

# Embarking a GC Digital Transformation Journey

**Jack Abate**  
Vice President Construction Operations

**Ariel Castillo**  
Strategic Process and VDC Specialist

# Ariel Castillo

Strategic Process and VDC Specialist



## Jack Abate

Vice-President – Construction Operations



# BACKSTAGE

**Ariel:** Jack, we are not doing anything technical. We are going to share our story. No one knows our story better than us. Regardless of doing it right or wrong it is our story. So, you should be fine.

**Jack:** That doesn't change the size of the room.







Kalamazoo, MI



Full-service  
Construction Company



+10,000 Projects  
Since 1909



+1,000 Clients



3 AGC  
Build America  
National Awards



28% Employees  
are Women\*

\*Construction industry average is 9.1%



# CUL•TU•RE

the beliefs, customs, arts, etc., of a particular society, group,  
place, or time.

# DIGITIZATION INDEX PER INDUSTRY



McKinsey Global Institute industry digitization index; 2015 or latest available data

Relatively low digitization  Relatively high digitization

● Digital leaders within relatively undigitized sectors

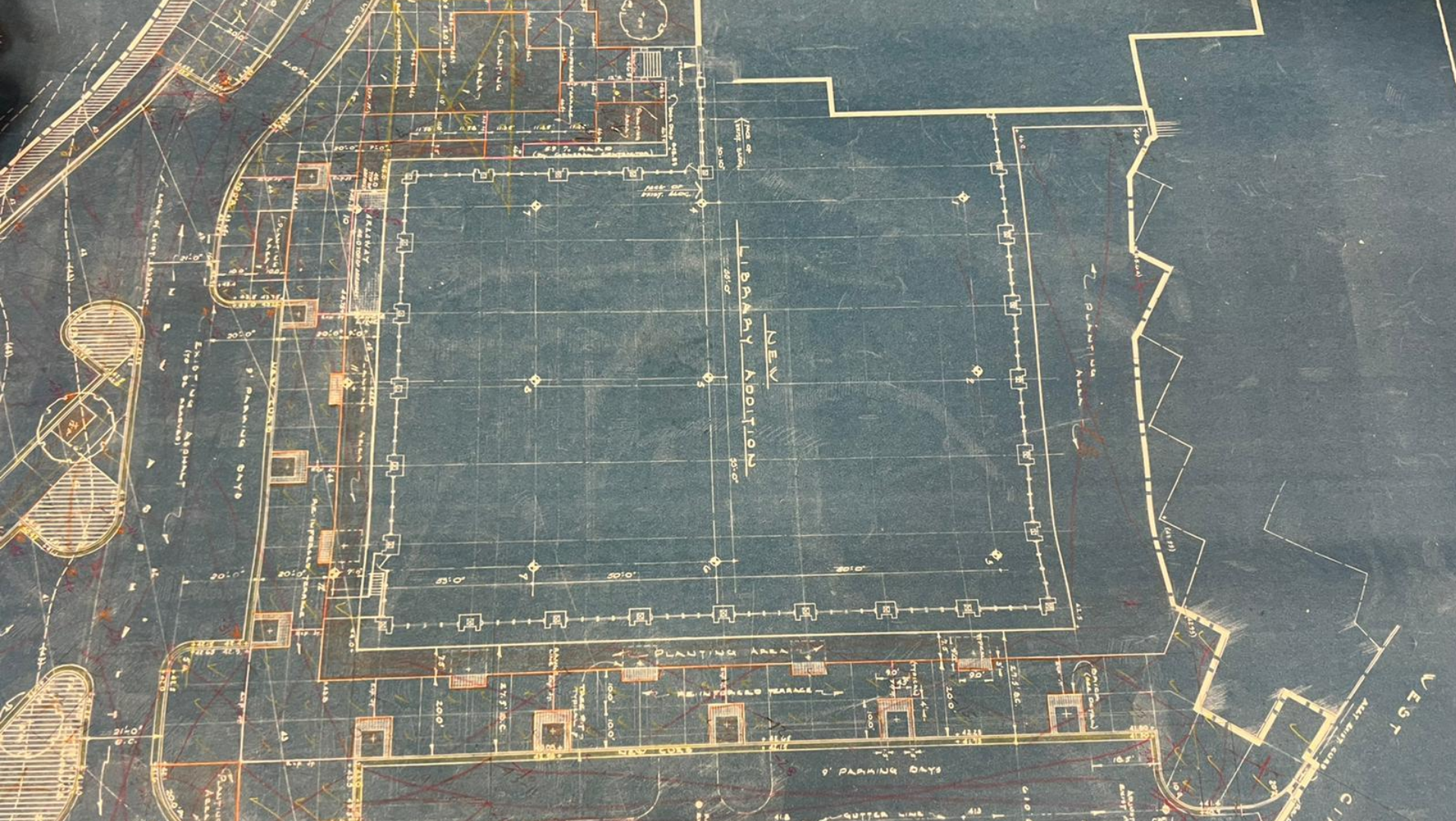
**Sector**

Construction

















**WHAT ARE**

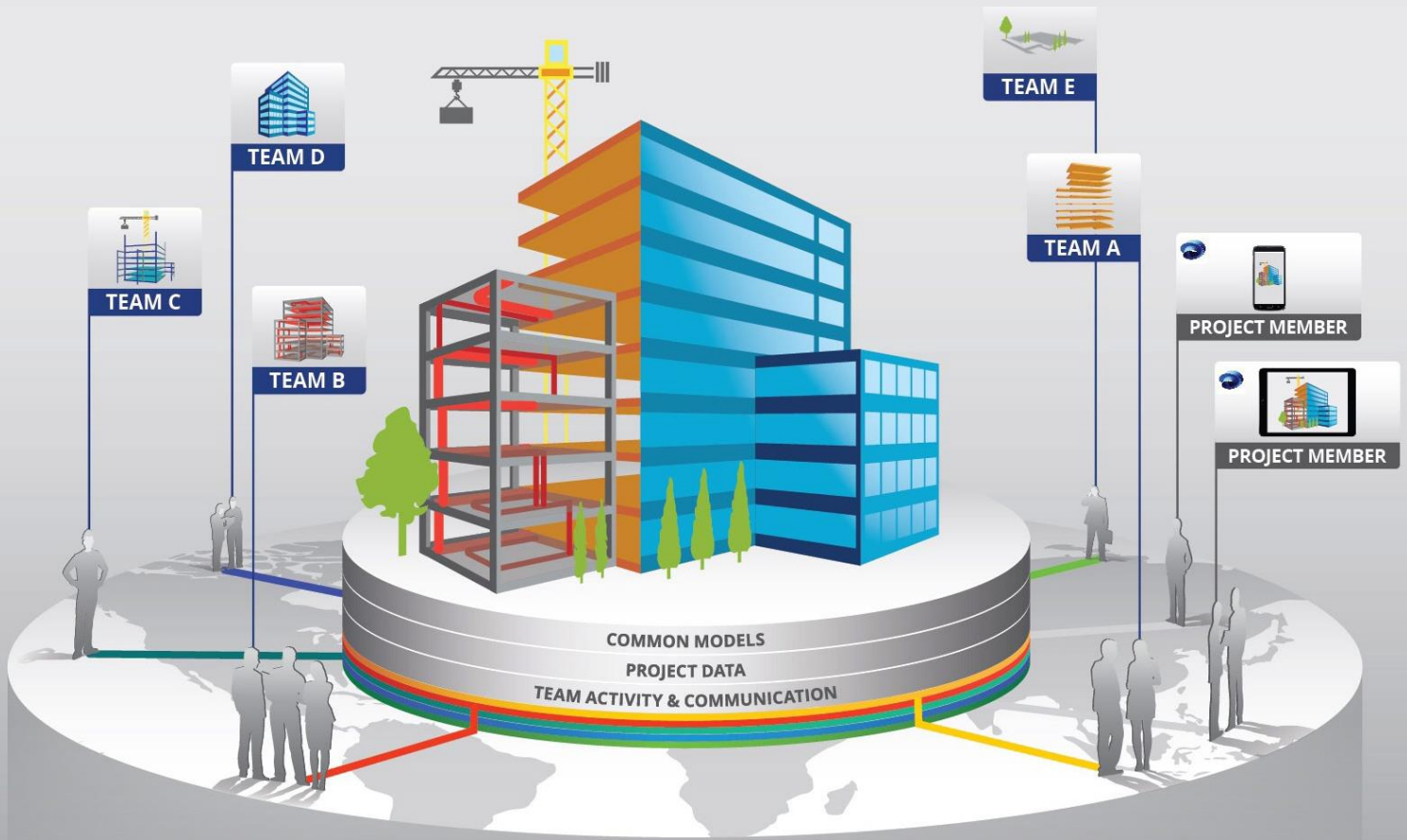
**THOSE?**

memeshappen.com









# CONSTRUCTION TECH MARKET MAP

## COLLABORATION SOFTWARE

### PROJECT & TASK MANAGEMENT



### OTHER COLLABORATION TOOLS



## MARKETPLACES

### EQUIPMENT SHARE



### OTHER MARKETPLACES



## INVENTORY & SUPPLY

### CHAIN MANAGEMENT



## DESIGN TECHNOLOGIES



## RISK MANAGEMENT

### MONITORING & SAFETY



## FRONTIER TECH & ROBOTICS

### DRONES



### AR / VR



### CONSTRUCTION ROBOTS



## DATA & ANALYTICS



## FINANCIAL MANAGEMENT



### SECURITY & COMPLIANCE





BIM MANAGERS

APPLICATION DEVELOPERS

3D PRINTING TECHNICIAN

DRONE OPERATORS

LEED CONSULTANTS

CLOUD ARCHITECT

DATA SCIENTIST

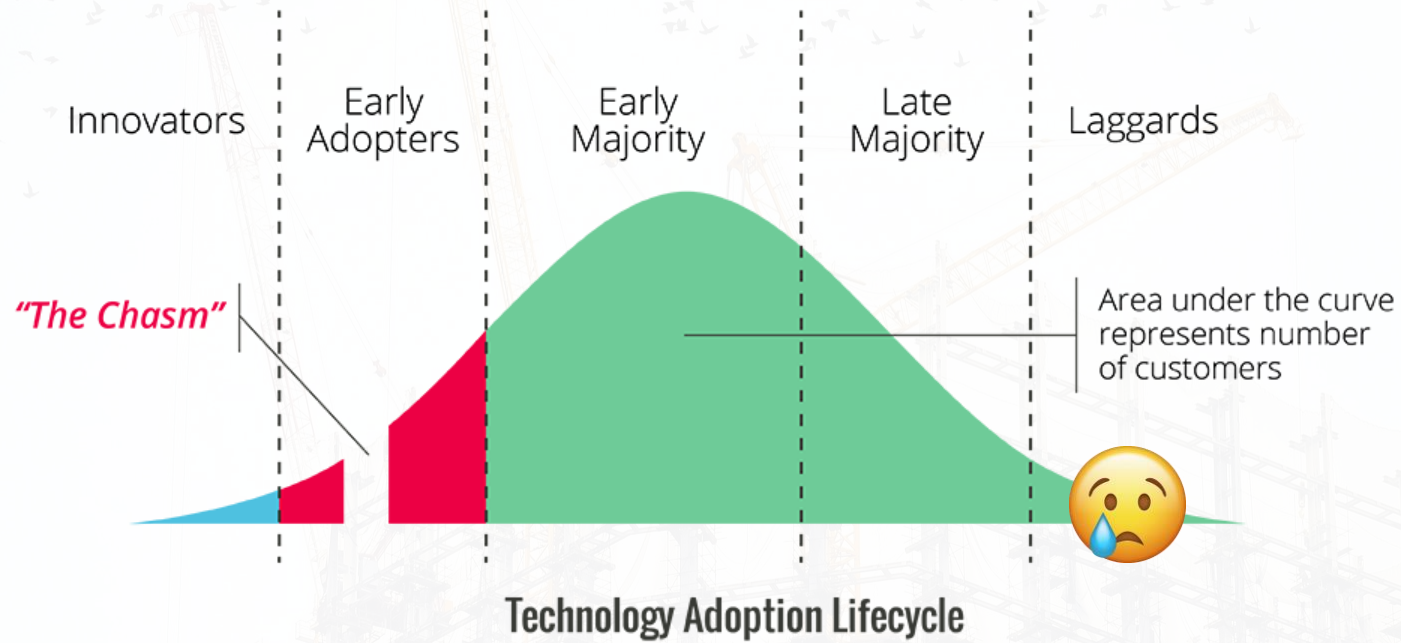
GENERATIVE DESIGNERS

ARCHITECTURAL PROTOTYPER

PARAMETRIC DESIGNER

ENVIRONMENTAL COORDINATOR







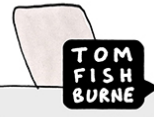
ARE WE ALL ALIGNED  
THAT OUR TOP PRIORITY IS  
DIGITAL TRANSFORMATION?

OF COURSE ABSOLUTELY 100%



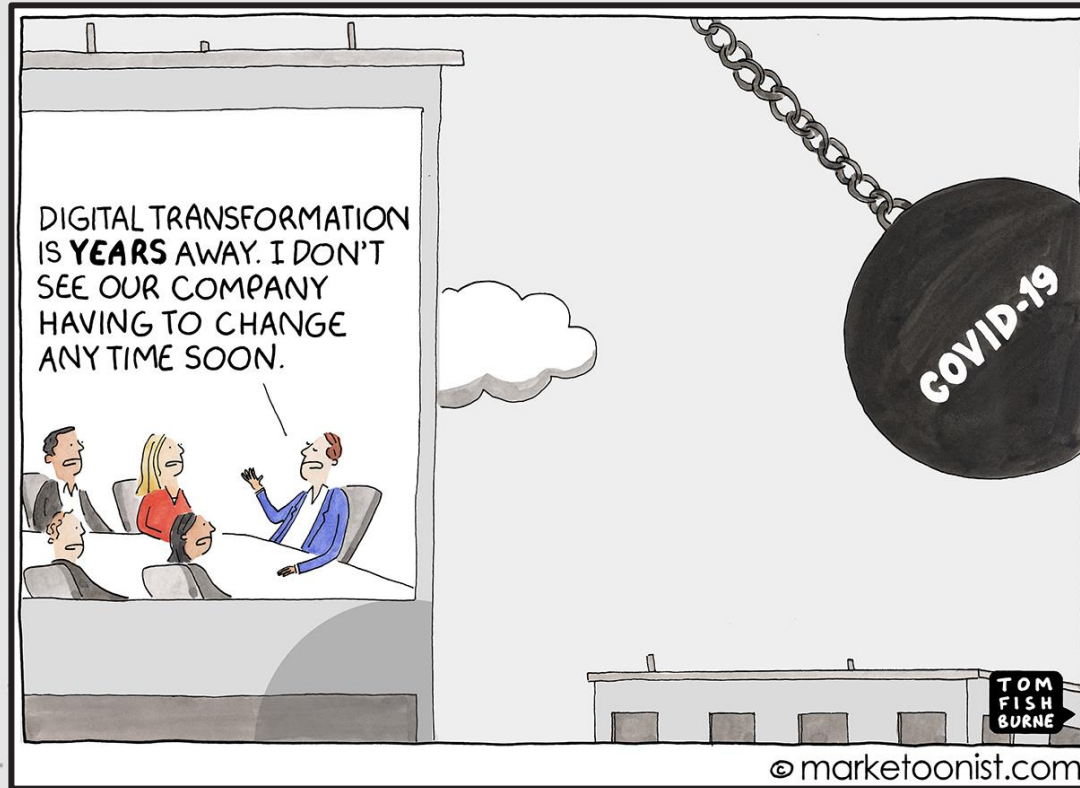
SO WHAT EXACTLY  
DO WE MEAN BY  
DIGITAL TRANSFORMATION?

SORRY, I'M LATE  
FOR ANOTHER  
MEETING.



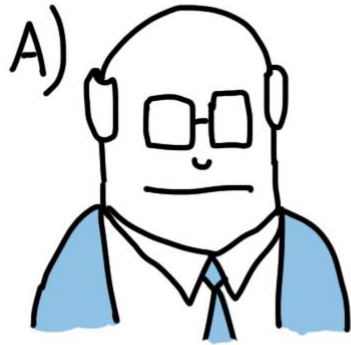
TOM  
FISH  
BURNE

© marketoonist.com

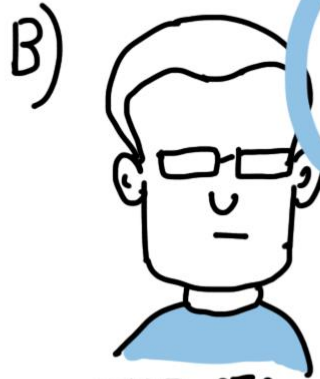


© marketoonist.com

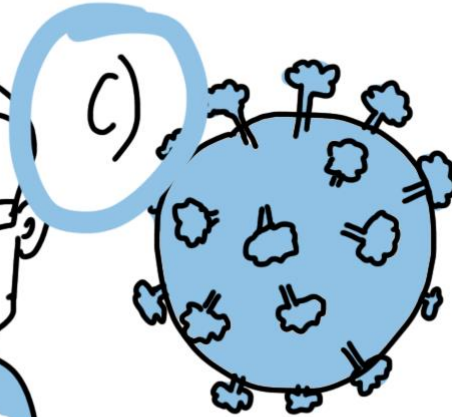
WHO LED THE DIGITAL TRANSFORMATION  
OF YOUR COMPANY ?



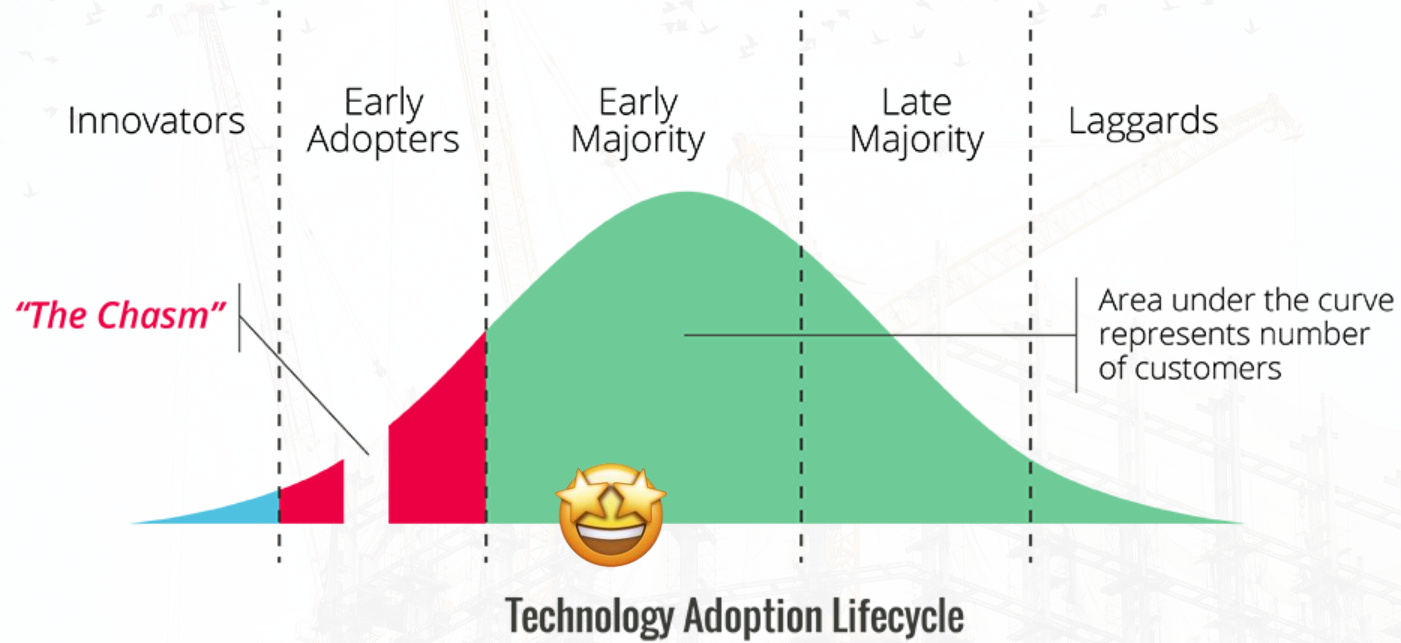
THE CEO



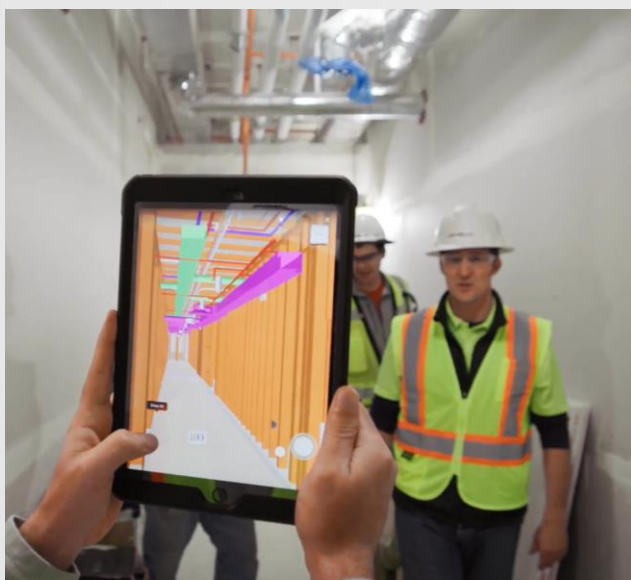
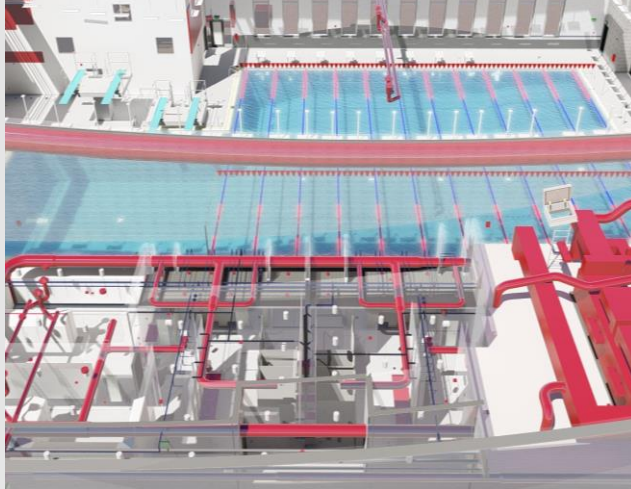
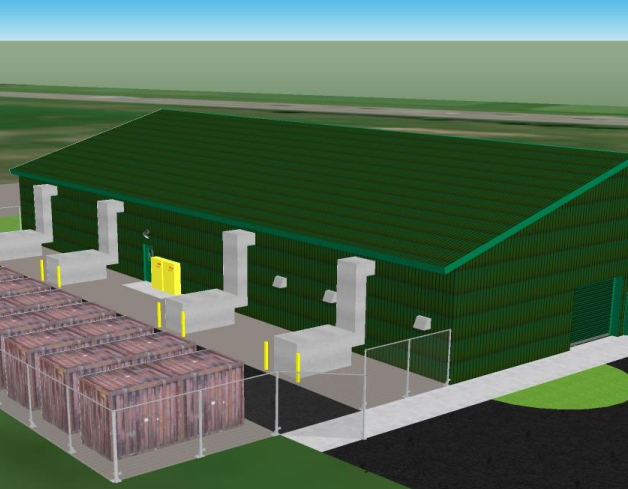
THE CTO



COVID-19







Microsoft Dynamics 365 Project and Operations interface showing a Quality dashboard.

**Quality**

**Quality Issues Status**

0 Issues

**Project Issues**

ID	Title	Type	Due Date
101	A/S Field Report 023 - windows at bricked locations	Observation	
102	A/S Field Report 023 - win tower location	Design	
103	Final HVAC after finishes	Observation	
104	R12 36x - gang bathroom smoke code violation	Design	
105	SR Field report - additional bridging catwalks	Observation	

5 of 20 Issues | View all (20)

**Issue Root Cause**

7 of 36

Root Cause	Count
Underfunded	30
Incomplete Work	25
Insufficient	20
Coordination	10
Design Change	8
Design Coordination	7
Planning	6

View all (36)

**Executive Overview**

- Data Connector
- Reports

“

Culture eats strategy for breakfast!

”

Peter Drucker

# PAIN POINTS



Mosquito Bite



Shark Bite



# STEPS TO A DIGITAL TRANSFORMATION ROADMAP

**Step 1:** Goals to be achieved in the next 3-5 years.

**Step 2A: Challenges** – A clear list of challenges aligned with our strategic vision/plan.

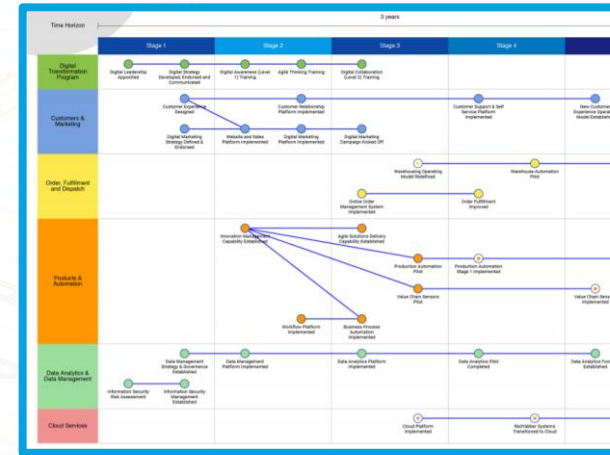
**Step 2B: Objectives** – What we must achieve in order to transform. For each challenge we must have at least one objective.

**Step 3:** Capabilities by department (or focus area).

**Step 4:** Actions – How to get from A to B?

**Step 5:** Initiatives – Group in logical “packages”.

**Step 6:** Roadmap – Create a sequence across the timeline.





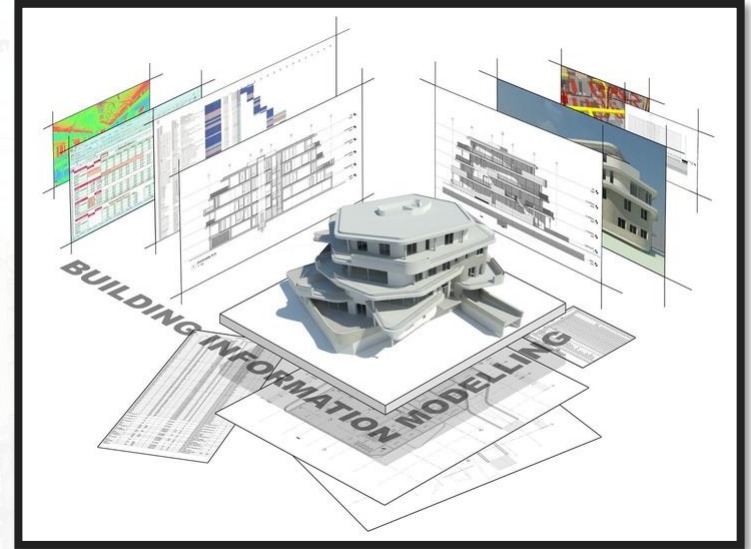


When your colleagues talk about 3D modeling  
and you only know about AutoCAD

# PRESENT AND FUTURE



Industry Standard



An Integrated Environment

# DIGITAL TRANSFORMATION

## STEPS TO MINIMIZE IMPACT

1

Trusting Leadership

2

Activate your industry

3

Practical implementation

4

Common goal



# KEY FACTORS



Tangible



Commercially viable



Applicable



Added value



Scalable

# 01

## PRECONSTRUCTION



# CHALLENGES

## PRECONSTRUCTION

The main obstacles during the CM bid process:



**EVER-CHANGING  
DIRECTORY**



**CONTRACTOR  
PARTICIPATION  
DATA**



**LIMITATIONS ON  
DIGITAL BIDS**







**WHY NOW?**



# THE IDEAL CANDIDATE



## SMART TOOL

Software that works for us.  
Minimizing manual input  
and capable of providing  
useful insights to our staff.



## IMPROVED DIRECTORY

A way to keep our database  
updated and aware of new  
companies in the area.



## EASIER BIDS

Let's make it easy on the  
subs. Can we eliminate  
difficulties accessing  
documents, travel time,...?



## LEGAL EBIDS

Can we legally replace in-  
person bid openings?  
Also, how can we share  
results faster?



## ASSIST PMs

How can precon make the  
transition to PMs easier?  
Can post-bid interviews run  
smoother?



## INTEGRATIONS

The platform must be able  
to communicate with 3<sup>rd</sup>  
party software.



# REVIEW OF PAST EVENTS

First demo  
with BC

**FEB 18**

**MAR 19  
APR 07**

BC and Procore  
demos, respectively.  
(w/Steve)

BC technical  
follow-up

**APR 17**

**APR 30**

BC trial started

Test bid  
due date

**MAY 14**

**MAY 15**

Electronic bid  
process review























Companies selling tech...

But once they get the job...



# SOFTWARE FEATURES

		Bid Solicitation	Sealed Bids	Bid Leveling	Crowd-Sourced Directory	Integrations
	Platform A					
	BuildingConnected					
	Platform C					

# OUR RECOMMENDATION

[Products](#)[Network](#)[General Contractors](#)[Subcontractors](#)[Owners](#)[Resources](#)[Login](#)

## BuildingConnected Pro

The #1 all-in-one bid management solution for construction professionals

[Get a demo](#)





PROJECT:  
2017-43 CABOT COVE  
GALLERIA REBUILD  
WITH GARAGE



Back to Projects

Add a Bid Package

Jump to...

BID PACKAGES

02 41 00: Demolition

03 30 00: Structural Steel

08 10 00: Concrete

08 40 00: Entrances, St...

09 20 00: Plaster and...

09 60 00: Flooring

11 31 00: Residential Ap...

12 30 00: Casework

12 36 00: Countertops

14 20 00: Elevators

21 00 00: Fire Supression

22 00 00: Plumbing

23 00 00: HVAC

26 00 00: Electrical

31 00 00: Earthwork

31 40 00: Shoring & Un...

## 02900: Landscape

OVERVIEW

BIDDERS

BID FORM

FILES

MESSAGES

PROPOSALS

Plugs OFF

Export to Excel

Submitted Total

BREAKOUTS

Irrigation

\$13,538

\$40,230

\$83,210

Plantings

\$101,336

\$69,600

\$15,750

Mulch

150 cubic yards @ \$33

\$4,950

\$6,880

\$12,372

Soil Prep & Fine Grade

\$10,240

\$109,110

\$14,072

Site Furnishings

\$8,450

\$32,090

\$192,064

Misc / Other

\$192,064

\$247,856

\$359,729

SUBTOTAL

\$192,064

\$247,856

\$359,729

ALTERNATES

Playground

\$41,200

\$47,220

\$52,430

Bioswale

\$12,350

\$1

\$1,480

Flagstone pavers

\$1,120

\$1,120

\$1,120

EXCLUSIONS

Supervision

Excluded

Excluded

Excluded

Additional Information



CMP Landscape

Chelsea Hodge  
Revision 1, 01/11/2018 at 3:59 PM PST



\$ APPARENT LOW



Frank and Sons

Chelsea Hodge  
01/11/2018 at 4:02 PM PST



Star Landscapers

Chelsea Hodge  
01/11/2018 at 4:05 PM PST



We have some alternate requests on alternates and a few of the line items. Heidi will reach out and will revise as appropriate.



# TESTING AND FEEDBACK

Building Connected database management and search functions are an improvement from our current solution. When creating a bidders list, I particularly like the Bid Category template function so its easy to start a base invite list with our preferred contractors and contacts. I think the eBid capabilities is something that we need.

— BRIAN MOON



eBids

Intuitive

Secure

No Driving

Collaboration

Crowd-Source

Legal Endorsment





# PERFECT SOLUTION?

Should we abandon a platform we have used for 2 years?

What if a new shiny software comes out next year?

Why change our process if it works?



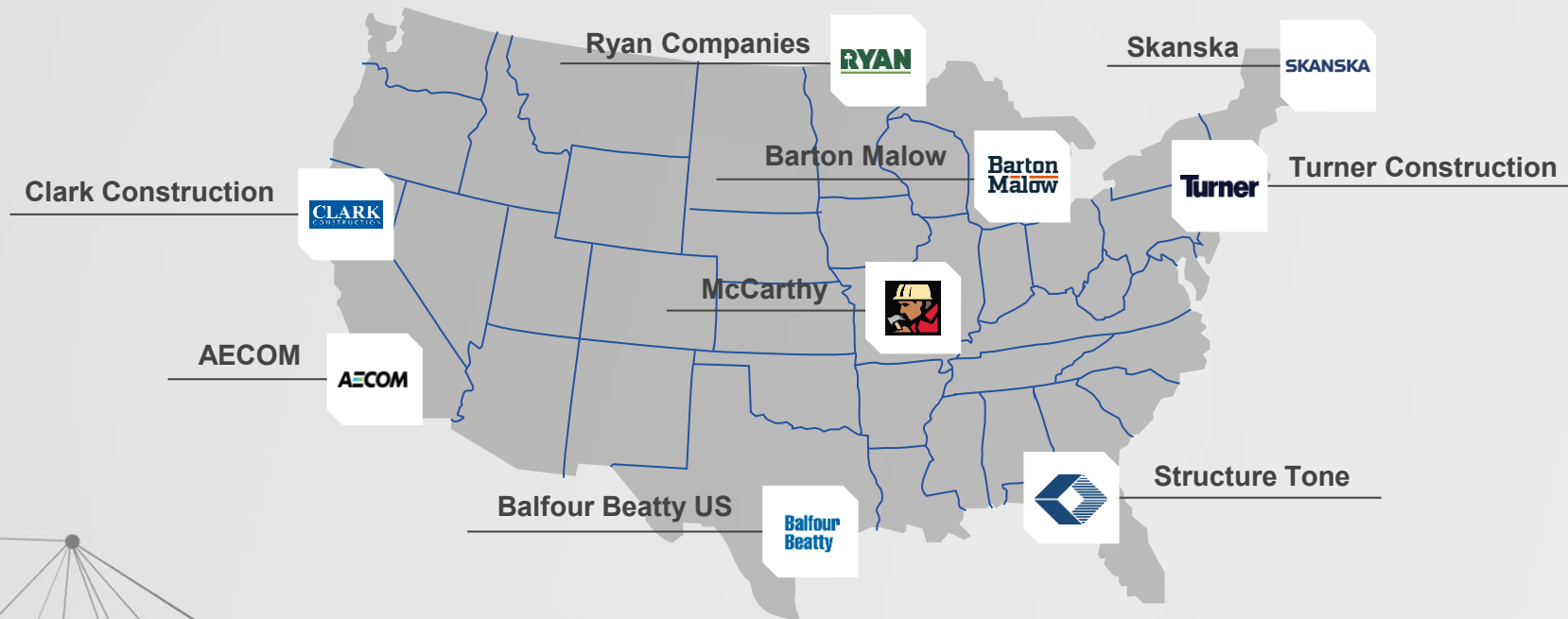




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# IT'S A PROVEN PLATFORM

13 of the Top 20 in the ENR use BuildingConnected



Source: <https://bit.ly/2X4og8X>



# ADDITIONAL BENEFITS



Better Directory



Cloud-Ready



Minimized  
Undelivered Invites



One-Person Show



Preferred Subs



Identifying Subs



Analytics



No Driving Time





# NEXT STEPS

1

We will receive an order form through DocuSign that outlines the agreement terms and costs.

2

Onboarding instructions and subscription setup.

3

Import database (optional).

4

Webinar and educational sessions.

5

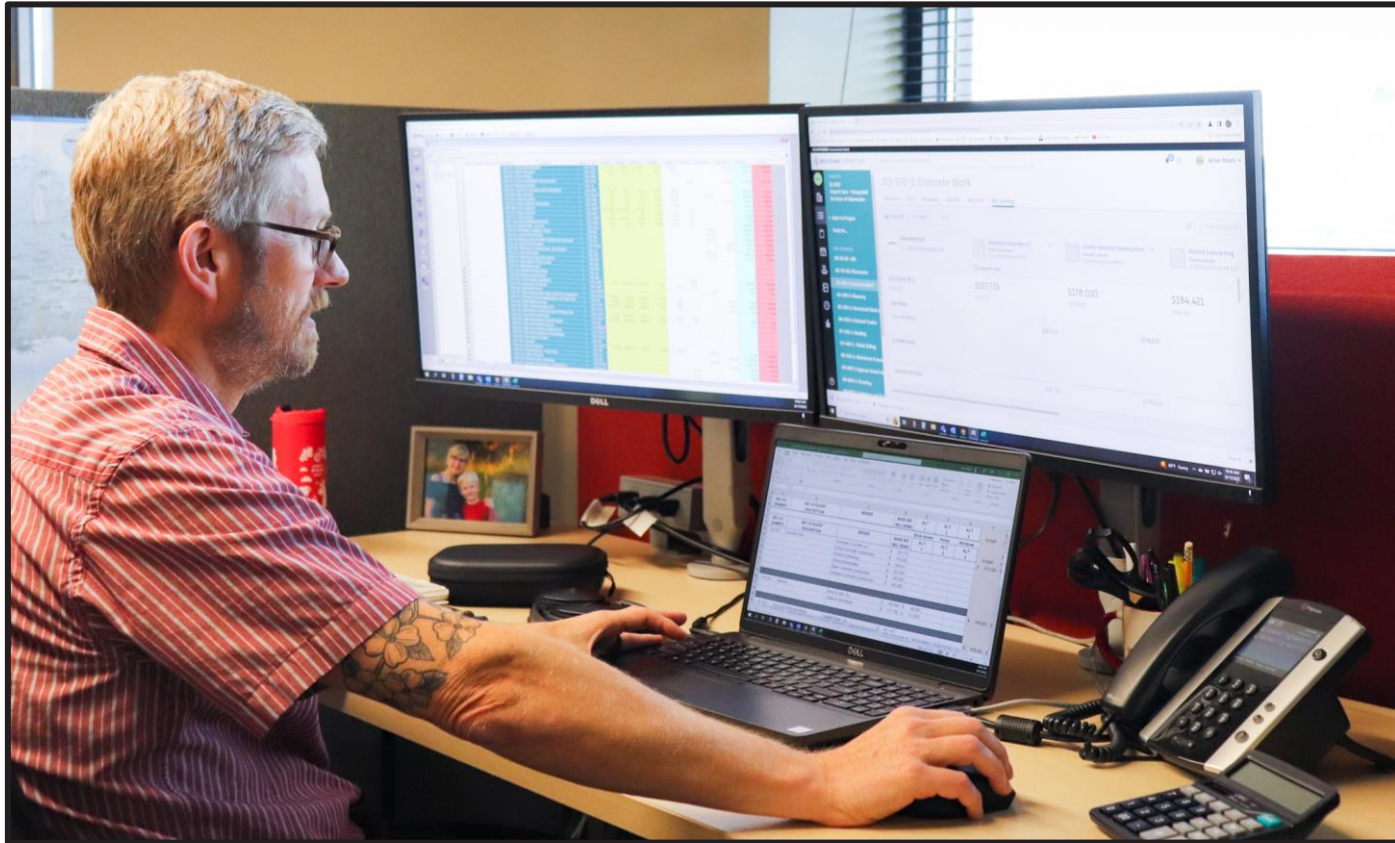
First project setup, ITB distribution and support.

6

Quarterly review process and adjustments as necessary.



# Digital Bid Openings



# Stats & Fun Facts

Where are we after our 2 years using BuildingConnected?



The infographic consists of four vertical columns, each representing a different metric. Each column has a light gray circle at the top containing a number with a plus sign. Below each circle is a bold title and a descriptive sentence. The columns are separated by thin red vertical lines, each with a small blue dot at the top and bottom. The metrics are: 1. +100 Projects: Benefiting from a fully digital process. 2. +4,000 Vendors: Invited to participate in our bids. 3. +30 Users: Estimators, Project Managers, Interns, etc. 4. +1,400 Digital Bids: On 2.5 years of implementation.

**+100**

## **PROJECTS**

Benefiting from  
a fully digital  
process

**+4,000**

## **VENDORS**

Invited to participate  
in  
our bids

**+30**

## **USERS**

Estimators, Project  
Managers, Interns,...

**+1,400**

## **DIGITAL BIDS**

On 2.5 years of  
implementation



# 02

## PROJECT MANAGEMENT



HOW IS THIS ANY  
DIFFERENT?

IN 2020, WE IMPLEMENTED



BOTH WERE **MARKET DRIVEN** AND **COMPANYWIDE**.

IN CONTRAST, THE FOLLOWING PRESENTATION IS  
DRIVEN BY **INTERNAL NEEDS** AND AIMS FOR A LEAN  
APPROACH THROUGH A **PILOT PROJECT**.



## HOW DID WE GET HERE?



## LIMITATIONS



### FRAGMENTED ENVIRONMENT

We have many tools that don't communicate forcing our team to spend time doing clerical work.



### TIME CONSUMING

Our staff consumes a lot of their time organizing information.



### DUMB DATA

We collect a lot data throughout the project that we aren't using.



### REDUNDANT

Many tasks and reports are done multiple times just to keep logs and files up to date.





## WHAT'S ON THE MARKET?



# TIMELINE

## Tech Discussion

PMs met to discuss potential tech use on TCAPS, main focus was BC.

Oct 14, 20

Discussed w/ Jack

• Same day PM

Oct 15, 20

## Platforms Review

We started reviewing several platforms and market share.

Procure Pricing

## Autodesk News

Information gets out that Autodesk will be launching a unified construction platform.

Nov 01, 21

• Oct 30, 20

Nov 17, 20

## AU2020

Autodesk presents the Build platform.

Barton Malow presents Scaling Construction in an Enterprise.

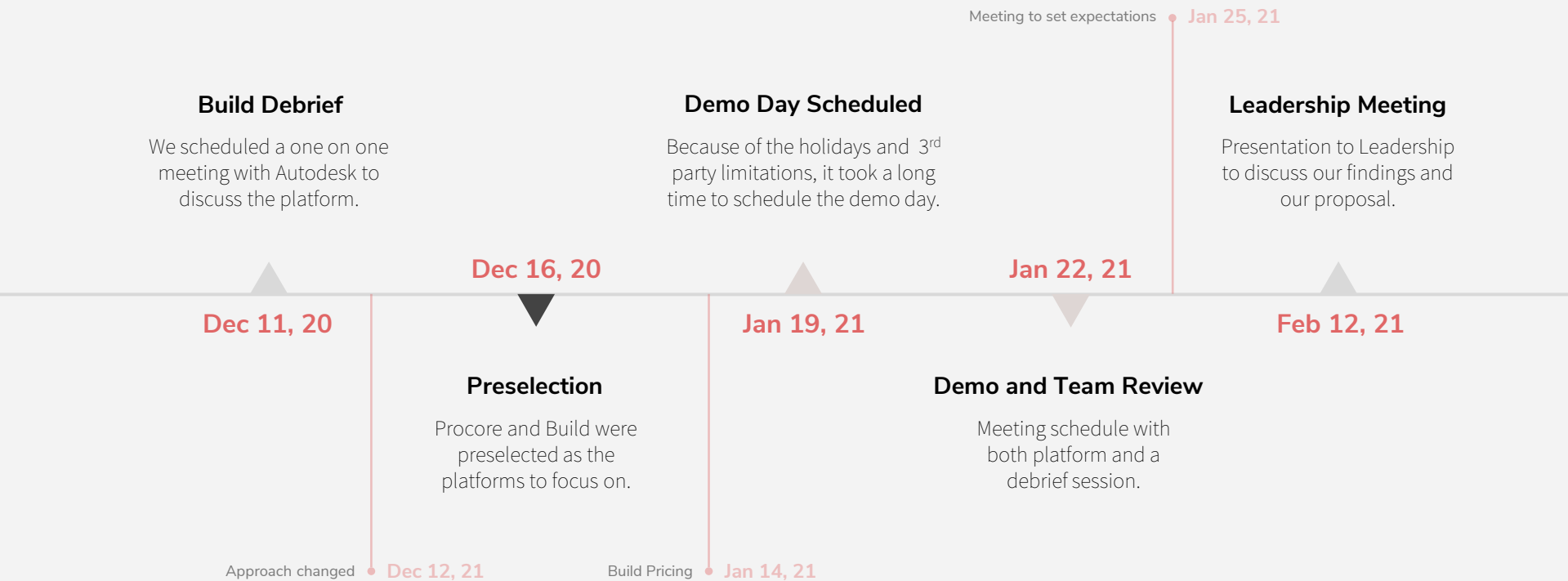
## Formal Meeting

We discuss our intention to pilot a new PM platform and get a green light.

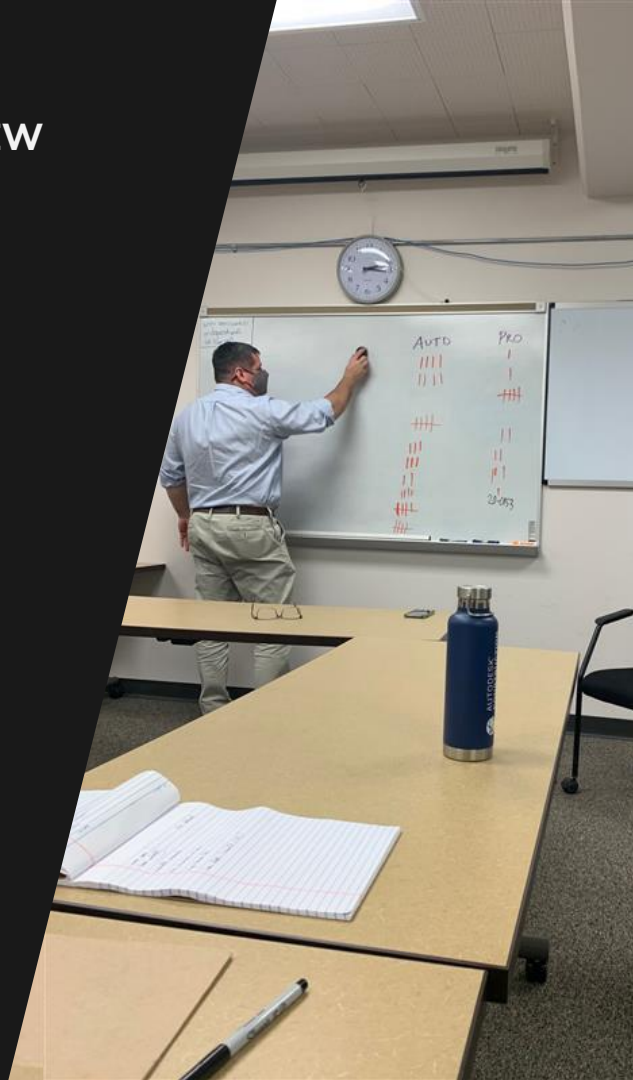
Nov 20, 20



## TIMELINE Cont'd.



## TEAM REVIEW



## FACE-OFF

After both meetings we had a debrief session to discuss our impressions of both platforms. We reviewed 10 areas, including but not limited to:

- Document management
- Submittals / RFIs
- Change management
- Field support
- Mobile capabilities
- Cost module
- Integrations
- Among others

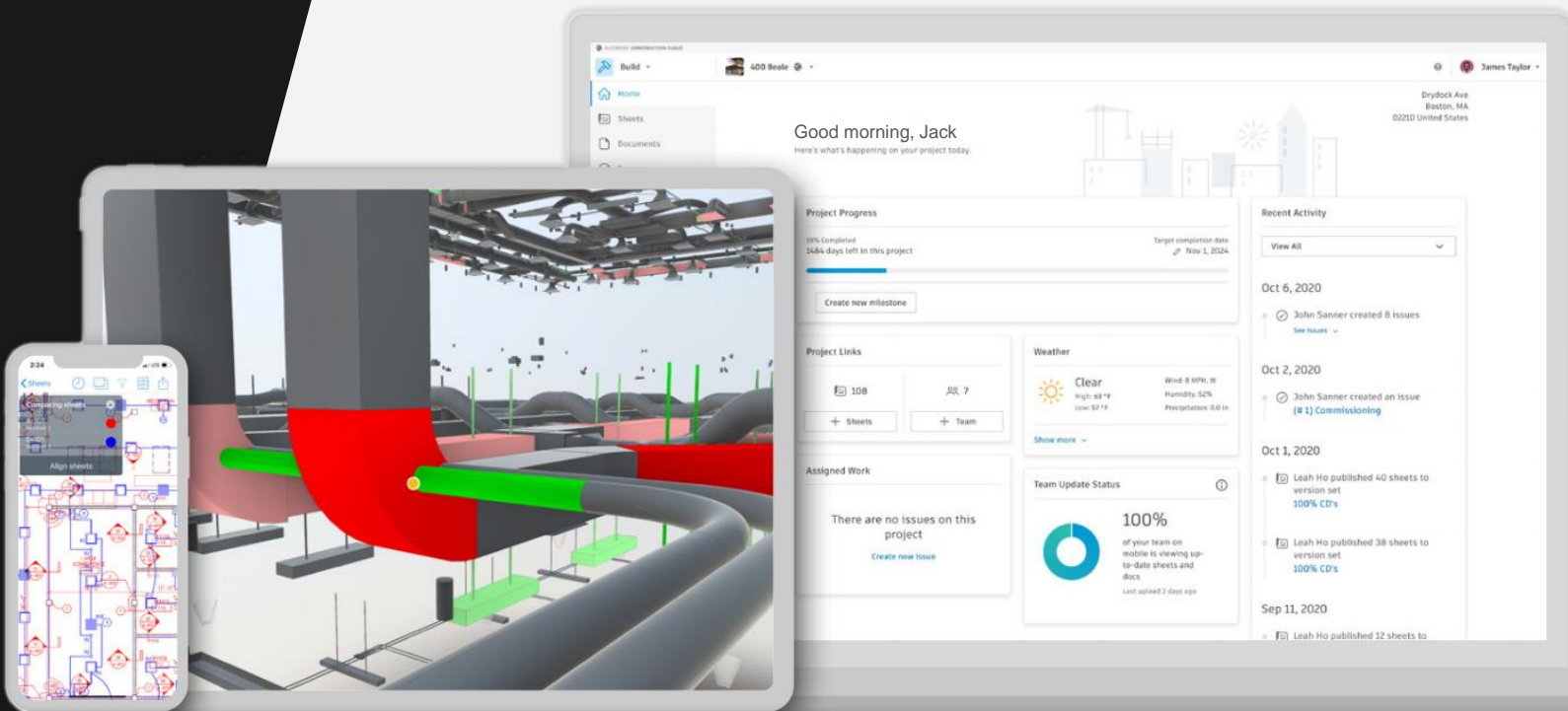




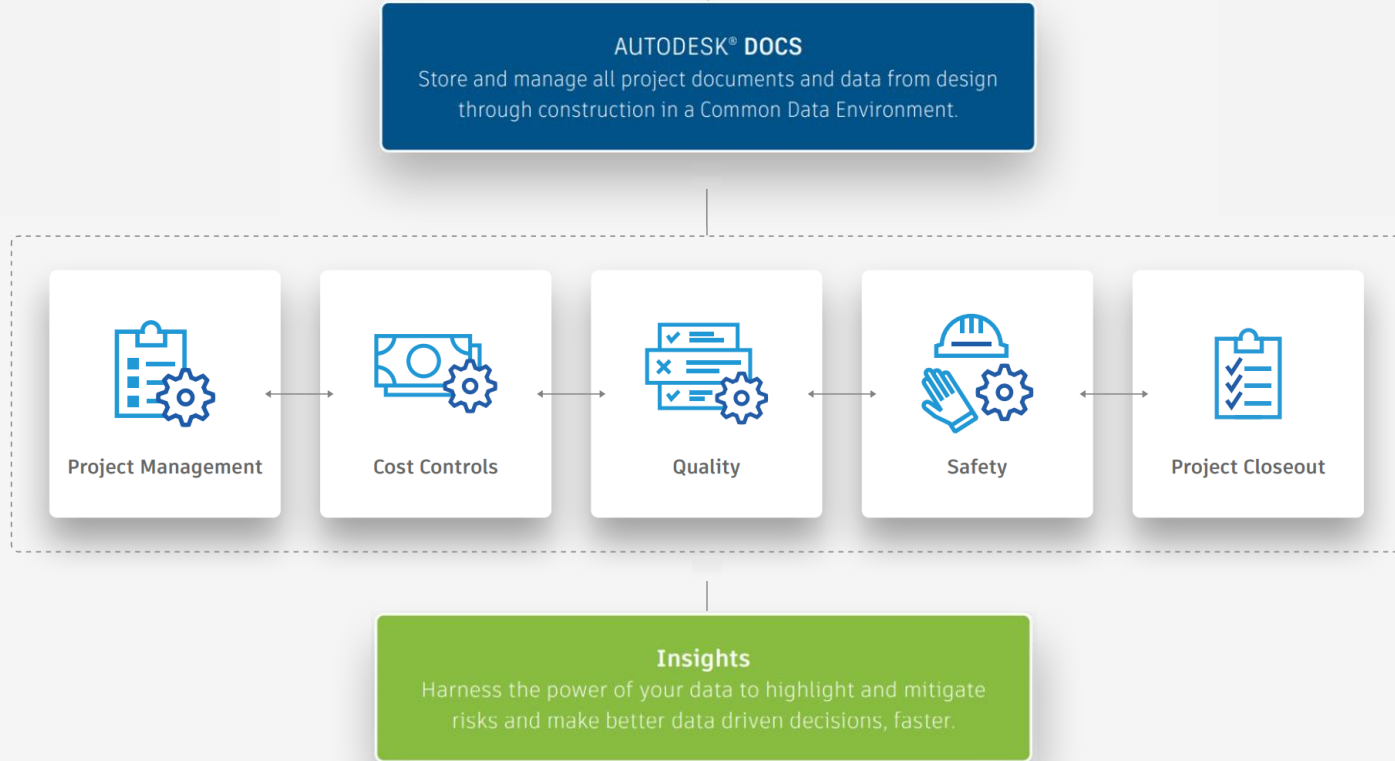
OUR PICK

AUTODESK® BUILD

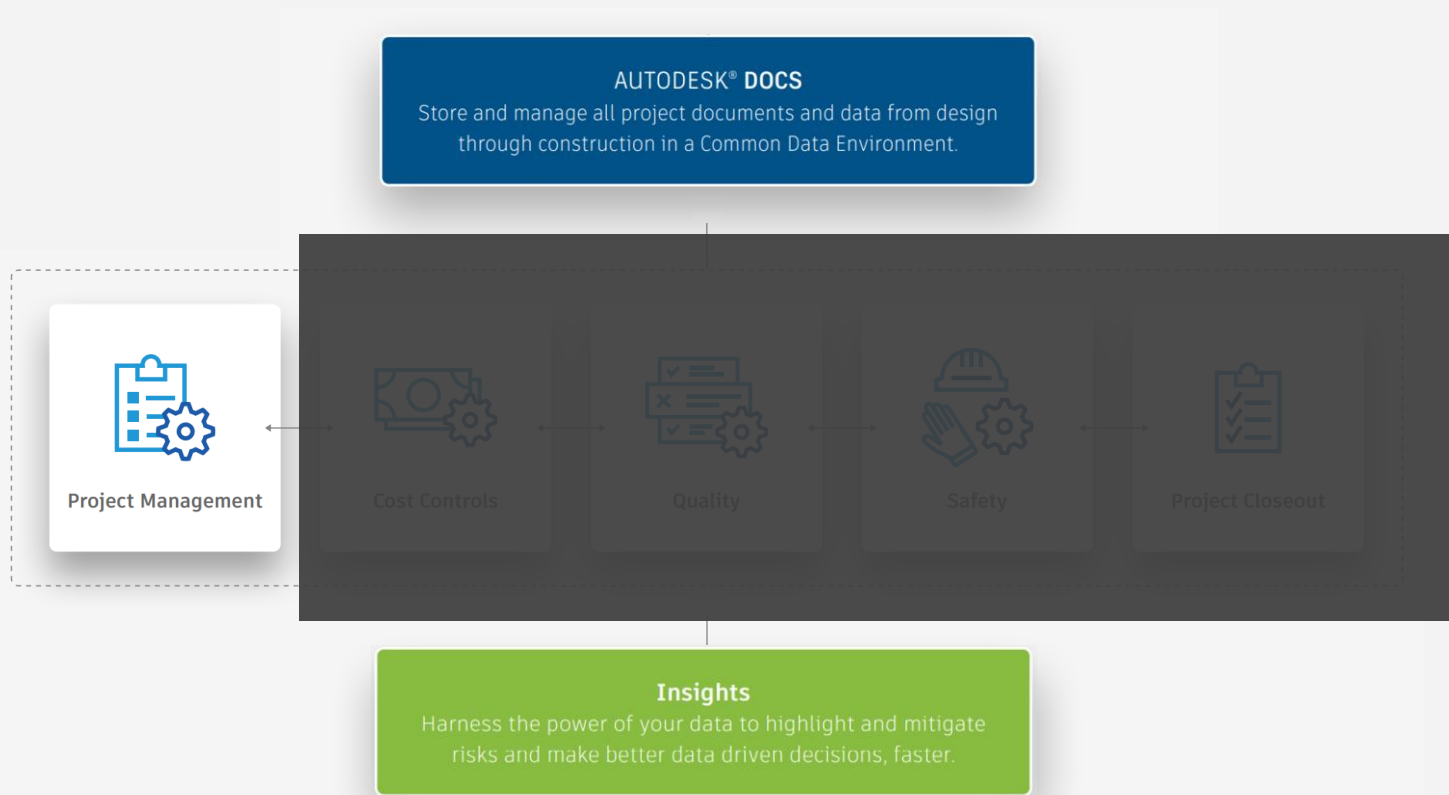
 **AUTODESK**  
**CONSTRUCTION**  
CLOUD™



# COMMON DATA ENVIRONMENT



# COMMON DATA ENVIRONMENT



## OUR GOALS | FIRST STEPS



### RFIs

Seamlessly create and manage RFIs to simplify workflows and reduce the risk of data loss.



### Submittals

Streamline the submittal process.



### Documentation

Cloud based documentation with the best online viewers and features.



### Punch List

Digitalize the punch list process to efficiently close projects.

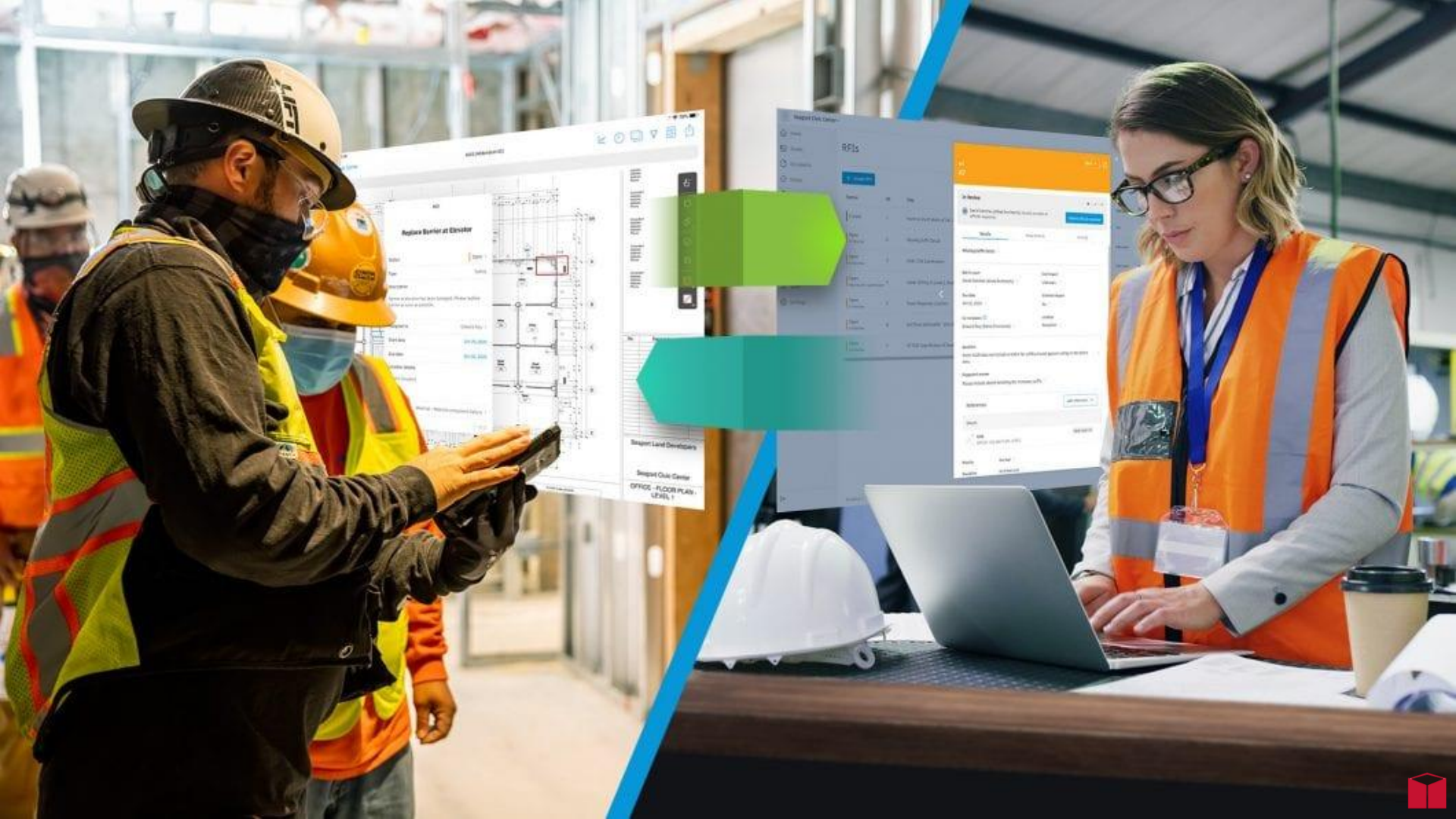


### Field = Mobile

Empowering teams to complete tasks from anywhere on the jobsite with seamless access to all project data.







Replace Barrier at Elevator

Item	Qty
Barrier	1

Request Land Dividers

Request On-site Center

OFFICE - FLOOR PLAN - LEVEL 1

RFIs

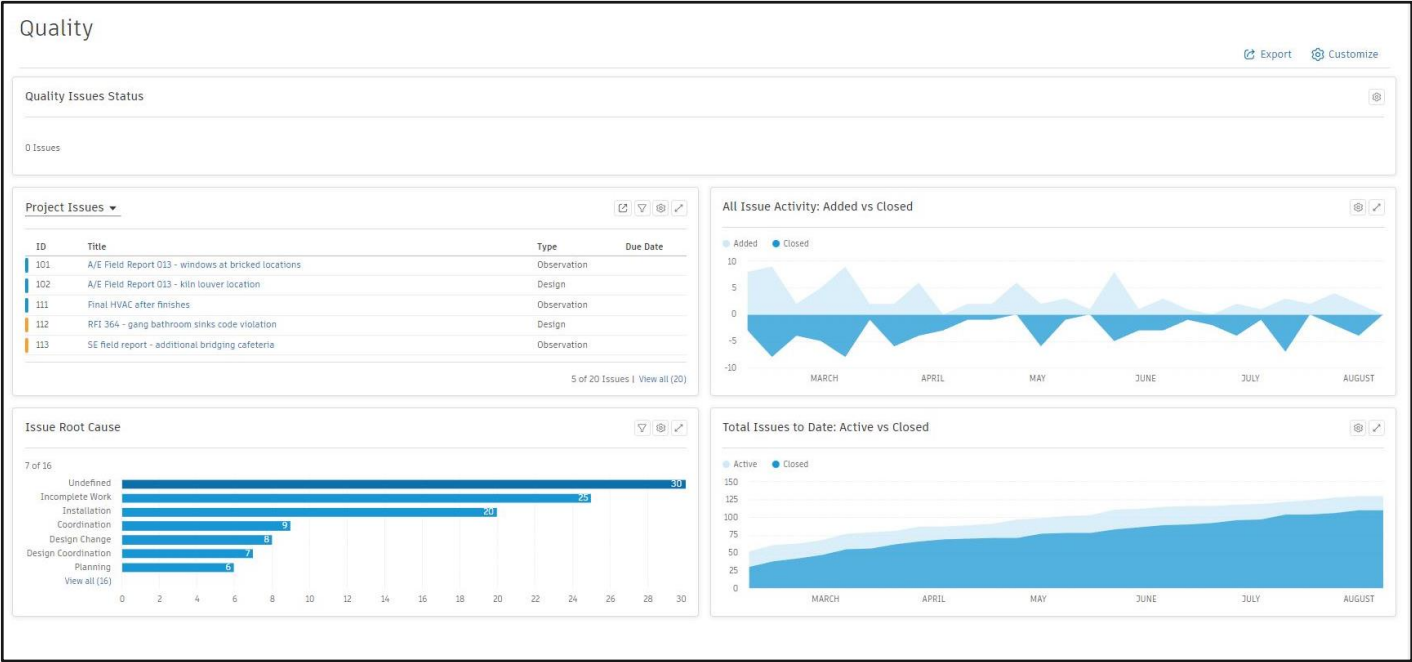
Item	Qty
Barrier	1

Request On-site Center

OFFICE - FLOOR PLAN - LEVEL 1



# INFORMATIVE DASHBOARDS



Export Customize

100%

0%

JULY AUGUST

100%

0%

JULY AUGUST

The figure consists of two vertically stacked area charts. Both charts have a y-axis representing the percentage of respondents, ranging from 0% to 100% in increments of 20%. The x-axis for both charts spans from July to August. The top chart displays a blue area representing the percentage of respondents who used a mobile app to book a flight. The area shows a fluctuating trend, starting around 20% in early July, peaking at approximately 40% in late July, dipping to around 20% in early August, and then rising back to about 40% by mid-August. The bottom chart displays a similar blue area, but it shows a steady, gradual increase from approximately 20% in early July to about 40% by mid-August, with a slight dip in late July.

ExportCustomize

Project Submittals

ID	Spec	Rev	Title	Type	Due Date
194	079200	0	JOINT SEALANTS - Test Reports	Reports	Apr 9, 2021
191	079200	0	JOINT SEALANTS - Schedules	Schedule	Apr 9, 2021
189	079200	0	JOINT SEALANTS - Schedules	Schedule	Apr 9, 2021
188	079200	0	JOINT SEALANTS - Schedules	Schedule	Apr 9, 2021
187	079200	0	JOINT SEALANTS - Schedules	Schedule	Apr 9, 2021

5 of 85 Submittals | View all (85)

Project RFIs

No RFIs  
Go to RFIs

Open RFIs by Current Assignment

1 of 1

OverdueDue in the next 5 daysDue after 5 days

Miller-Davis Company

012

Open RFIs and Submittals

OverdueDue in the next 5 daysDue after 5 days

0 RFIs

84 Submittal Items

804

RFI Activity

RFIs

Month	RFIs
MARCH	4
APRIL	8
MAY	7
JUNE	17
JULY	9
AUGUST	4

RFI Progress Tracking: Active vs Closed

ActiveClosed

Month	Active	Closed	Total
MARCH	280	20	300
APRIL	300	40	340
MAY	320	60	380
JUNE	340	80	420
JULY	360	100	460
AUGUST	380	100	480

**Project Address**

4053 Frank Rd  
Traverse City, MI 49684

---

**Project Issues ▾**

ID	Title
101	A/E Field Report Q13 - window
102	A/E Field Report Q13 - kin loin
111	Pinal HVAC after finishes
112	RfI 364- gang bathroom sink
113	SE field report - additional br

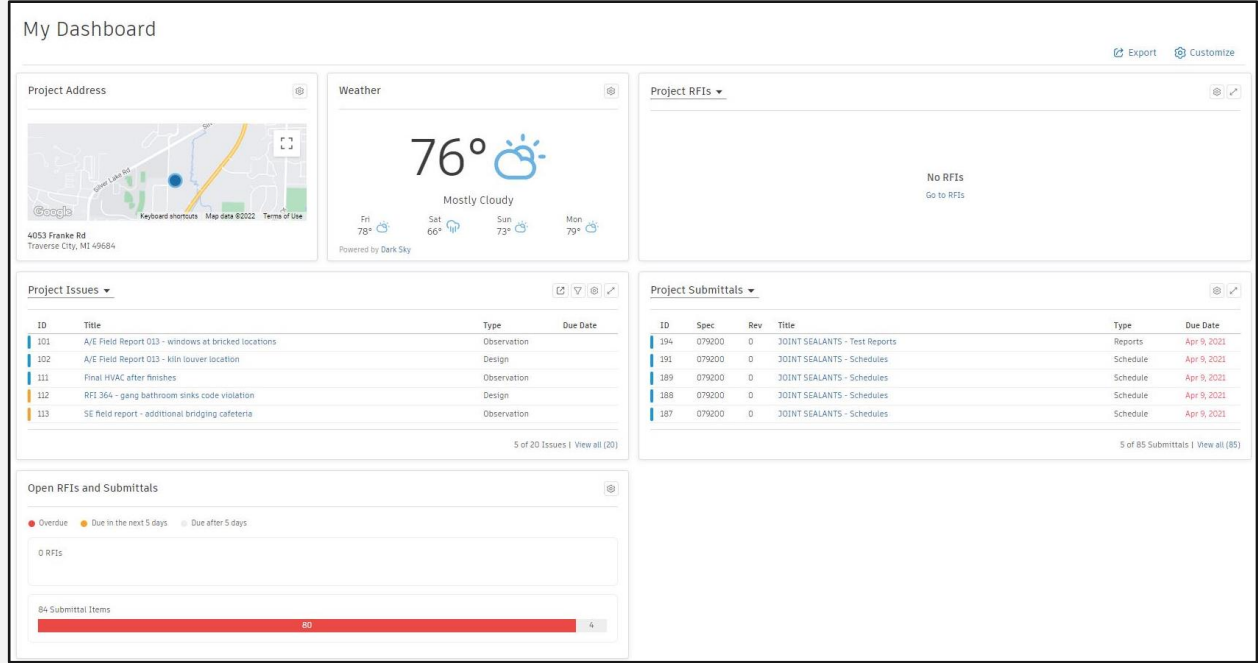
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**Open RFIs and Submittals**

● Overdue
● Due in the next 5 days
0 RFIs

0 Submittal Items

# INFORMATIVE DASHBOARDS





# LEAN APPROACH

Test with a project that allows us to understand and experience the benefits.

**PILOT**

Discuss ROI, lessons learned and companywide adoption.

**REVIEW**

Proceed on a targeted and controlled implementation following a Fibonacci sequence.  
1, 1, 2, 3, 5, 8,...

**IMPLEMENT**

**STANDARDS**

Develop standard operating procedures, review and incorporate feedback.

**INTEGRATIONS**

Explore/Develop new uses and work on integrations with other departments.



# PILOT

TCAPS New Montessori School



## WHY?



### DECENT SIZE JOB

This would allow to test multiple features at once and the amount of documentation could help us hit a positive ROI faster.



### TIMING

Due to the lack of projects starting in 2021, this could be our opportunity to set the foundation before construction season starts in 2022.



### TEAM

The project team is excited about what this platform could bring to the project.

### BONUS

Clients thoughts about our current platform?



# ROI

Autodesk Build Cost: \$XX,000 for Project

## MHA

Staff	Hrs	Cost/Hr*	Cost*
Project Manager	1,660	X	Y
Project Engineer	1,400	X	Y
Superintendent	3,320	X	Y

\$ XXX,000

7.05%

Hr Savings to Breakeven

Project	Week
117	1.4
99	1.2
234	2.8

WHO SAVES THE MOST TIME EACH WEEK?

PROJECT MANAGERS  
**12.0**  
HRS / WEEK



PROJECT ENGINEERS  
**12.0**  
HRS / WEEK



SUPERINTENDENTS/  
FOREMAN  
**13.5**  
HRS / WEEK



\*\*Procore's 2020 ROI Report

## SUPPORT SERVICES

We can relocate resources from current solutions. — \$XX,000

\*This is an approximate and not the actual cost/hr.



## ADDITIONAL BENEFITS

**89%**

HELPED  
STANDARIZED  
PROCESSES

**83%**

CONFIDENCE BOOST  
TO MEET GOALS

**32%**

AVERAGE INCREASE IN  
CONSTRUCTION VOLUME MANAGED  
WITH SAME RESOURCES.

Knowledge retention | More protection in litigation | Better project visibility | Improved resolution times | Retain talent

Reduce risk | Improves communication | Better document site issues | Client satisfaction

Transparency | Better and faster closeouts | Increased safety





# 03

## FIELD MANAGEMENT

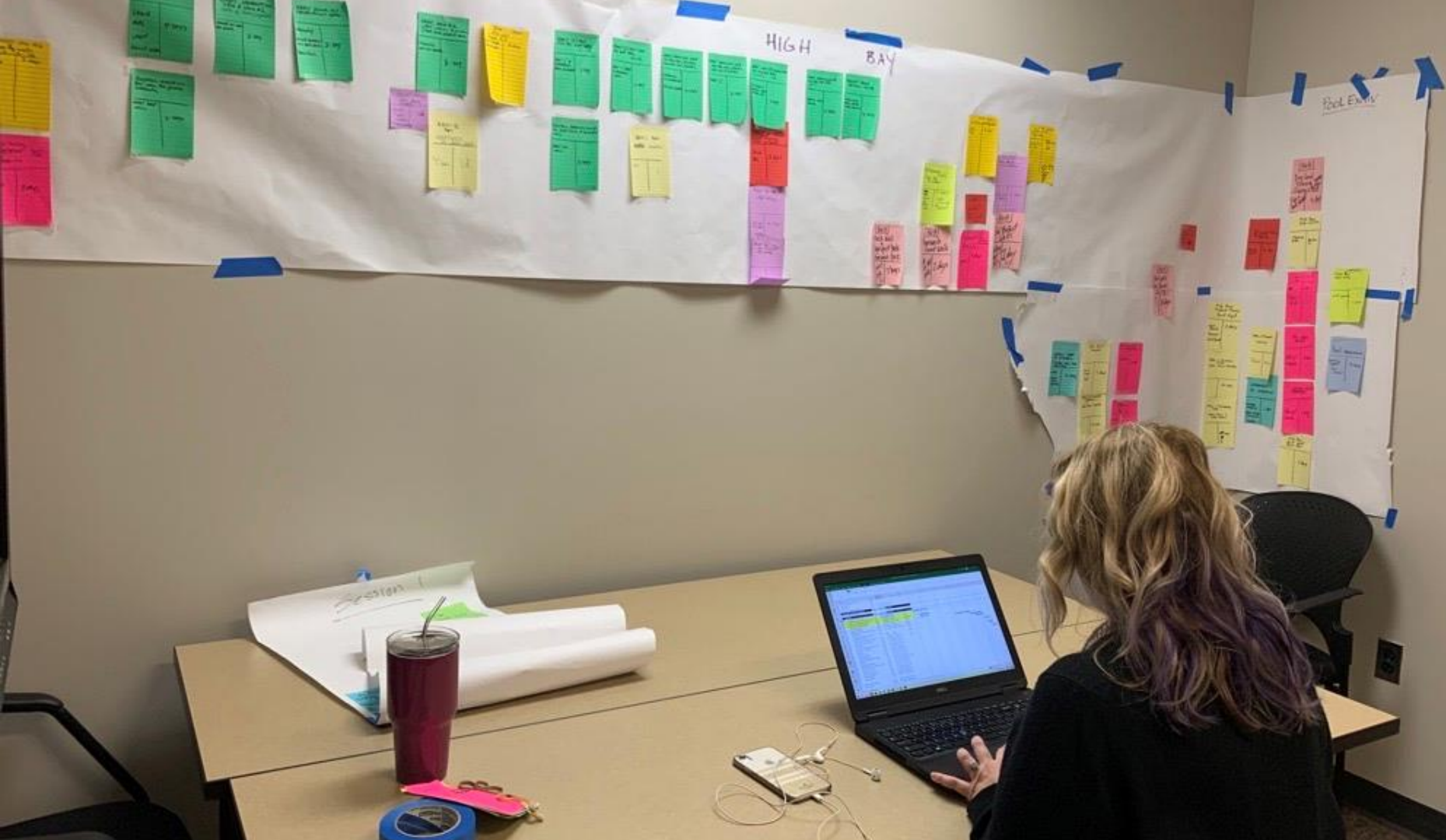










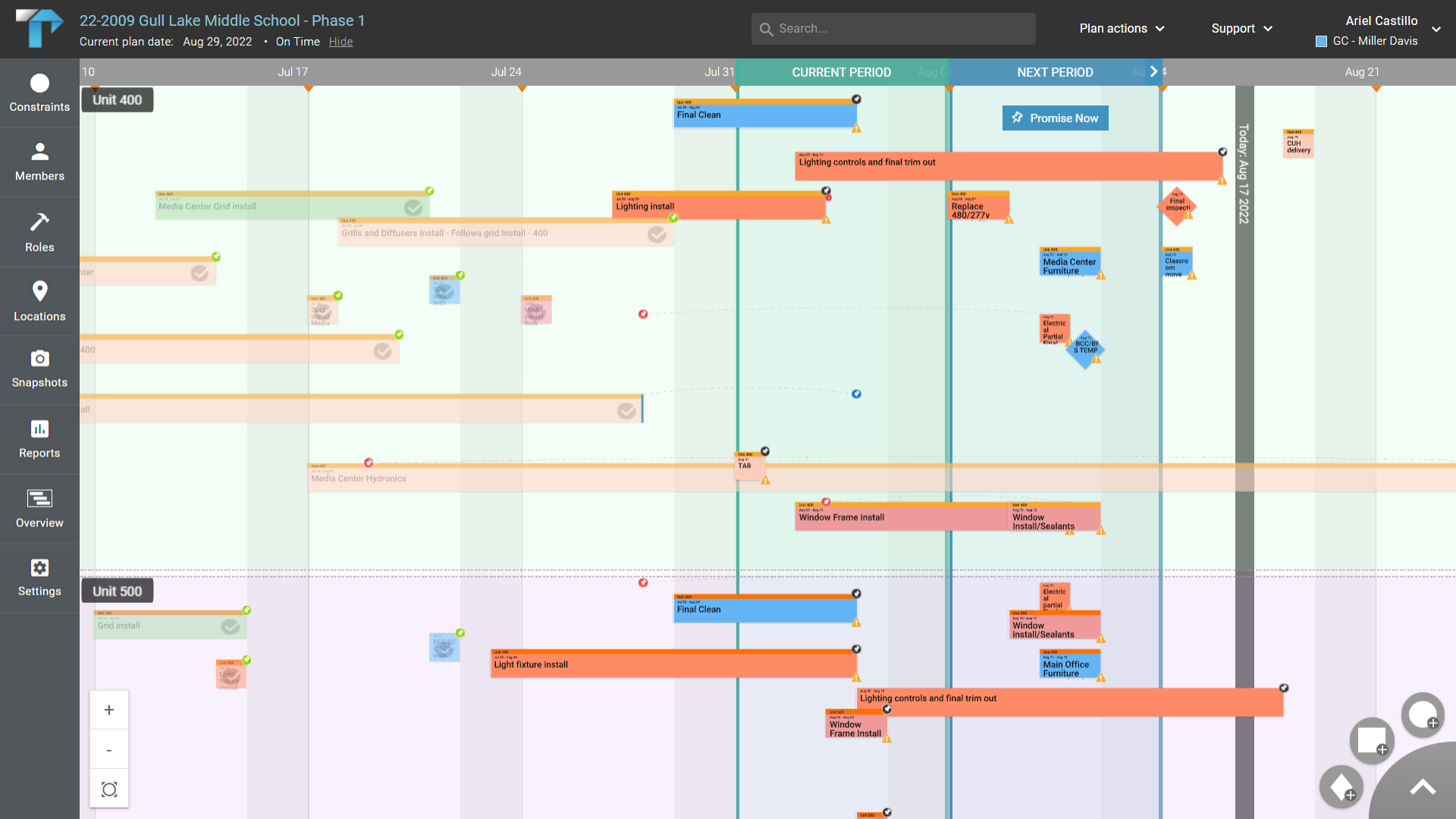




## Look-Ahead Schedule

07/24/2020 through 08/20/2020

Task	July							July/August							August							August							COMMENTS
	24 S	25 M	26 T	27 W	28 Th	29 F	30 S	31 S	1 M	2 T	3 W	4 Th	5 F	6 S	7 S	8 M	9 T	10 W	11 Th	12 F	13 S	14 S	15 M	16 T	17 W	18 Th	19 F	20 S	
Company A																													
Restroom trusses & sheathing																													
Ticket booth roof lettering																												Before roofing	
Fencing																												Ornamental fence on site 8/15	
Company B																													
Restroom/TB MEP rough in																													
Pour equipment pads in restroom building																													
Install north light poles																													
Company C																													
Pave parking lot asphalt																												Within next couple of weeks?	
Trench drain																												Discuss with Earley	
Restoration of W side of site																													
Grading/compaction for phase 3 concrete																													
Project Name:	Project X								Issue Date:								7.26.2020												
Project Number:	00-0000								Superintendent:								X												

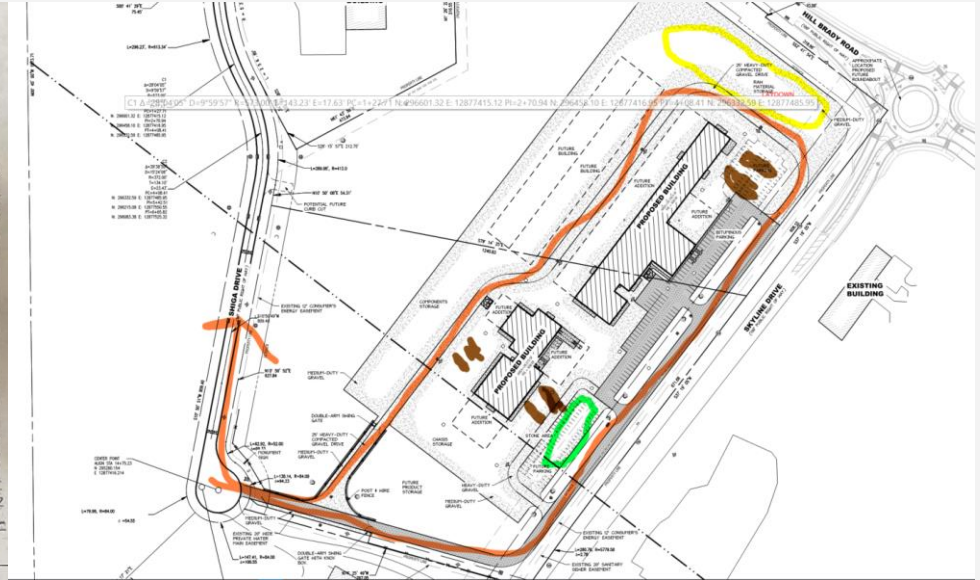
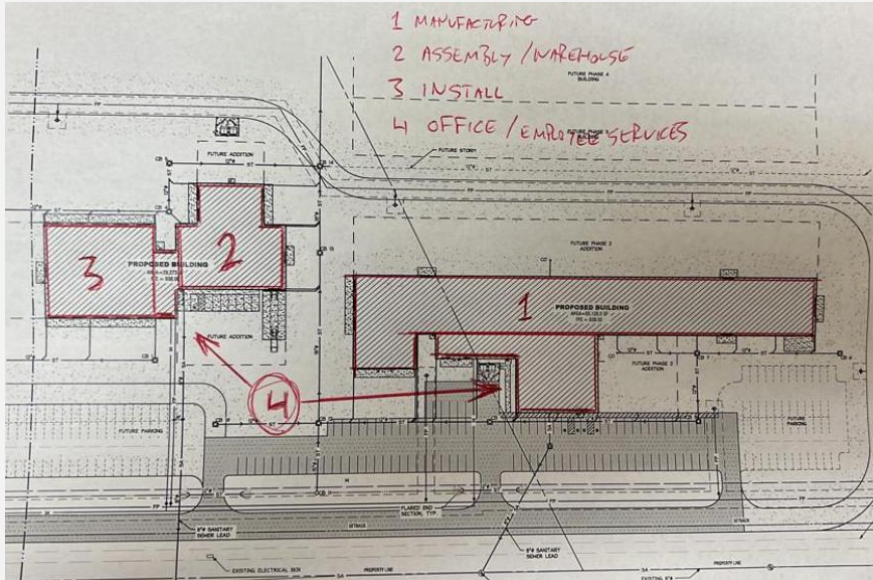




# 04

BONUS





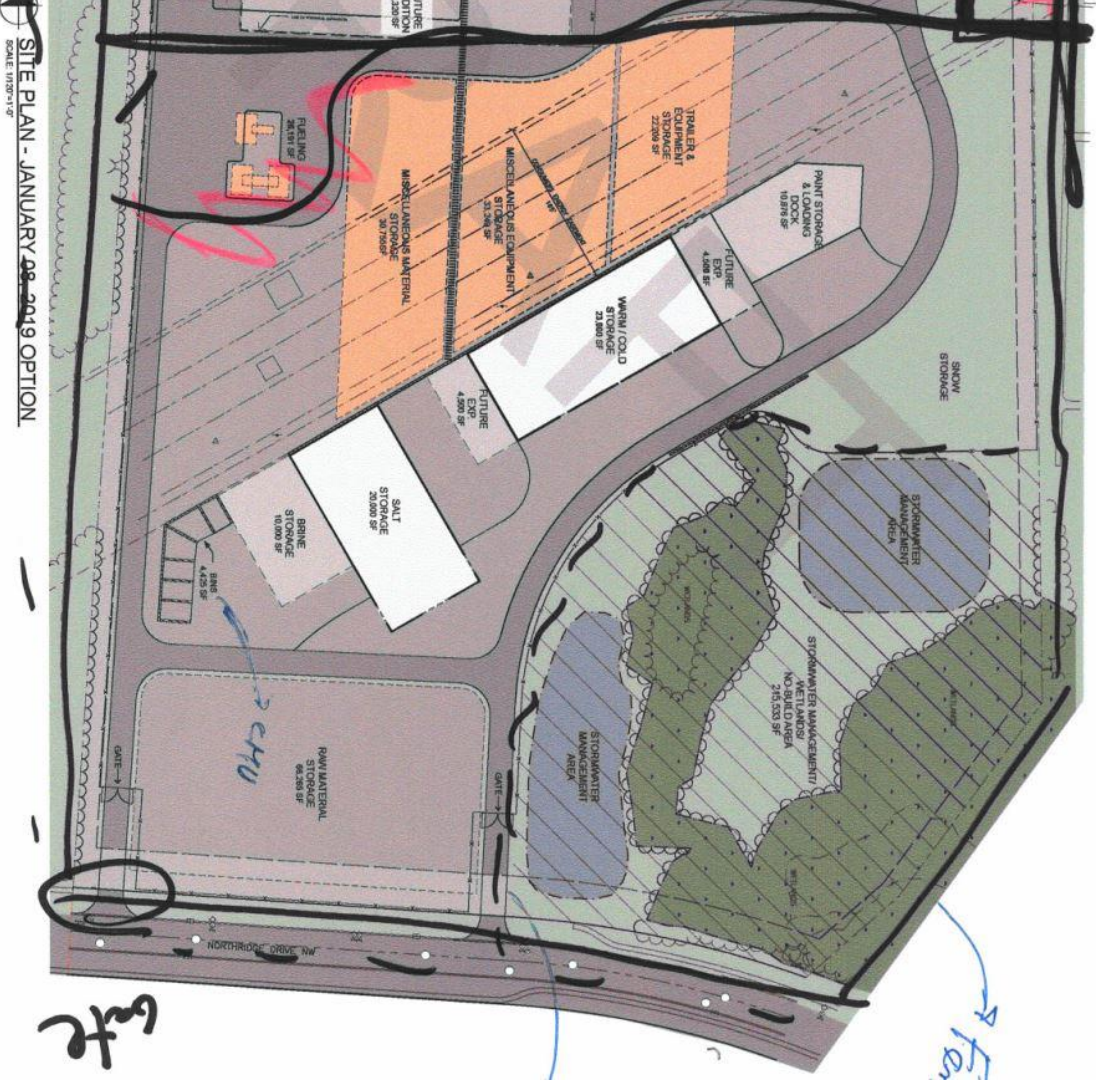
Project 1	10 days	Fri 12/3/21	Thu 12/16/21	
Project 2	10 days	Fri 12/10/21	Thu 12/23/21	5FS-5 days
Project 3	10 days	Fri 12/24/21	Thu 1/6/22	6
Project 4	10 days	Fri 12/31/21	Thu 1/13/22	7FS-5 days





**APPENDIX C  
ELIMINARY PROJECT CONCEPT**

Contract #20-75, Construction Manag



SITE PLAN - JANUARY 28, 2019 OPTION  
SCALE 1/8"=1'-0"







**TL;DR**



TL;DR

# Main Takeaways

## Think Outside The Box

Don't be afraid to challenge the way you work.

## Vision

Establish a vision as a team, communicate and face the process.





## **Waste**

Generate pressure to reduce waste

## **External Collaboration**

As an industry we must turn  
“my data” into “our data”.

## **Shared Knowledge**

Dedicate time to acknowledge the  
people you work with and embrace  
their uniqueness.



## To Be or Not To Be

It's no longer an advantage to embrace tech. It's a disadvantage not to.

## Resource Allocation

Let computers do computer work and get people working for the people.

# EMBRACE IT!

Motivation and belief are key factors.



BONUS

# Perseverance

People suffered learning about fire and electricity...

But try to live and compete without them!

# TIMELINE.

## 2020

Digital Signatures

DocuSign

Digital Bids

BuildingConnected

Digital Pull Planning

TouchPlan

COVID Monitoring

MS Power Automate

## 2021

PM (Pilot)

Autodesk Build

Specs Review

Pype AutoSpecs

Closeouts

Pype Closeouts



# TIMELINE.

## 2022

PM (Companywide)

Autodesk Build

BIM Training

AGC CM-BIM

Cloud Migration

AWS / SharePoint

Workforce Intelligence

BridgIt

## 2023

Cost / Accounting

Preconstruction

Historical Data

Dashboards

Cybersecurity







# CUL•TU•RE

the beliefs, customs, arts, etc., of a particular society, group, place, or time.





# THANK YOU!

## Contact Information

[acastillo@miller-davis.com](mailto:acastillo@miller-davis.com)

[jabate@miller-davis.com](mailto:jabate@miller-davis.com)