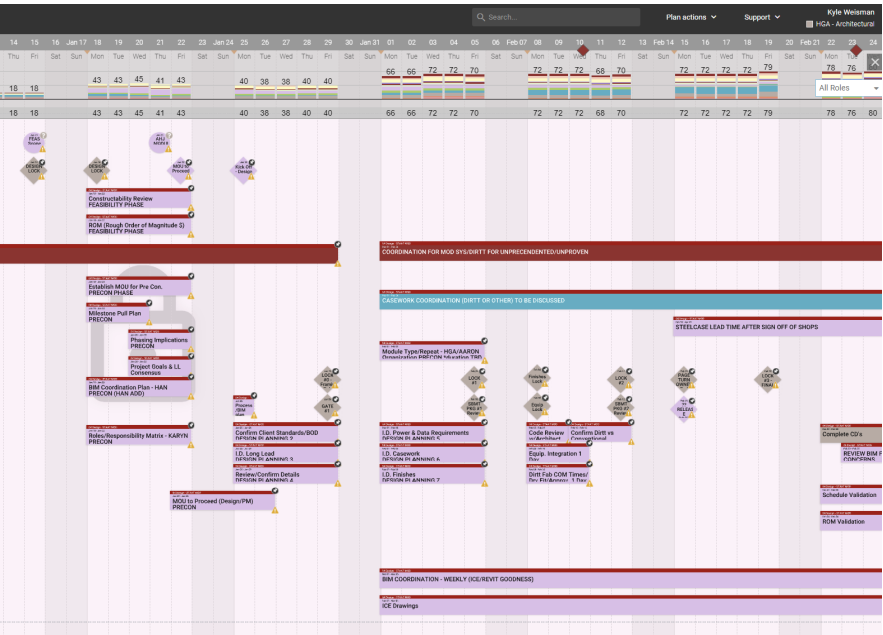
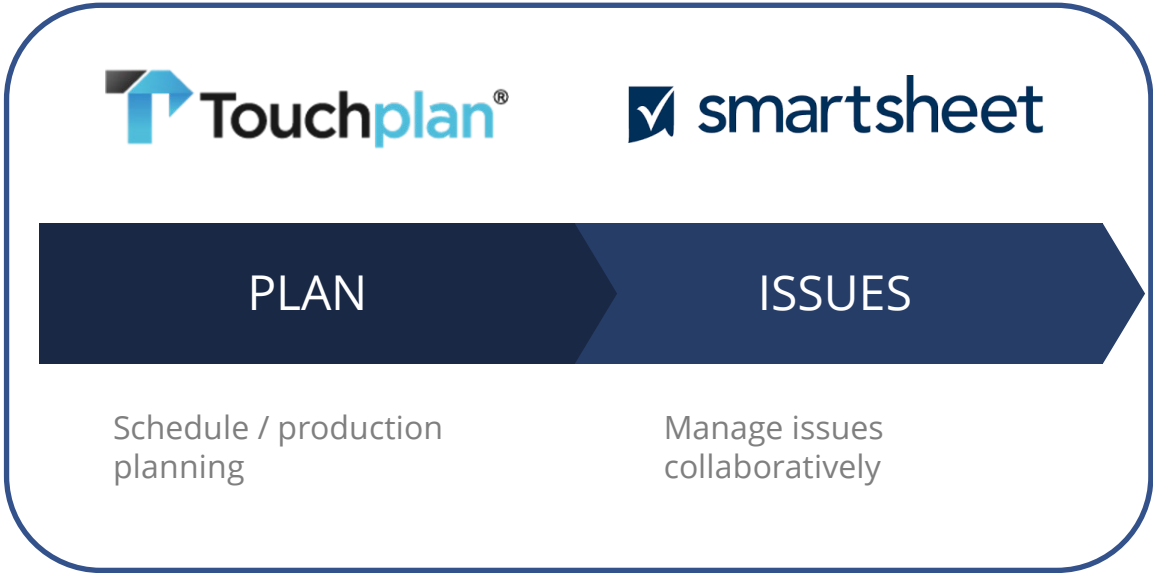
*8 AM – 2 PM –
Component Team
Huddles*

3 PM – 4 PM

***Component Team
Leaders Huddle***



TOOLS: PROCESS FOCUSED PLANNING



smartsheet

File Automation Forms

AMC Grafton Issues List

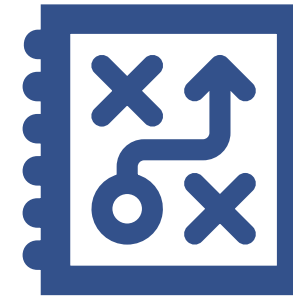
	Done	PMT Topic	RFI	Issue #	Category	Description	Comments	Team Category	Responsible Person	Team	Need By
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	01 General	GENERAL		X	HEADER		
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	12	01 General	Organization Structure & Communication Cadence	12/30 - Confirm org structure and communication cadence 1/4 - Nick to send out org structure for comments/questions 1/6 - send back any comments to Nick Loughrin 1/14 - Tuesday and Thursday PMT Check ins 7:30-8:00am	01 PMT	EH E.J. Herr	AAH	01/0
3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	22	01 General	LEED / Healthy Spaces	1/6 - need to verify if LEED is possible - HGA to verify if this is possible 1/14 - HGA to complete verification HSSI compliance by early next week 1/18 - HHI Compliance, need a meeting to discuss granular details about HHI compliance, conduits for example 1/19 LEED based on being located on a previously approved site, the project cannot receive site credits, additionally there are many other credits we cannot meet because of the nature of the staat mod, site location and timing. HSRM - are a good position. Enviro Site Assessment is an issue to discuss. Commissioning requirements needs to be considered. Energy Efficiency levels could meet the basic. Per Karen, move forward with HSRM and review as a team for individual items. 1/26: LEED = No, HSRM (60 or Above) = Yes	01 PMT	KW Kyle Weisman	HGA	01/2
4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	25	01 General	Modular Process Overview	1/14 Tuesdays and Thursdays PMT Check in 7:30-8:00am. Meeting is set up.	01 PMT	EH E.J. Herr	AAH	01/2
5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	68	01 General	Project Name	2/1 - What formal name should be used for the project? Several have been used to date: - AMCG Medical Observation Unit Addition & Enabling Project.	01 PMT	NL Nick Loughrin	BOLDT	02/0
6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	02 Design	DESIGN			HEADER		
7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	18			1/6 - verify wall system (DIRTT, Modular Services, (headwall), Steelcase, Drywall) - will confirm decision timeline with pull plan on 1/7 1/14 - Confirming AHJs will be comfortable with DIRTT system and integration timeframe will work. To complete by 2/16	05 Interiors Team			



THE SOLUTION: PRE-PLANNING



System Standards



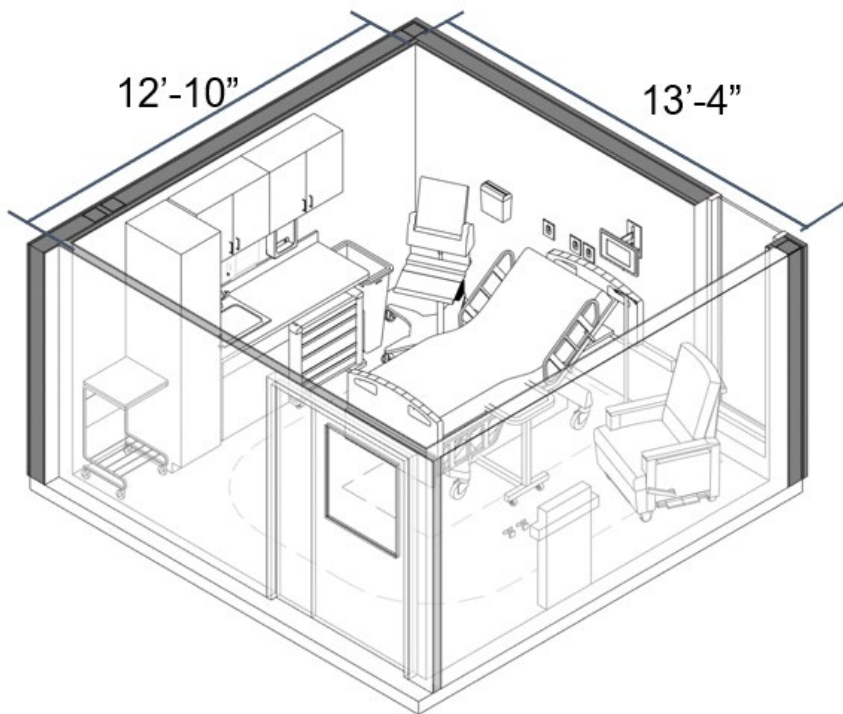
Modular Standards



THE SOLUTION: PRE-PLANNING



System Standards



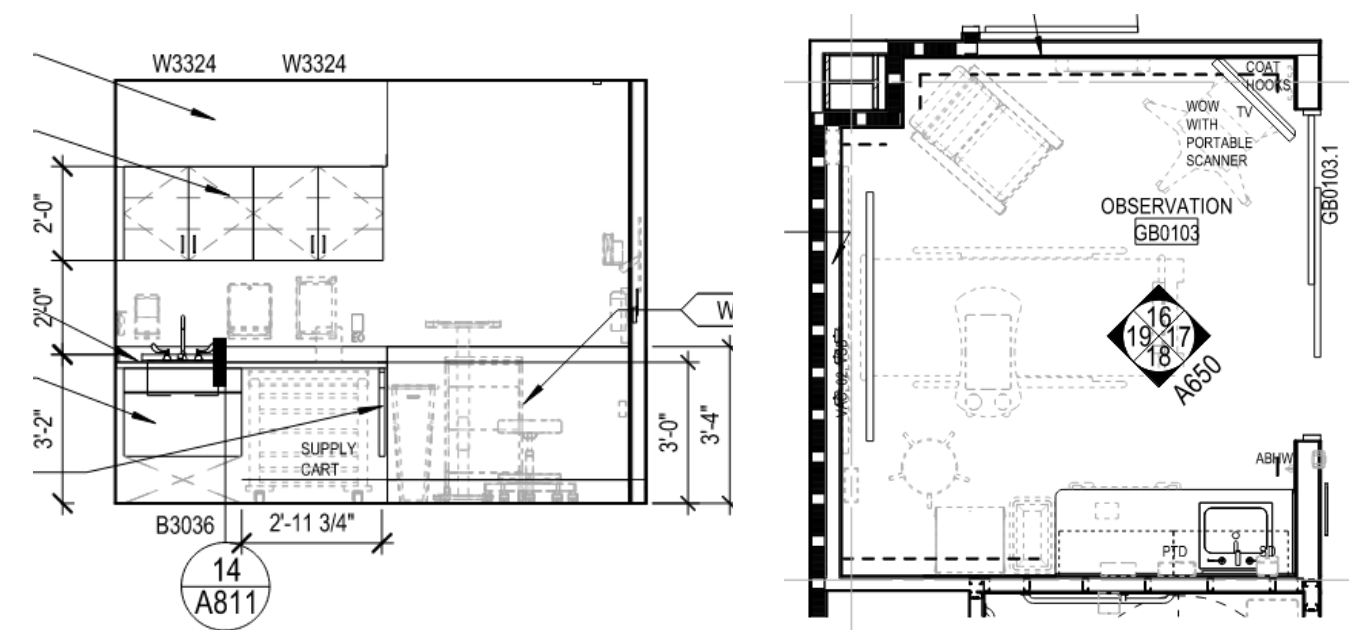
Modular Standards



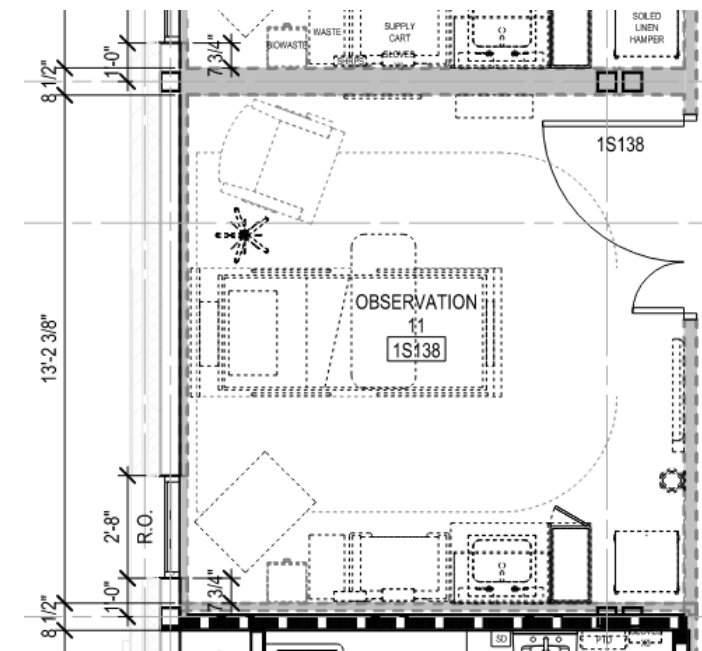
THE SOLUTION: PRE-PLANNING



System Standards



Modular Standards



THE SOLUTION: KEEP IT VISUAL



**FULLY
INTEGRATED
TEAM**

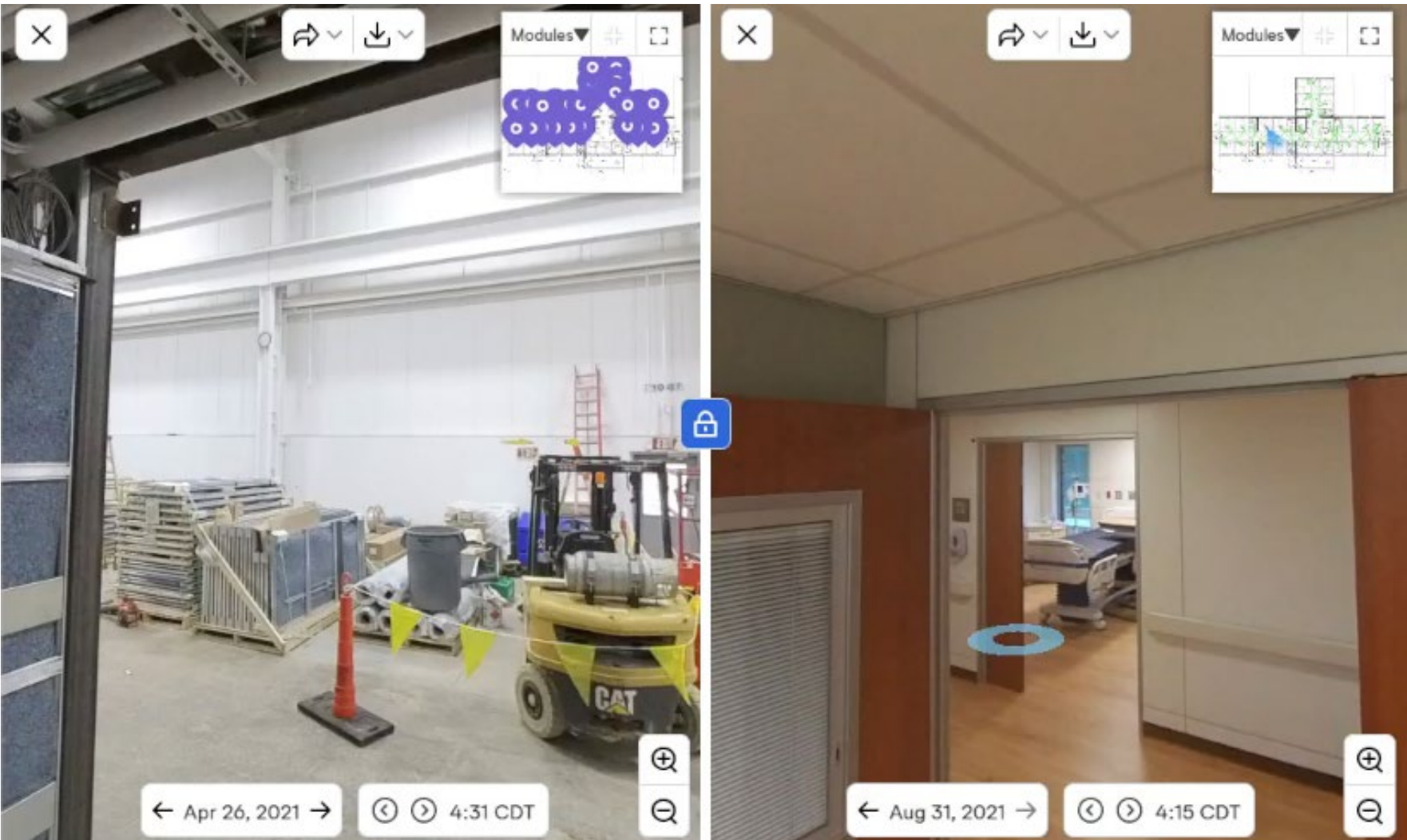
**PROCESS FOCUSED
PLANNING**

**LEVERAGING
TECHNOLOGY**

**AGILITY &
ADAPTATION**



THE SOLUTION: LEVERAGING TECHNOLOGY



AUTODESK®
CONSTRUCTION
CLOUD

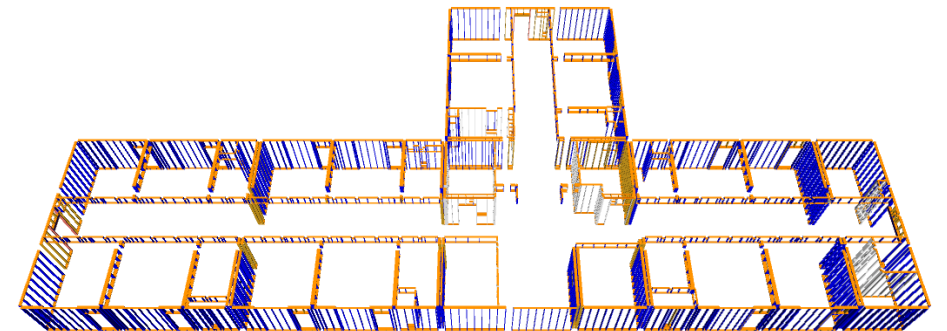
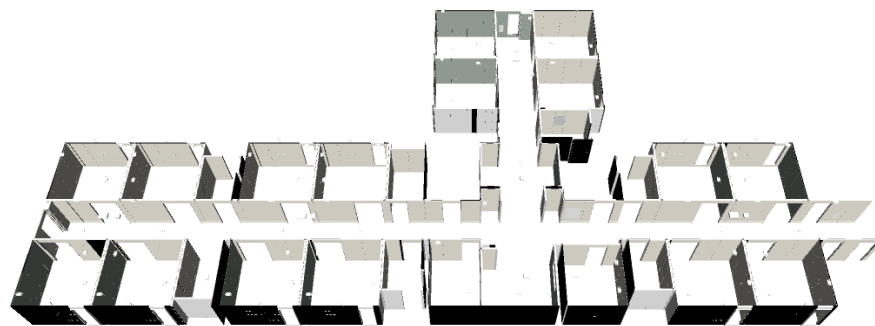
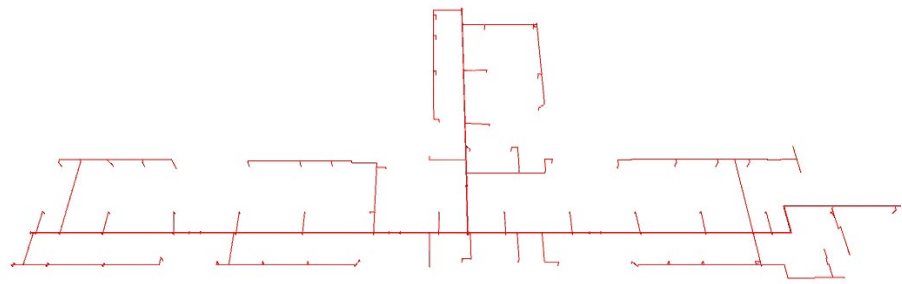
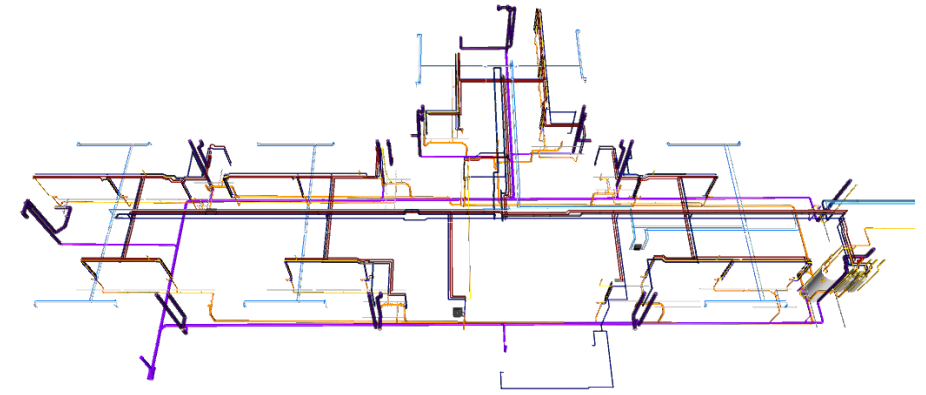
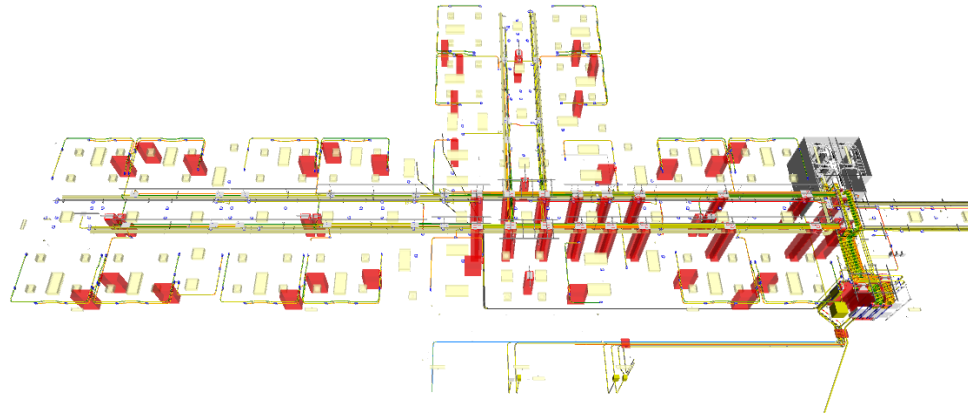
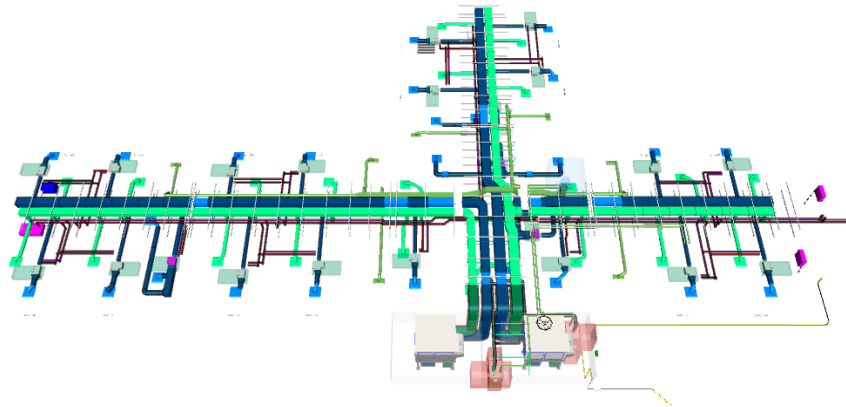
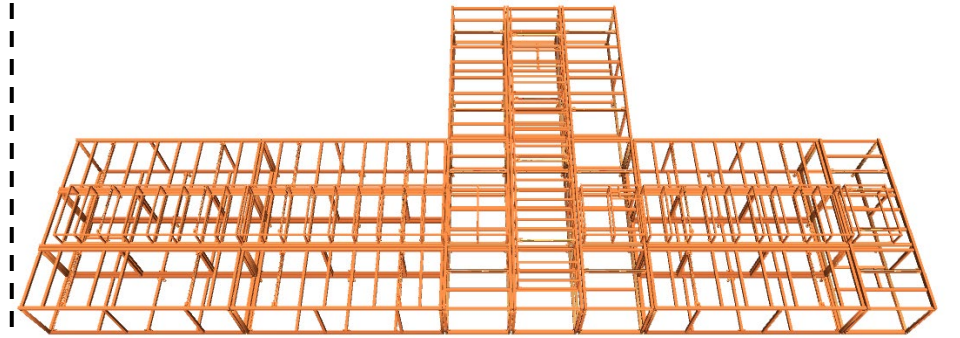
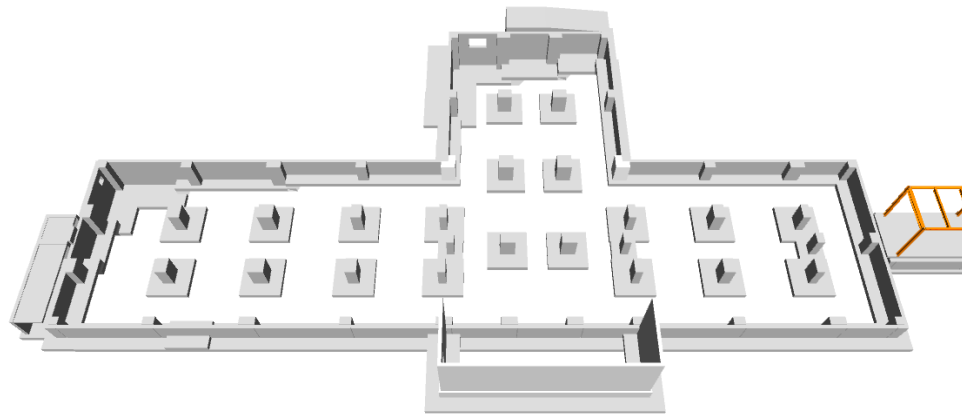
COORDINATE

CURRENT SET

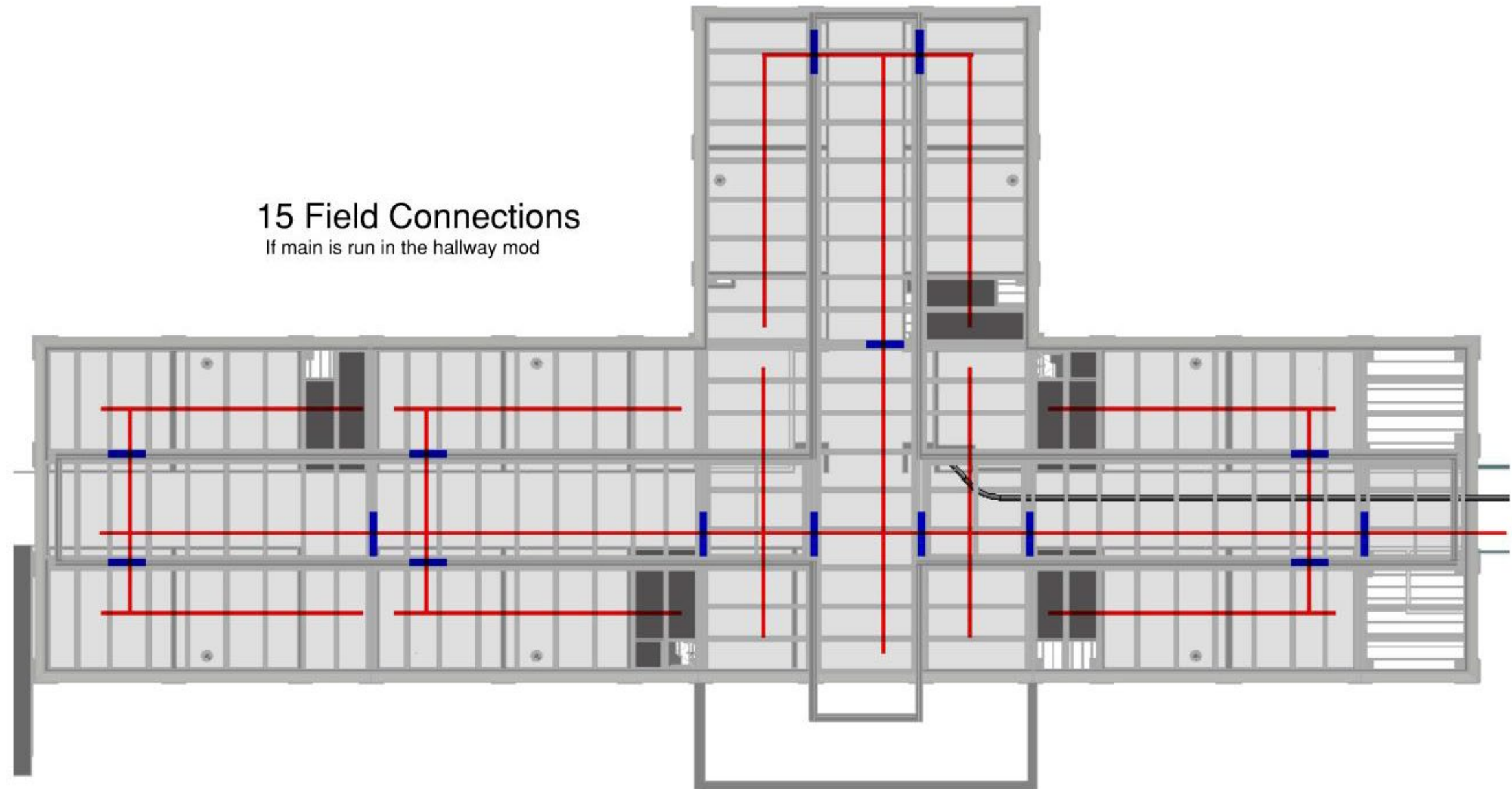
Bluebeam Review / Studio
Faster review of
submittals - collaborative
approach to the review
process.

Easy access to view
drawings, specifications,
and punch-list, submittals,
RFIs, 3D Model,
Coordination, Clash
Detection

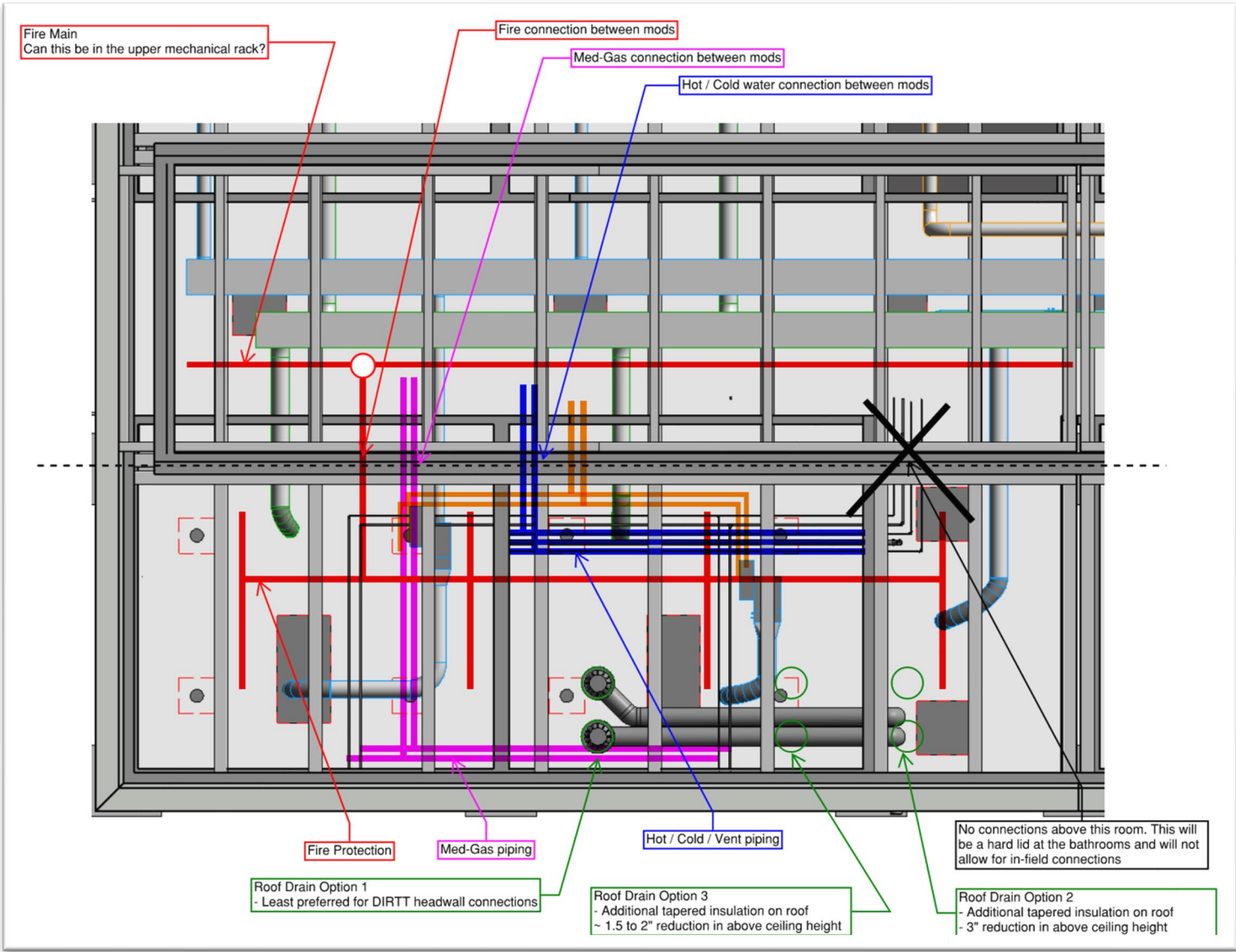




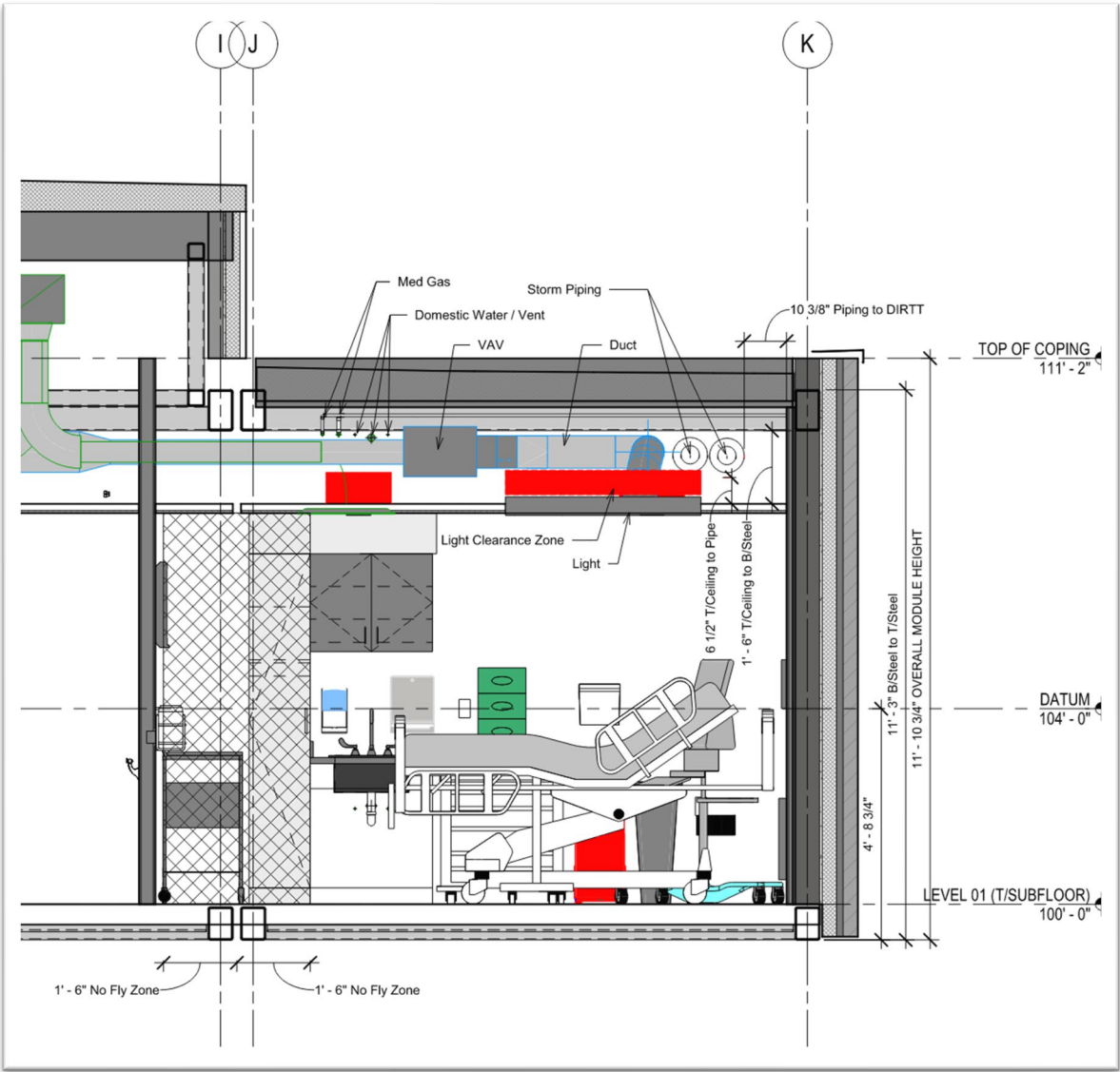
THE SOLUTION: LEVERAGING TECHNOLOGY



THE SOLUTION: LEVERAGING TECHNOLOGY

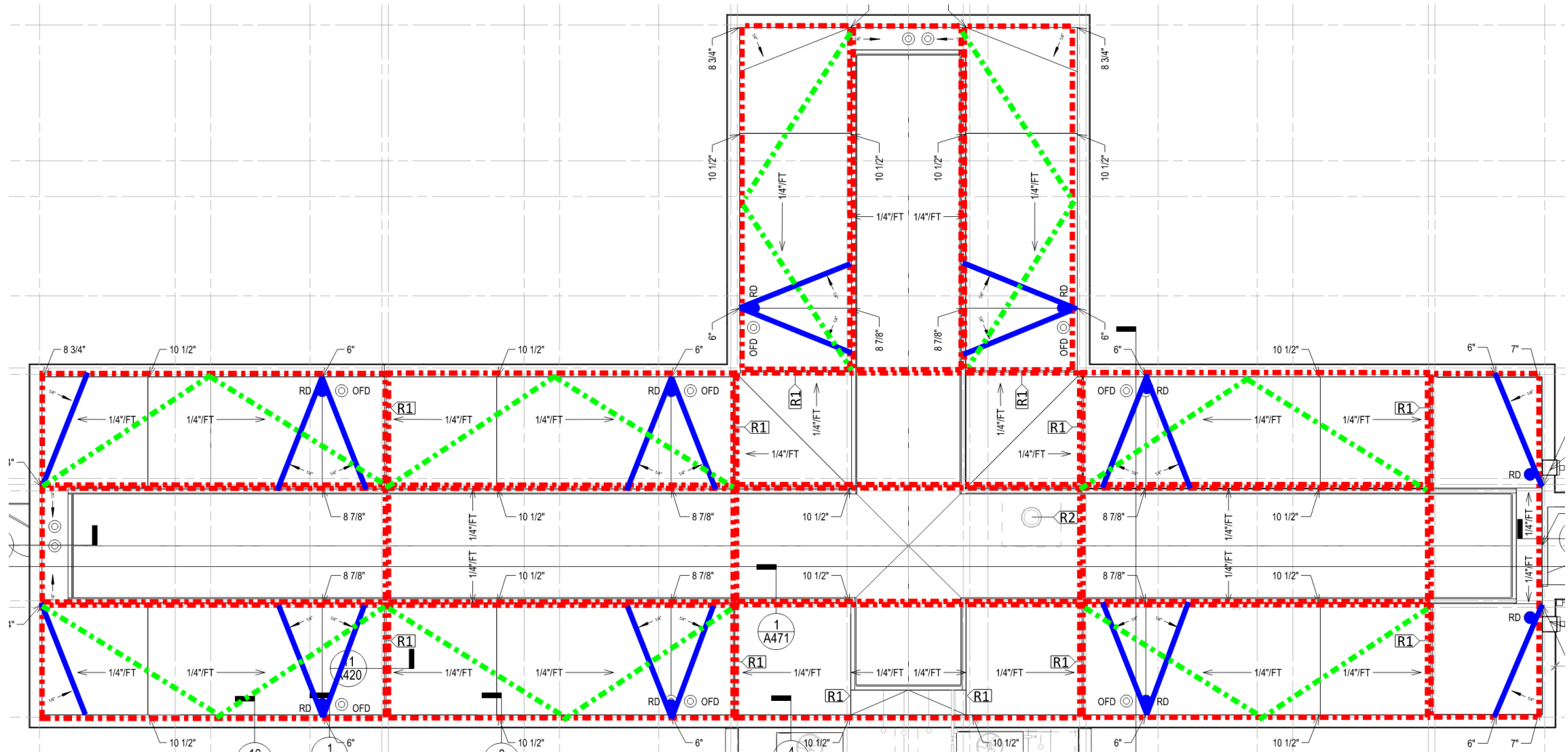
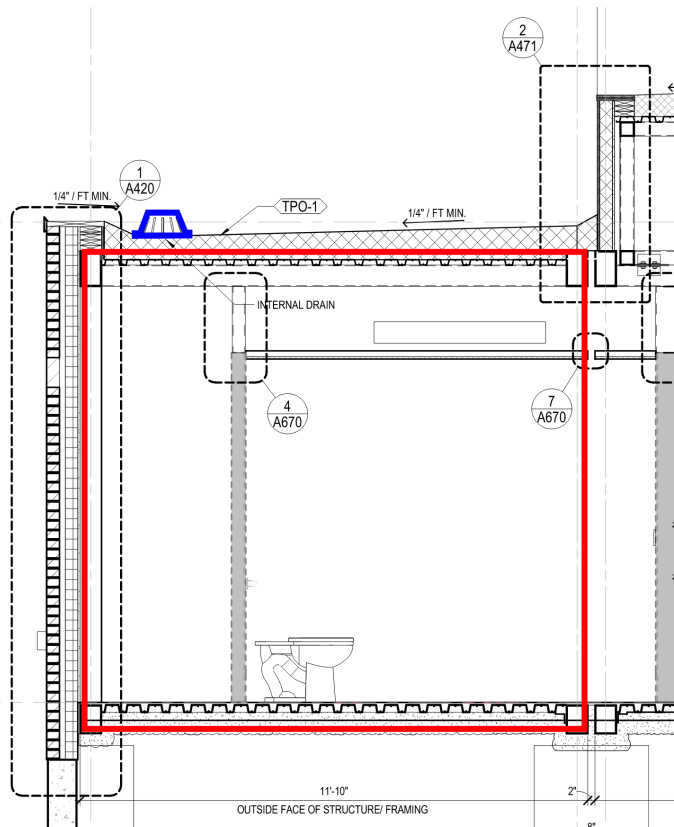


ELEVATION



SECTION

THE SOLUTION: LEVERAGING TECHNOLOGY



THE SOLUTION: LEVERAGING TECHNOLOGY



THE SOLUTION: LEVERAGING TECHNOLOGY



REAL-TIME ACCESS TO REVIT MODEL TO
TROUBLESHOOT

THE SOLUTION: FROM B TO I-2 & OFFSITE INSPECTIONS



**FULLY
INTEGRATED
TEAM**

**PROCESS FOCUSED
PLANNING**

**LEVERAGING
TECHNOLOGY**

**AGILITY &
ADAPTATION**

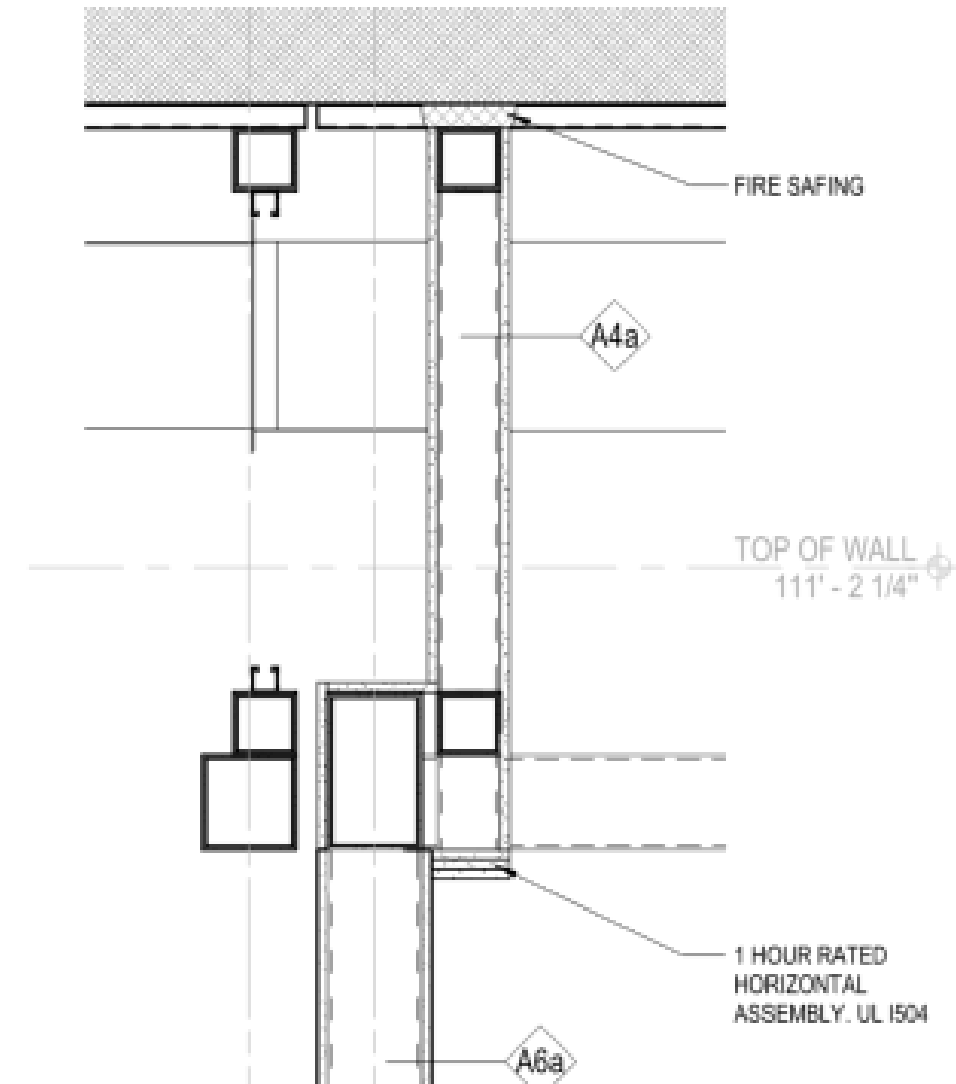
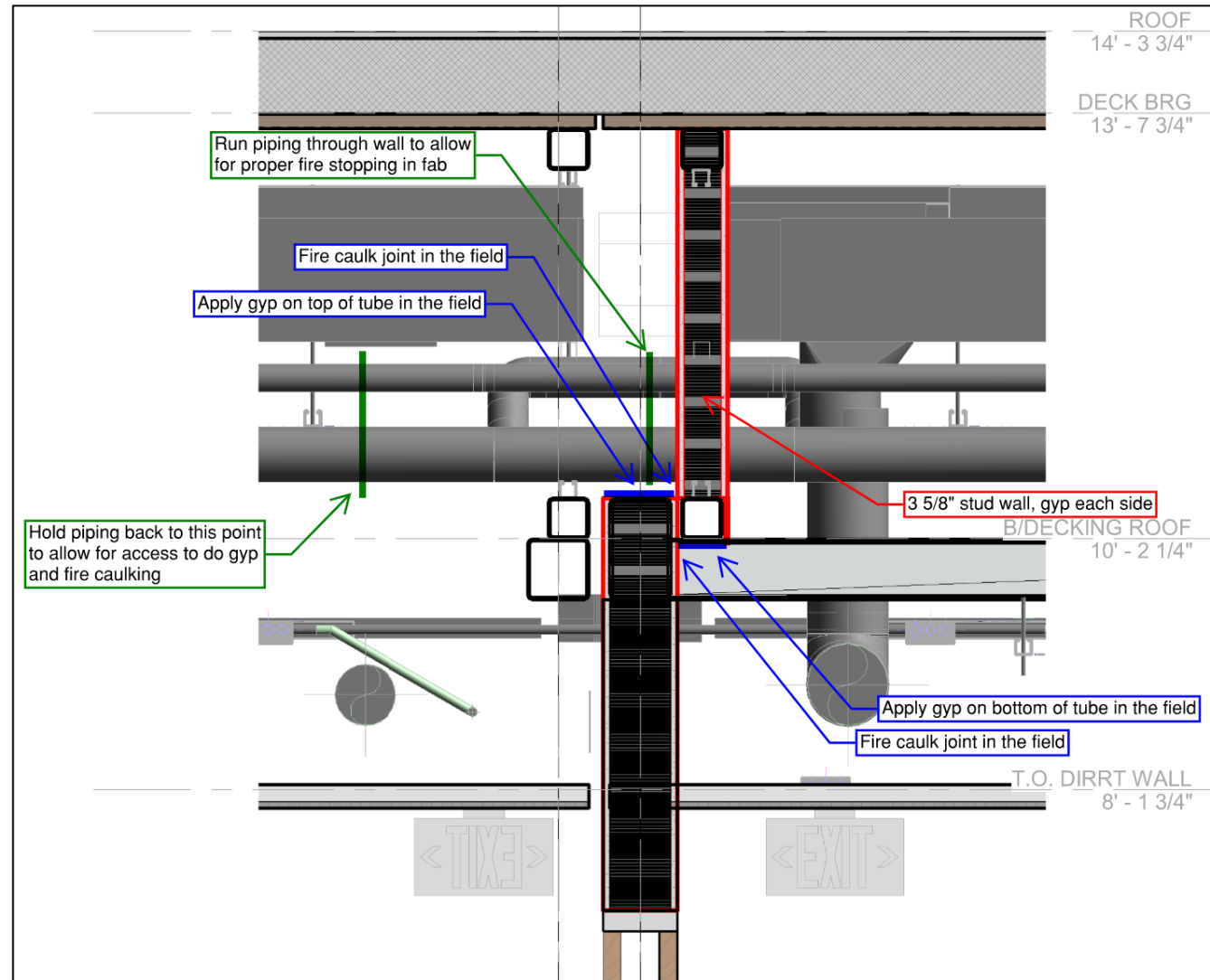


THE SOLUTION: AGILITY & ADAPTATION

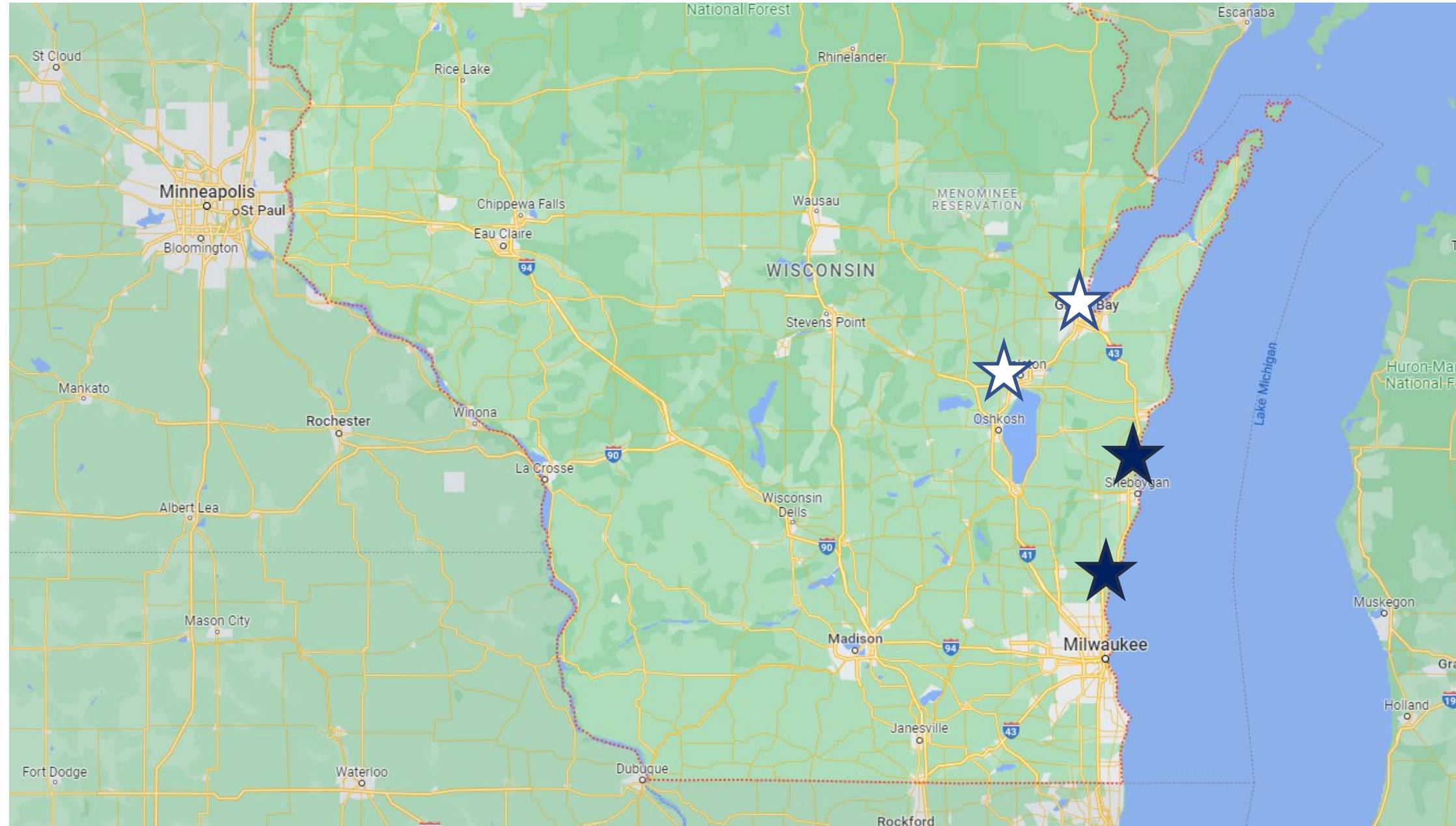
- B Occupancy (Business)
- I-2 Occupancy (Institutional)
- Permit needed to start Fabrication



THE SOLUTION: AGILITY VIA TECHNOLOGY




THE SOLUTION: AGILITY AND ADAPTATION



THE SOLUTION: ENGAGED AND FLEXIBLE

Team set up immediate discussions with DHS leadership regarding project

- Strategy
- Process
- Inspection



Site - Can only be inspected on Site
Factory - Can only be inspected in Factory
Factory/Site - Can be inspected in either Factory or Site

Rough Checklist
Page 1 of 2

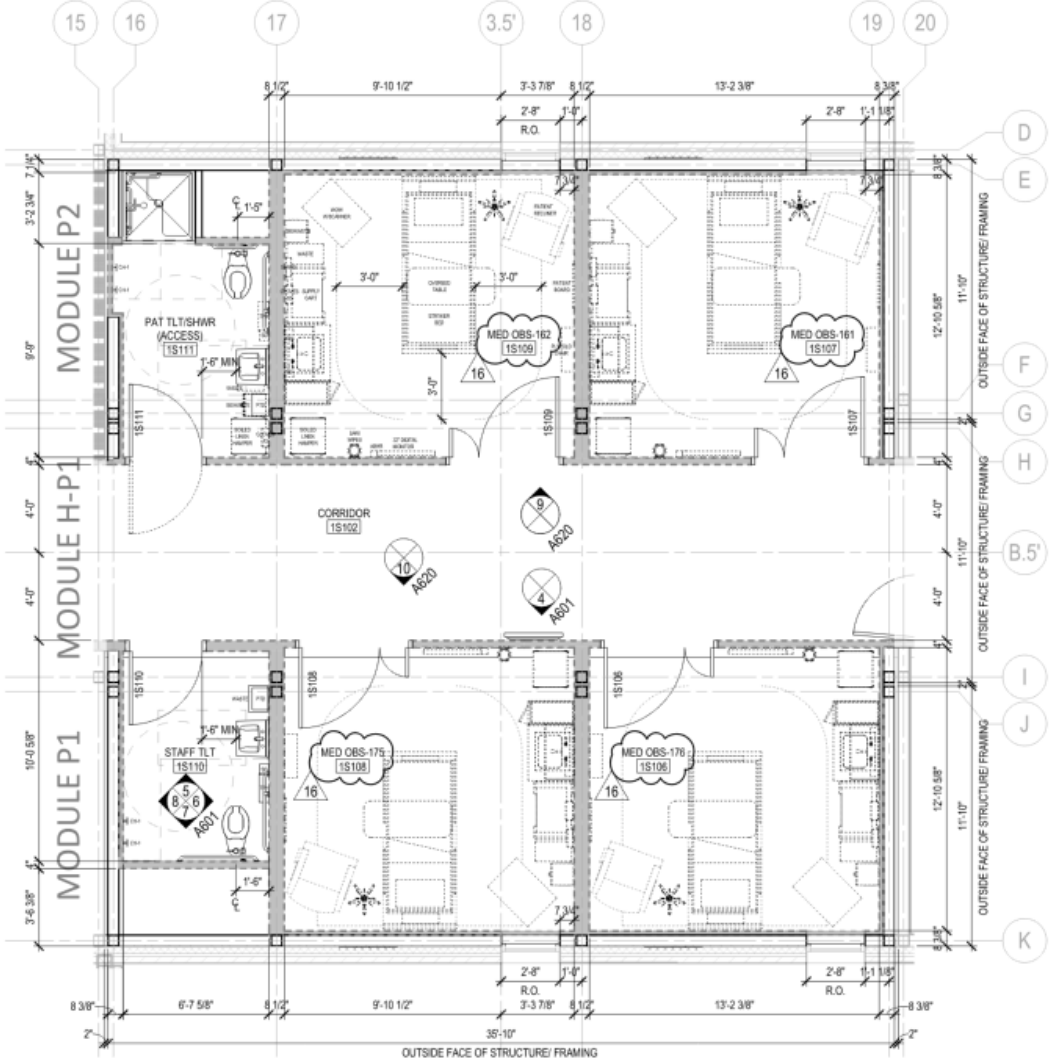
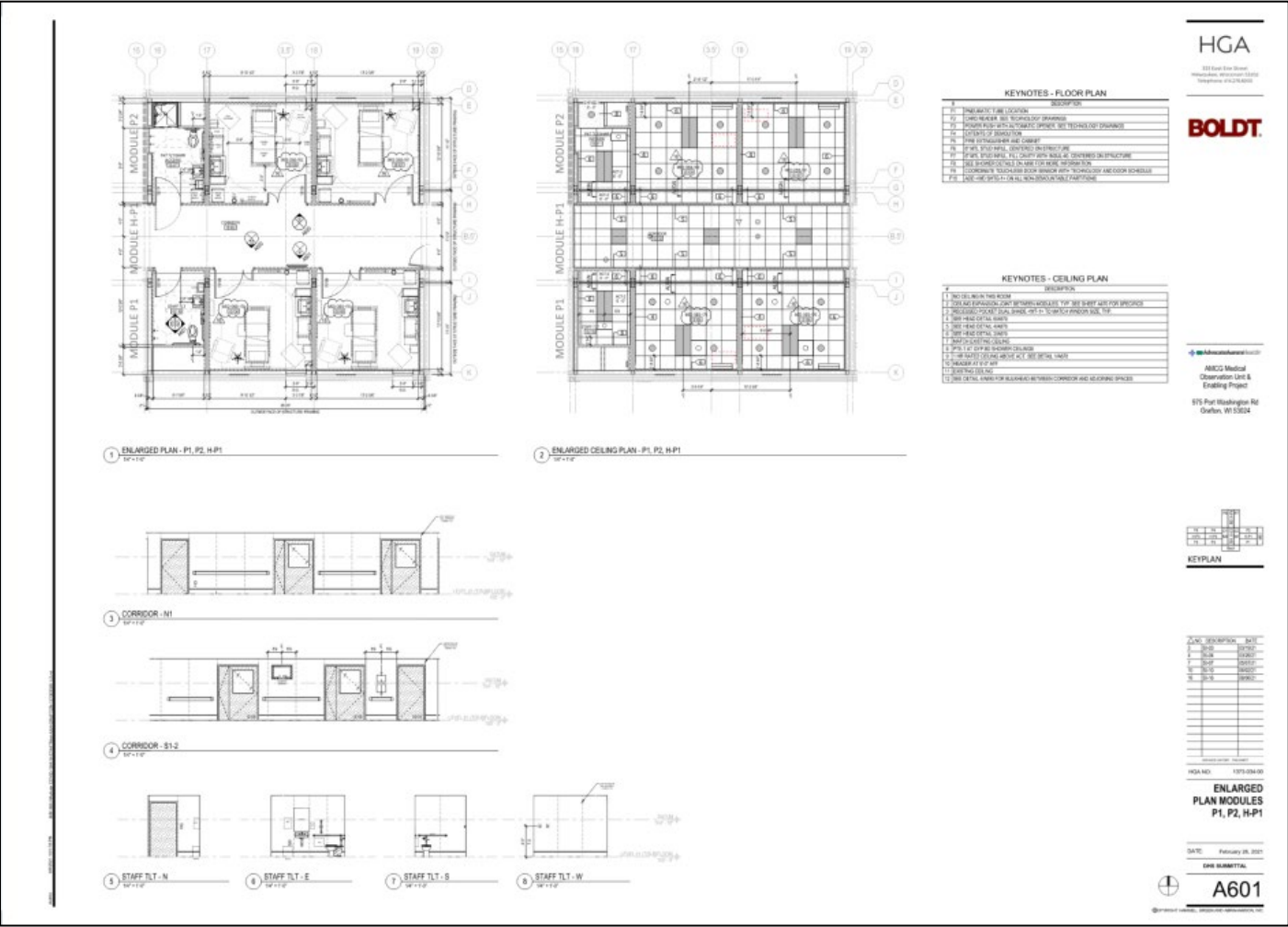
Should there be some that are Factory **and** Site?

Contact Name: _____ Transaction ID: _____
Address/Lot #: _____
Inspector: _____ Date of Inspection: _____
Weather Condition: _____ Time of Inspection: _____

A. General Factory and Site	<input type="checkbox"/> D.9 Shafts
<input type="checkbox"/> A.1 Approved plans and specifications on site	<input type="checkbox"/> D.10 Continuity of assemblies
<input type="checkbox"/> A.2 Structural Component Plans	<input type="checkbox"/> D.11 Structural Member Protection
<input type="checkbox"/> A.3 Mechanical System Approval	<input type="checkbox"/> D.12 Through Penetration Protection
<input type="checkbox"/> A.4 Fire Protection System Plans	<input type="checkbox"/> D.13 Box Protection - Membrane (e.g. metallic electrical boxes)
<input type="checkbox"/> A.5	<input type="checkbox"/> D.14 Foam plastics Protection
B. Construction Type Factory (in wall)	<input type="checkbox"/> D.15 Attic Protection
<input type="checkbox"/> B.1 Combustible or Non-combustible	<input type="checkbox"/> D.16 Projects into setbacks
<input type="checkbox"/> B.2 Blocking	<input type="checkbox"/> D.17 Masonry Rating
<input type="checkbox"/> B.3 Partitions	<input type="checkbox"/> D.18
<input type="checkbox"/> B.4 Heavy Timber Decking	E. Space Arrangement Site Only
<input type="checkbox"/> B.5 Exterior Finish materials	<input type="checkbox"/> E.1 Construction matches plans
<input type="checkbox"/> B.6 Vapor Barrier / Retarded	<input type="checkbox"/> E.2 All openings (locations & limits)
<input type="checkbox"/> B.7	<input type="checkbox"/> E.3 Headroom
C. Structural Factory (building)/ Site (Site Connections)	<input type="checkbox"/> E.4 Mezzanines
<input type="checkbox"/> C.1 Columns	<input type="checkbox"/> E.5 Correct number of stories
<input type="checkbox"/> C.2 Beams / Girders	<input type="checkbox"/> E.6 Attic access
<input type="checkbox"/> C.3 Bearing Points	<input type="checkbox"/> E.7 Roof access
<input type="checkbox"/> C.4 Joists and spans	<input type="checkbox"/> E.8 Occupancy separation construction
<input type="checkbox"/> C.5 Anchor bolts - Torque / Tight	<input type="checkbox"/> E.9 Hazard Isolation
<input type="checkbox"/> C.6 Joist Hangers to wood	<input type="checkbox"/> E.10
<input type="checkbox"/> C.7 Lateral support	F. Egress Site Only
<input type="checkbox"/> C.8 Bracing and Blocking	<input type="checkbox"/> F.1 Exit distribution
<input type="checkbox"/> C.9 Framing of openings	<input type="checkbox"/> F.2 Corridor width
<input type="checkbox"/> C.10 Sheathing	<input type="checkbox"/> F.3 Door Placement
<input type="checkbox"/> C.11 Trusses	<input type="checkbox"/> F.4 Exit signage
<input type="checkbox"/> C.12	<input type="checkbox"/> F.5 Exit door swings on plans
	<input type="checkbox"/> F.6 Grade Level Doorway Thresholds



THE SOLUTION: ALIGNING EXPECTATIONS



TAKEAWAYS



HOW CAN YOU APPLY THIS TOMORROW?



FULLY
INTEGRATED
TEAM



PROCESS FOCUSED
PLANNING



LEVERAGING
TECHNOLOGY



AGILITY &
ADAPTATION

ENGAGED
STAKEHOLDERS

SLOW DOWN
TO GO FAST

SINGLE SOURCE
OF TRUTH

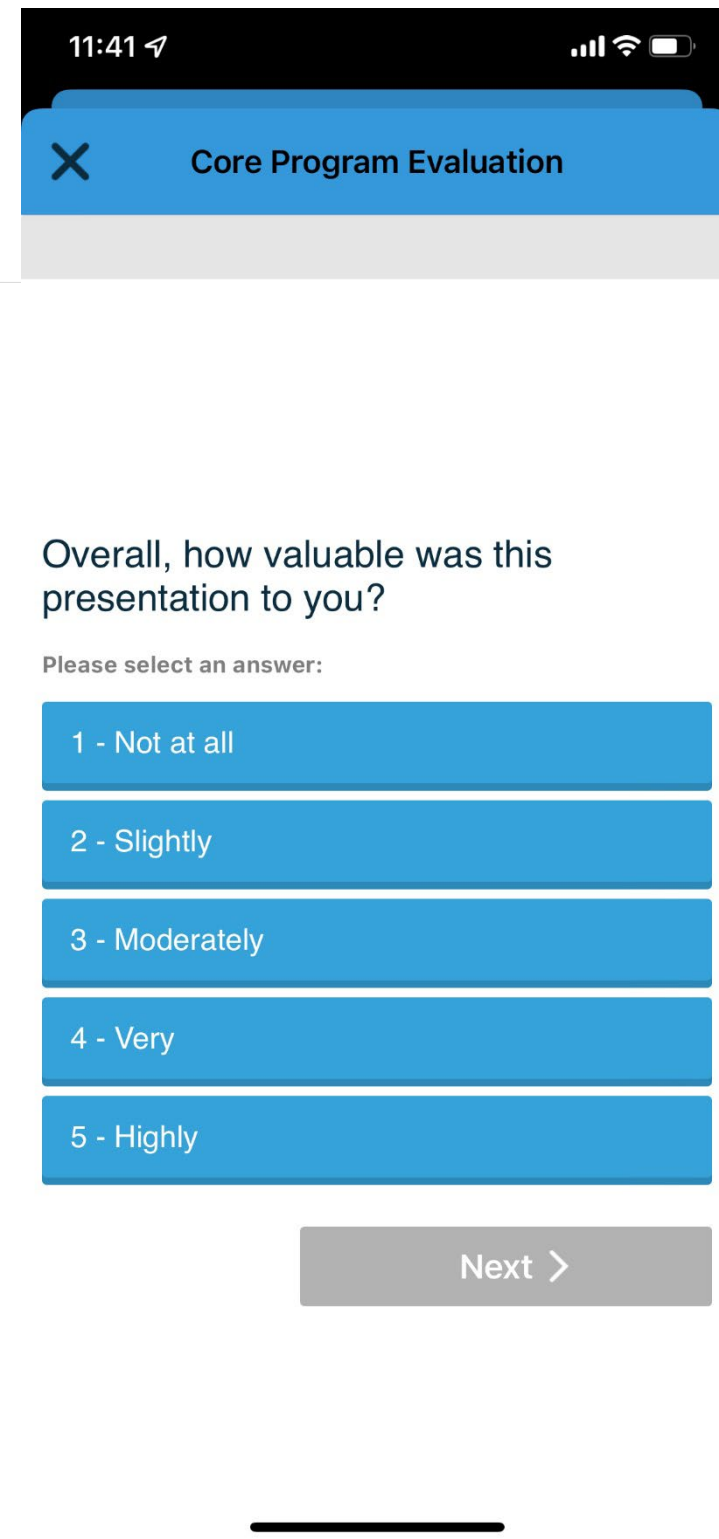
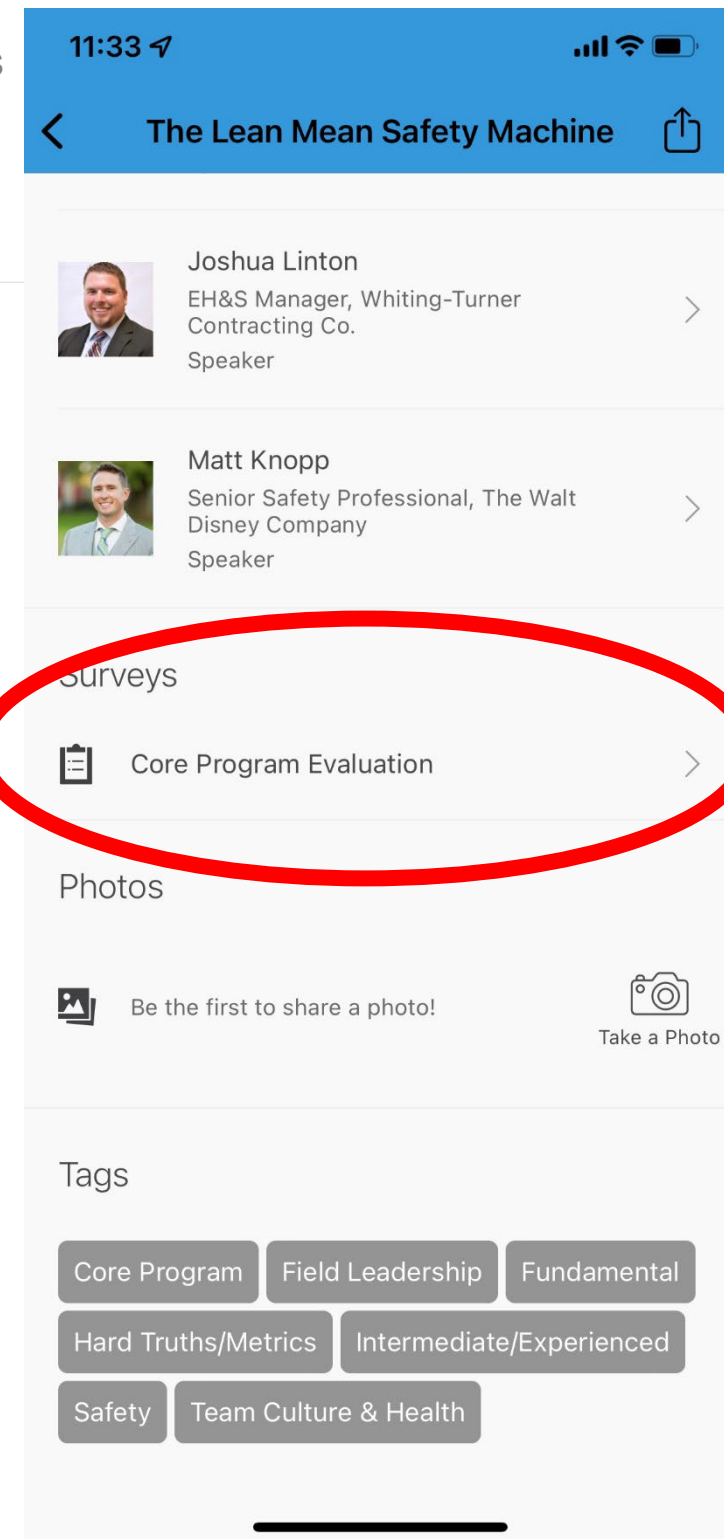
FROM B TO I-2

Rate Presentations in the App

Continuous improvement: give presenters your feedback by taking the session evaluation!

1. Find the session under “schedule”
2. Click on it then scroll down
3. Click “core program evaluation”
4. Complete the 5-question evaluation

This information will determine the top 5 presentation teams and the top Live Lab





24TH LCI CONGRESS
OCTOBER 18-21



In the spirit of continuous improvement, we would like to remind you to complete this session's survey! We look forward to receiving your feedback.



CONTACT US

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Thank you for attending this presentation. Enjoy the rest of the 24th Annual LCI Congress!



THANK YOU

