



2022 Digital Construction Summer School

How We Build: Barton Malow's Experience with the Autodesk Construction Cloud

Brian Popis

Senior Business Transformation Engineer | Barton MAlow

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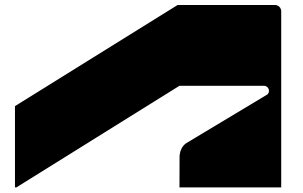
Barton Malow

- 5+ years of experience in construction software deployment, especially the Autodesk Construction Cloud
- Committed and passionate about the advancement of technology in our industry
- Thought leader for standard and best practices in all construction markets
- Purposeful leader of educating new hires and interns surrounding our software solutions

Presentation agenda

- Barton Malow and the Autodesk Construction Cloud
- Deep Dive: Our Use of Autodesk Construction Cloud
- Wrap Up and Industry Outlook





Barton Malow and the Autodesk Construction Cloud

Barton Malow and ACC

A Brief History

- Prior users of Building Connected, Assemble, PlanGrid, etc.
- Begin our implementation of BIM 360 in late 2018
- Ramp up usage through early 2021; begin implementation of Autodesk Build
- All new projects created in Autodesk Build as of November 2021

Core Technology



AUTODESK CONSTRUCTION CLOUD™



Assemble

Condition, query and connect BIM data to key workflows including design reviews, takeoffs, estimating, change and schedule management.



BuildingConnected

Save time and increase accuracy in bidding and risk management workflows with the largest crowd-sourced construction network.



BIM 360

Connect project teams and data to help reduce risk, improve quality, and deliver projects on time and budget.



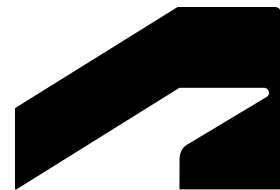
PlanGrid

Simple, powerful construction software that empowers teams to collaborate efficiently and access the record set from any device.



AN AUTODESK COMPANY

**Barton
Malow**



Deep Dive: Our Use of Autodesk Construction Cloud



Autodesk Build – Project Home and Custom Dashboards

Good morning, Brian
Here's what's happening on your project today.

5778 Rivard Street
Detroit, MI
48211 United States

Project progress
98% Completed
25 days left in this project
Target completion date: Aug 22, 2022
[Create new milestone](#)

Quick links
1901 Sheets
133 Members

Site weather
Partly cloudy
High: 82 °F
Low: 62 °F
Wind: 8 MPH, WNW
Humidity: 57%
Precipitation: 0.0 in
[Show more](#)

Recent activity
View all

- 16 photos were uploaded
[View Photos](#)
Ryan Hecker - moments ago
- 7 photos were uploaded
[View Photos](#)
Nathan Brejnak - moments ago
- 2 photos were uploaded
[View Photos](#)

Work status
Your assigned work
2 form drafts

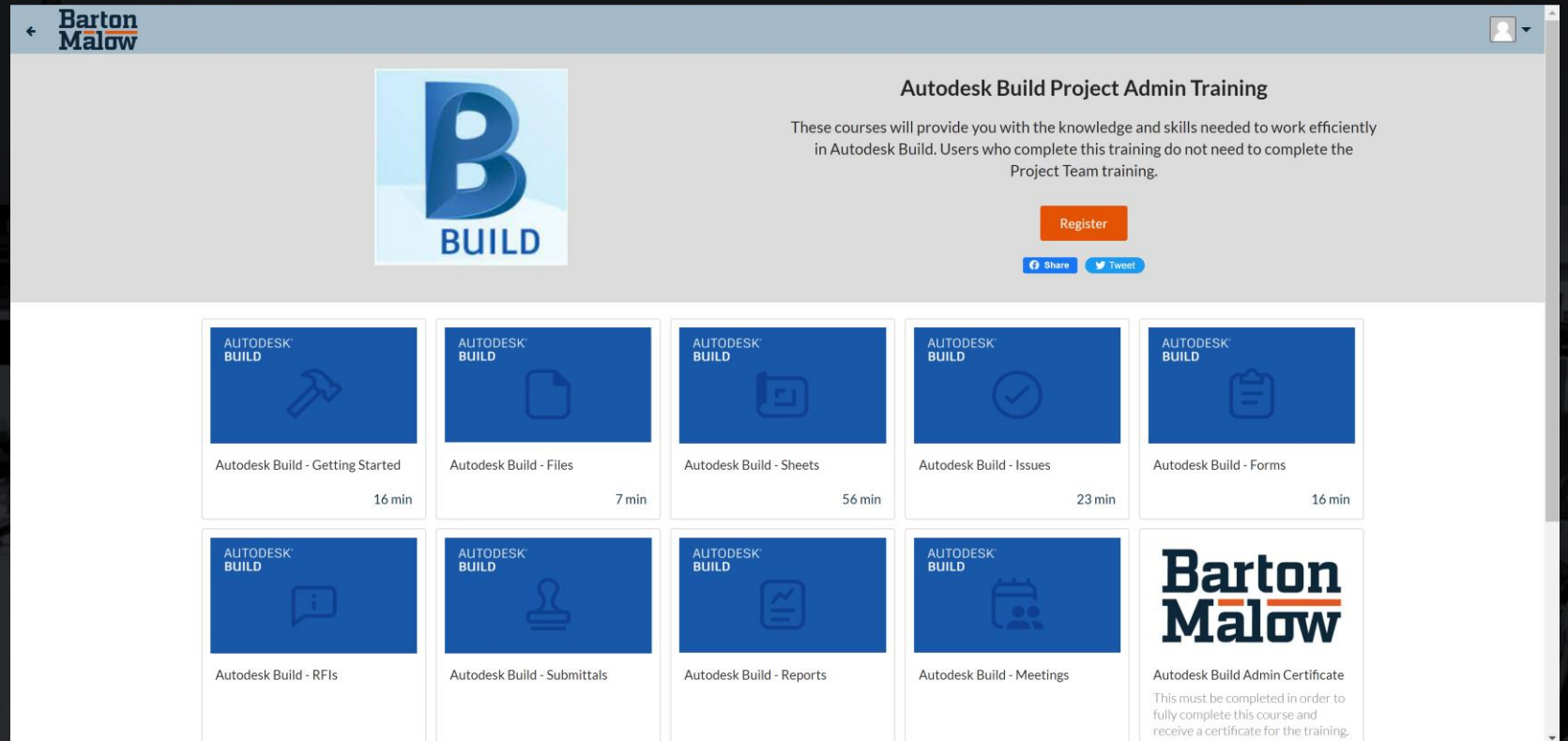
WHAT IS IT USEFUL FOR?

Embedded analytics
Automated insights
Easy project access
3rd party integrations



Autodesk Build - Team Training & Onboarding

- OnDemand, Virtual training
- Persona-based trainings
- Accessible by internal and external team members
- Heavy emphasis on training programs for interns and new hires
- Training incorporated into core job responsibilities
- Spotlight on Digital Builder Podcast with Eric Thomas



The screenshot shows a web page for 'Autodesk Build Project Admin Training' on the Barton Malow intranet. The page features the Autodesk Build logo (a large blue 'B' with 'BUILD' underneath) and a 'Register' button. Below the header, there is a grid of training modules, each with an icon, title, and duration:

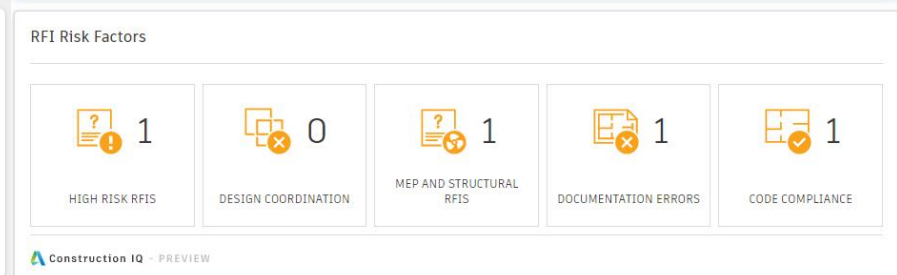
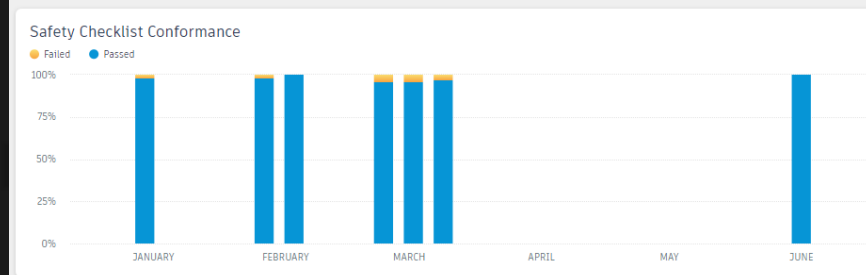
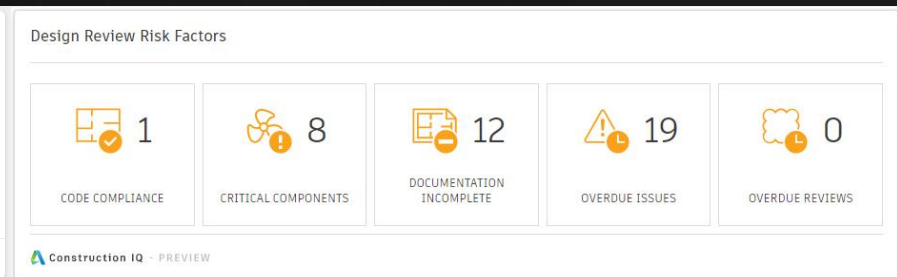
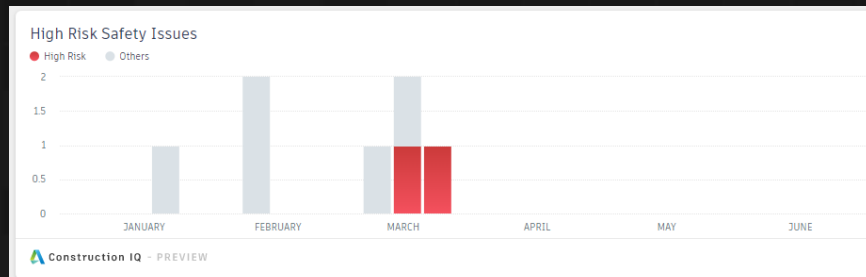
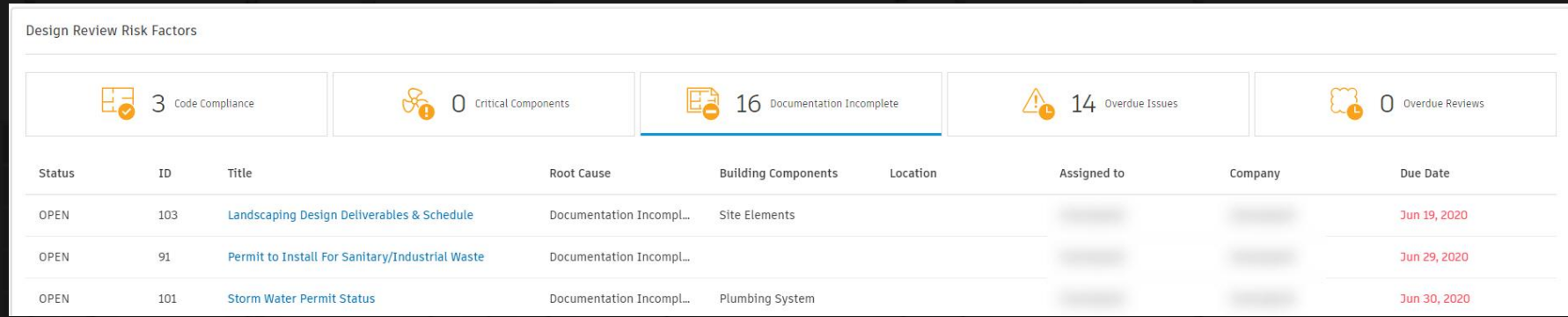
| Module Title | Duration |
|----------------------------------|----------|
| Autodesk Build - Getting Started | 16 min |
| Autodesk Build - Files | 7 min |
| Autodesk Build - Sheets | 56 min |
| Autodesk Build - Issues | 23 min |
| Autodesk Build - Forms | 16 min |
| Autodesk Build - RFIs | |
| Autodesk Build - Submittals | |
| Autodesk Build - Reports | |
| Autodesk Build - Meetings | |
| Autodesk Build Admin Certificate | |

The 'Autodesk Build Admin Certificate' module includes a note: 'This must be completed in order to fully complete this course and receive a certificate for the training.'

Autodesk Build- Insights & Data

In App Analytics


- High level metrics
- Construction IQ
- Automated machine learning and analytics to instantly provide project information



Autodesk Build - Insights & Data


Additional Insights:

- Granular metrics
- Project specific KPIs
- Integrated with ACC
- Shareable outside ACC
- Pin back to Custom dashboard


RFI Dashboard

RFI Stats

| | | | |
|-------------------------|-----------------------|---------------|-------------------|
| 15.61 | 15.72 | 2.26% | 2.71% |
| Average Days to Respond | Average Days to Close | % Cost impact | % Schedule Impact |



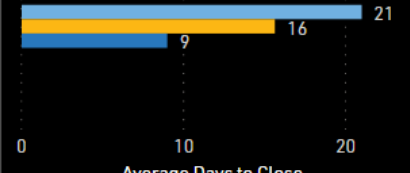
RFI Target vs Average



15.72

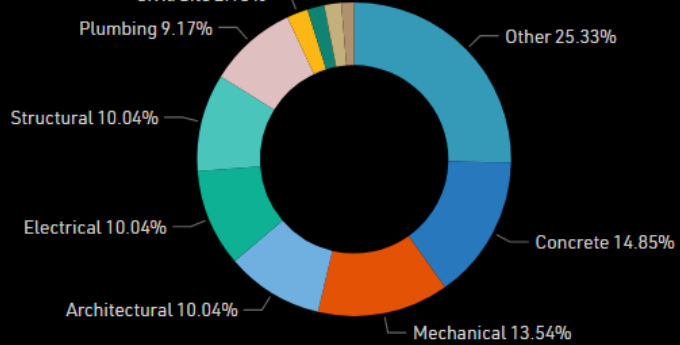
RFIs by Status

Status: answered closed open



| Status | Count |
|----------|-------|
| answered | 21 |
| closed | 16 |
| open | 9 |

RFIs by Discipline



| Discipline | Percentage |
|---------------|------------|
| Other | 25.33% |
| Concrete | 14.85% |
| Mechanical | 13.54% |
| Architectural | 10.04% |
| Electrical | 10.04% |
| Structural | 10.04% |
| Plumbing | 9.17% |
| Civil/Site | 2.18% |


Top 5 RFI Collaborators by Comment

| | | | |
|------------|-------------|----------------|-------------|
| Mark Henry | Daniel Osma | Quaid Spearing | Jordan Ream |
| 10 | 9 | 7 | 6 |

Top 10 Overdue RFIs

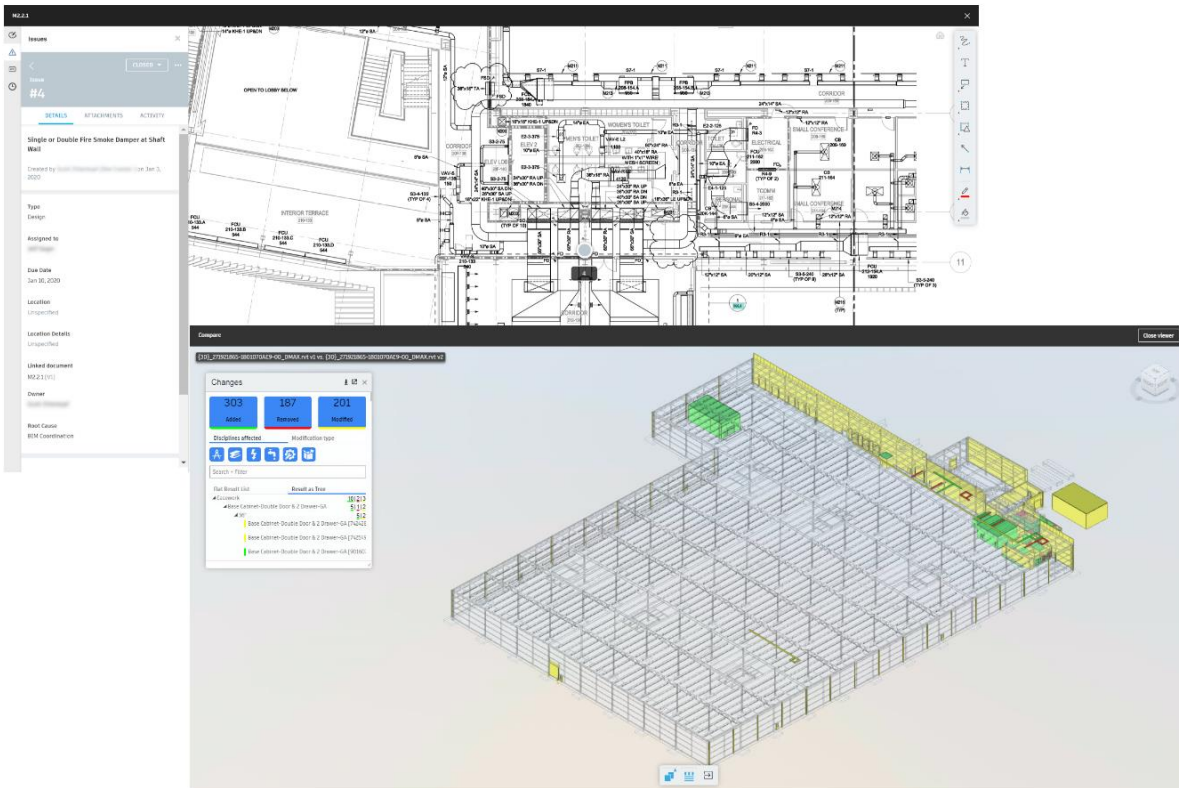
| RFI# | RFI Link | Title | Days Overdue |
|-------|----------------------|--|--------------|
| 132.1 | Link | 1st Floor VDC Sheet Metal Question | 44 |
| 139 | Link | Structural Reinforcement Detail needed for Curbs on Deck | 35 |
| | Link | PTS Blower room at level 2 | 15 |
| 176 | Link | Raised Slab at Elevator Lobby PH Level | 7 |
| 191 | Link | P-tube at Column Enclosures | 1 |
| 187 | Link | Roof Tie Backs Incorporated into Drawings | 1 |
| 190 | Link | MOB - EIFS to Window Termination Detail | -1 |
| 189 | Link | MOB Garage Connector Interface | -1 |
| 194 | Link | 3rd Floor VDC Sheet Metal Questions | -5 |
| 195 | Link | 4th Floor VDC Sheet Metal Questions | -5 |
| 196 | Link | 6th Floor VDC Sheet Metal Questions | -5 |
| 198 | Link | Bathroom Pod - Grab Bars | -5 |
| 193 | Link | COLUMN ENCLOSURE 2ND FLOOR | -5 |
| 197 | Link | Curtain Wall in Place | -5 |

10/15/20
Refresh



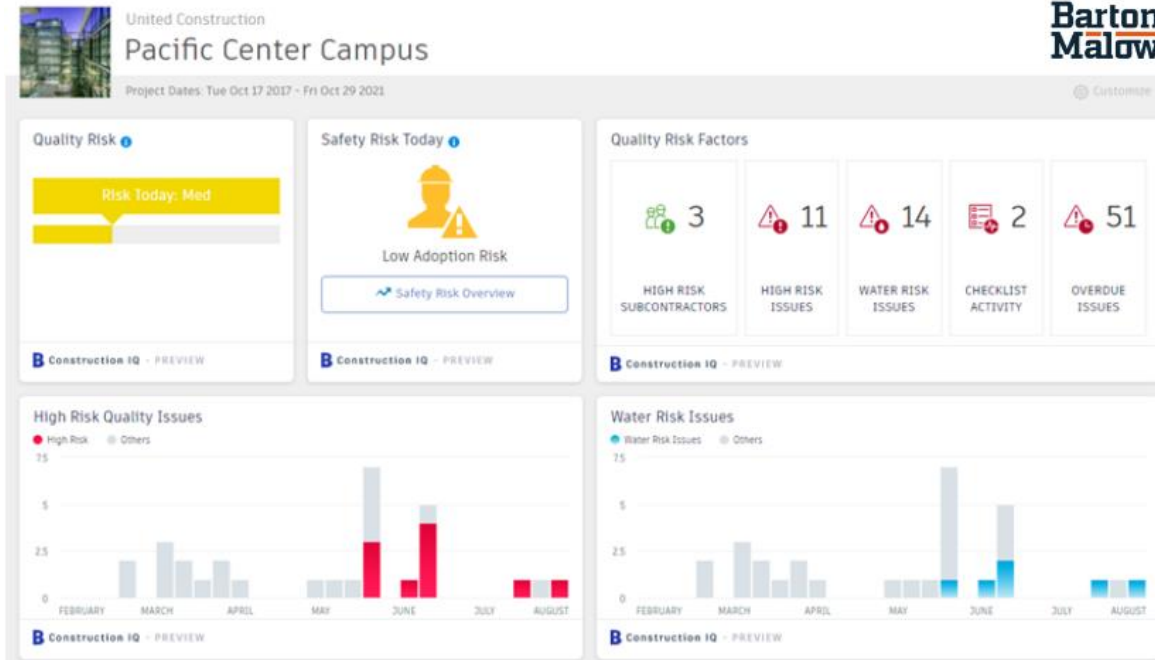
Autodesk Build – Files and Sheets

HOW BARTON MALOW USES IT:



- Consolidate information and setting up standard templates and workflows to maximize efficiency
- Management of all 2D and 3D data in one place
- Issue tracking and resolution directly on project documents
- Comparison of different documents or versions of the same document

Autodesk Build - Insights

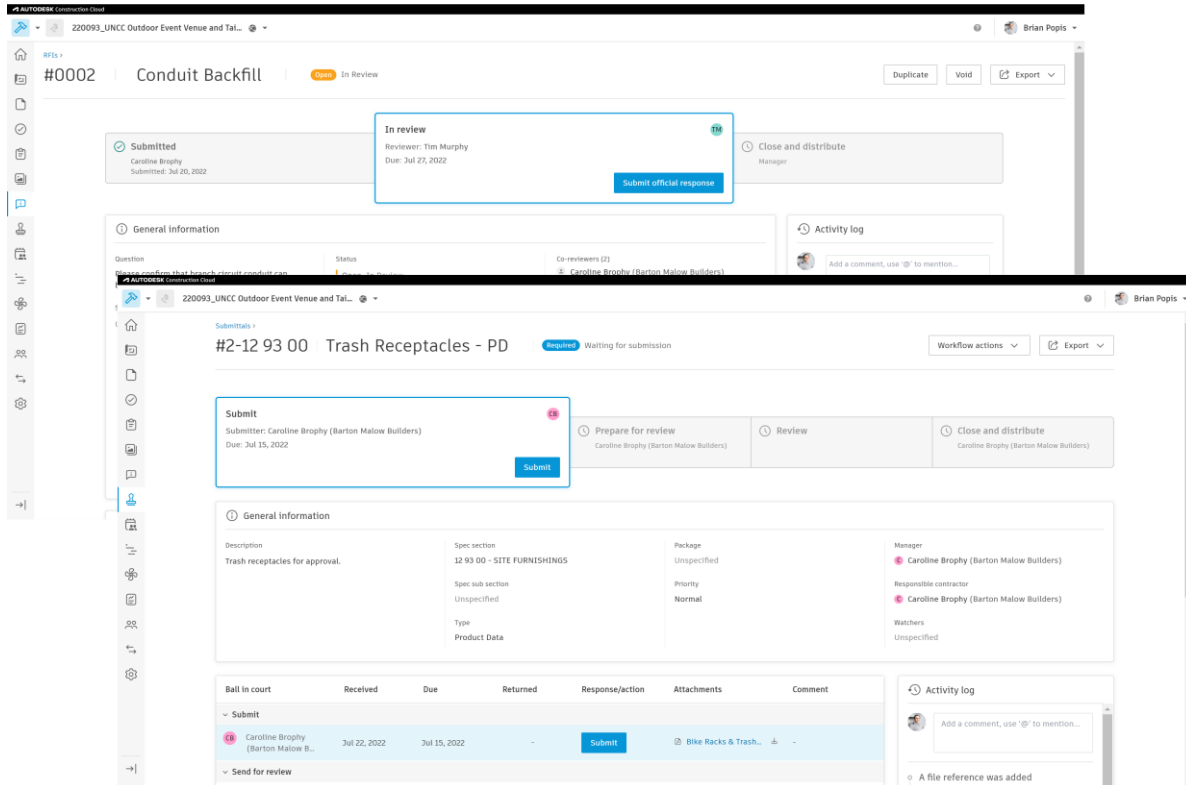


HOW BARTON MALOW USES IT:

- Delivers unified project data, analytics, and predictive insights
- Use predictive risk data to improve project efficiency
- Assess trends and patterns in project data to identify gaps and problems
 - Design
 - RFIs and Submittals
 - Safety
 - Quality
- Customize, schedule and run project reports based on project needs

Autodesk Build – Submittals and RFIs

HOW BARTON MALOW USES IT:

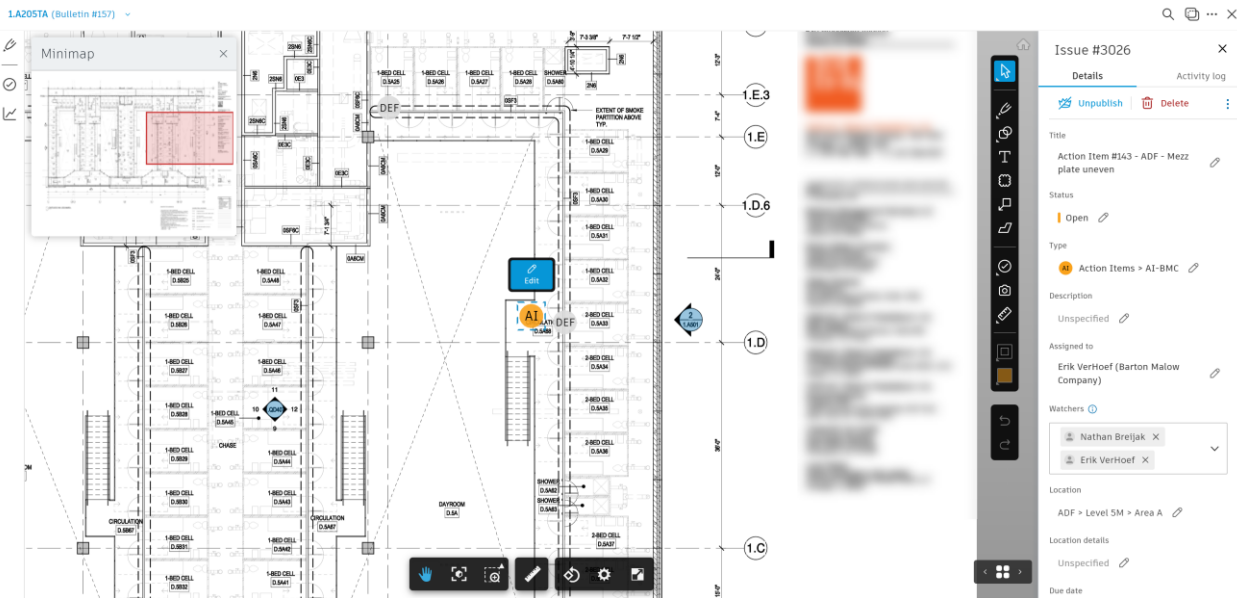


- Initiation, management, and responding to RFIs and Submittals throughout the project life-cycle
- Creation, maintenance, and storage of project meeting minutes for in a unified platform
- By pinning RFIs to project drawings and models, team members in the office and field can be aligned on outstanding questions in design

Autodesk Build – Issue Management

HOW BARTON MALOW USES IT:

- Perform construction quality, safety, punchlist, and equipment commissioning workflows – all from a smartphone or tablet device
- Reviewing and completing of checklists based on different project needs
- Create, assign, and track open action items to track work to complete, items to adjust, and more
- Run reports of outstanding open issues and checklists for all project team members to view and address



Autodesk Build – Quality and Safety Checklists

AUTODESK Construction Cloud | 200152_MSU HHSC (Build) | Brian Popis

Forms > Safety | **Attach N2 - Pre-Task Plan** | Draft | Copy | Export

This draft has not been submitted. You can view it but can't modify or submit it.

Form Details

- Form date: Aug 1, 2022
- ID: #59
- Location: -
- Description: -

Attachment N2 Pre-Task Plan 11x17

Completed by: [Redacted] | Date Completed: [Redacted] | Shift: [Redacted]

Project Name & Site Location: [Redacted] | Job/Task Description: [Redacted]

Review Performed by: [Redacted]

EMERGENCY INFORMATION | **PHONE NUMBER:**

- Safety Showers
- Eye Wash
- Emergency Procedures:
 - Information / Contacts
 - Evacuation
 - Shelter
- Walking / Working
- Heights / Falls / O
- Lifting / Strains
- Fire / Chemicals /
- Language Barrier
- Voice / Sight Obst
- Containment
- Protection
- Spill Clean Up / D

Safety Risk Factors

- 0 High Risk Subcontractors
- 16 High Risk Issues
- 1 Housekeeping Issues
- 10 Positive Observations

Housekeeping Issues

- Housekeeping: 95
- Other: 5

High Risk Safety Issues

Bar chart showing High Risk (red) and Others (grey) from March to August. High Risk peaks in July and August.

Safety Checklist Conformance

Bar chart showing Failed (orange) and Passed (blue) items from March to August. Conformance is generally high, with a dip in May.

Subcontractor Safety Risk

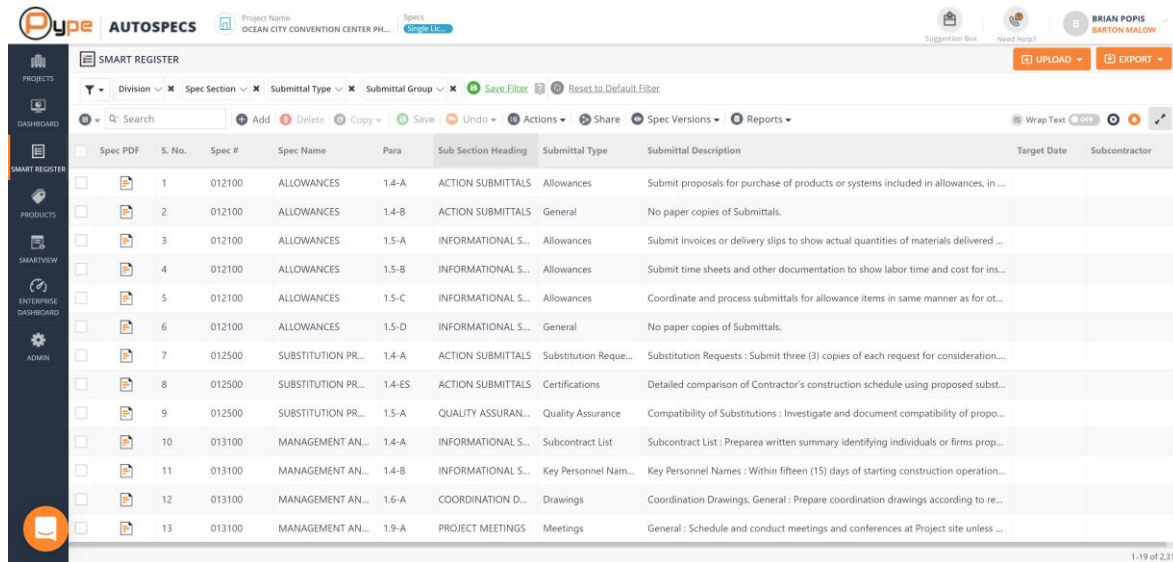
| Name | Total | Fall | Struck By | Electrocution | Caught In-Between | Fire | Other | Ladder | PPE | ELECTRICAL | Guard Rail | Openings and Holes | Access and Egress | Fall Arrest System | Hand/Power Tools | Hazardous Material | Housekeeping | Lift and Hoist | Lighting | PPE - Hearing | Sharp Edges | Work Environments | Barricade | Confined Space | Crane | Elevated Surface | Equipment/Installat... |
|--------------|-------|------|-----------|---------------|-------------------|------|-------|--------|-----|------------|------------|--------------------|-------------------|--------------------|------------------|--------------------|--------------|----------------|----------|---------------|-------------|-------------------|-----------|----------------|-------|------------------|------------------------|
| Barton Malow | 13 | 6 | 1 | 2 | 1 | 3 | 0 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Safety Risk Factors Table

| Risk | Hazard | ID | Title | Description | Assigned To |
|---------------|--------------------------------------|----|--|--|------------------|
| Other | Hazardous Material | 20 | Are material staging/storage areas organized? | | |
| Other | | 18 | Equipment is properly being used? | | |
| Other | Missed Inspection | 19 | Is the pre-use inspection complete? | | |
| Electrocution | | 24 | Is housekeeping in good condition? | | |
| Electrocution | | 3 | Is housekeeping in good condition? | | |
| Other | Hand/Power Tools, PPE, PPE - Hearing | 7 | Is job specific PPE required and being used? | Workers running chop saws without the use o... | Mark Haggenmaker |
| Struck By | PPE | 14 | Is the standard PPE being worn? | | Mark Haggenmaker |
| Fall | Lift and Hoist | 1 | Proper use of scissor lift | | |
| Other | | 13 | Is there signage present on site to identify ha... | | |
| Other | PPE | 6 | Is job specific PPE required and being used? | | Mark Haggenmaker |

Pyte Autospecs and Autodesk Build

HOW BARTON MALOW USES IT:



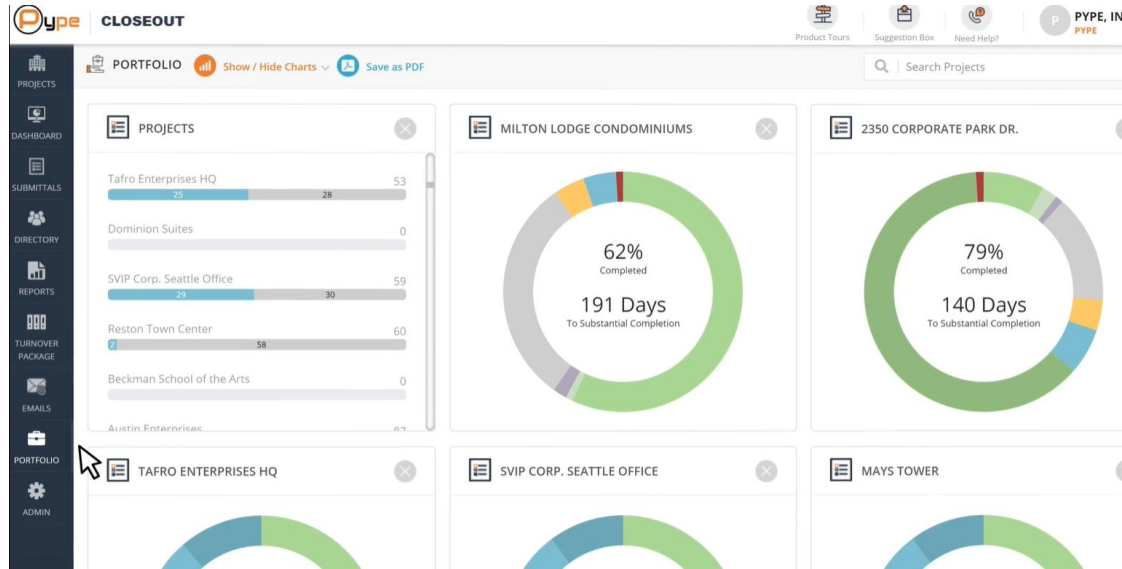
The screenshot displays the Pyte Autospecs web application interface. The top navigation bar includes the Pyte logo, 'AUTOSPECS', and a project name 'OCEAN CITY CONVENTION CENTER PH...'. Below the navigation bar is a search bar and a list of filters: Division, Spec Section, Submittal Type, and Submittal Group. A toolbar contains icons for Add, Delete, Copy, Save, Undo, Actions, Share, Spec Versions, and Reports. The main content area is a table with columns for Spec PDF, S. No., Spec #, Spec Name, Para, Sub Section Heading, Submittal Type, Submittal Description, Target Date, and Subcontractor. The table lists 13 rows of specifications, including Allowances, Substitution Requests, and Management Announcements.

| Spec PDF | S. No. | Spec # | Spec Name | Para | Sub Section Heading | Submittal Type | Submittal Description | Target Date | Subcontractor |
|----------|--------|--------|--------------------|--------|---------------------|-----------------------|--|-------------|---------------|
| | 1 | 012100 | ALLOWANCES | 1.4-A | ACTION SUBMITTALS | Allowances | Submit proposals for purchase of products or systems included in allowances, in ... | | |
| | 2 | 012100 | ALLOWANCES | 1.4-B | ACTION SUBMITTALS | General | No paper copies of Submittals. | | |
| | 3 | 012100 | ALLOWANCES | 1.5-A | INFORMATIONAL S... | Allowances | Submit invoices or delivery slips to show actual quantities of materials delivered ... | | |
| | 4 | 012100 | ALLOWANCES | 1.5-B | INFORMATIONAL S... | Allowances | Submit time sheets and other documentation to show labor time and cost for ins... | | |
| | 5 | 012100 | ALLOWANCES | 1.5-C | INFORMATIONAL S... | Allowances | Coordinate and process submittals for allowance items in same manner as for ot... | | |
| | 6 | 012100 | ALLOWANCES | 1.5-D | INFORMATIONAL S... | General | No paper copies of Submittals. | | |
| | 7 | 012500 | SUBSTITUTION PR... | 1.4-A | ACTION SUBMITTALS | Substitution Reque... | Substitution Requests : Submit three (3) copies of each request for consideration... | | |
| | 8 | 012500 | SUBSTITUTION PR... | 1.4-ES | ACTION SUBMITTALS | Certifications | Detailed comparison of Contractor's construction schedule using proposed subst... | | |
| | 9 | 012500 | SUBSTITUTION PR... | 1.5-A | QUALITY ASSURAN... | Quality Assurance | Compatibility of Substitutions : Investigate and document compatibility of propo... | | |
| | 10 | 013100 | MANAGEMENT AN... | 1.4-A | INFORMATIONAL S... | Subcontract List | Subcontract List : Preparea written summary identifying individuals or firms prop... | | |
| | 11 | 013100 | MANAGEMENT AN... | 1.4-B | INFORMATIONAL S... | Key Personnel Nam... | Key Personnel Names : Within fifteen (15) days of starting construction operation... | | |
| | 12 | 013100 | MANAGEMENT AN... | 1.6-A | COORDINATION D... | Drawings | Coordination Drawings, General : Prepare coordination drawings according to re... | | |
| | 13 | 013100 | MANAGEMENT AN... | 1.9-A | PROJECT MEETINGS | Meetings | General : Schedule and conduct meetings and conferences at Project site unless ... | | |

- Automatically turns specifications into searchable, shareable submittal logs
- Takes the time-consuming process of manually creating submittal logs and replaces it with a streamlined, automated process
- Submittal log can be exported to BIM 360 for assignment to subcontractors and review with architect/engineer



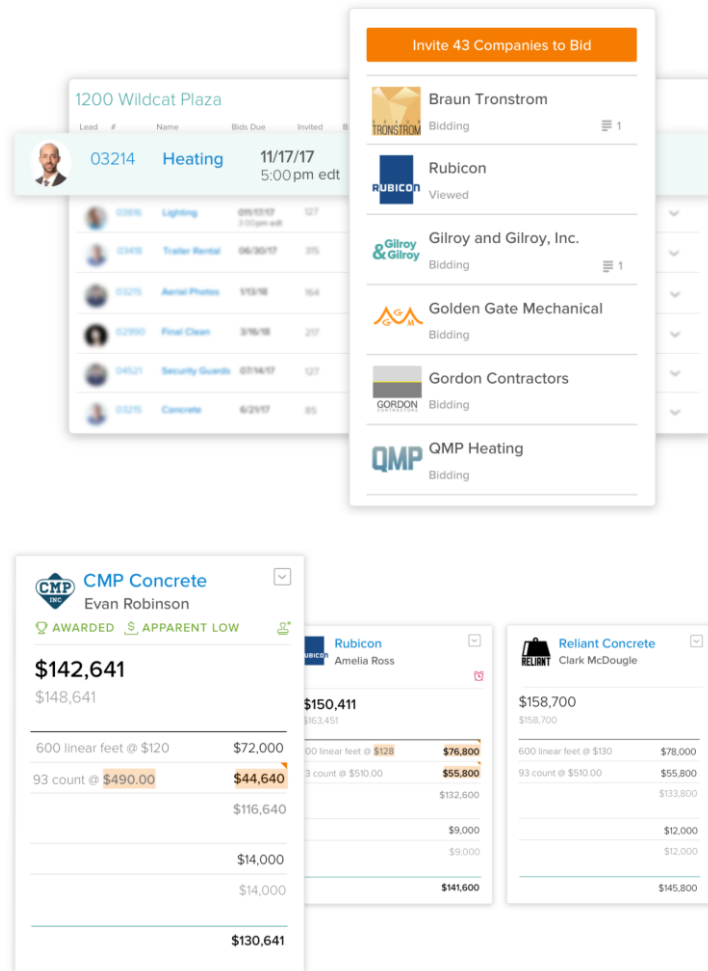
Pype Closeout and Autodesk Build



HOW BARTON MALOW USES IT:

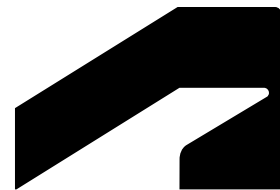
- Pype Closeout provides a single portal for closeout document collection, management, and compilation into a digital turnover package
- Subcontractors automatically receive timely and specific notifications to submit documents; can easily upload required docs directly into the Closeout platform for the Barton Malow project teams to review and approve.
- All final documentation for the project can automatically be packaged into a PDF turnover package

Building Connected



HOW BARTON MALOW USES IT:

- Send out invitations to bid projects and additional work in less than 10 minutes
- Manage and track the entire project bidding process from a unified online platform
- Evaluate subcontractor bids side by side
- Collaborate with subcontractors through Building Connected to efficiently produce results for project bids
- Reduce up front risk by viewing which subcontractors are qualified (project limit, EMR, etc.)



Wrap Up and Industry Outlook

ACC Transformation

Clients and Partners using the Autodesk Construction Cloud

- Many clients are beginning to centralize processes with ACC
 - Automotive
 - Healthcare
 - Manufacturing
- It is becoming more common for not only our processes to be hosted within ACC, but many other teammates on collaborative projects



Questions and Answers?