



Empowering Communities

Bluebeam's Impact on Transforming Our Infrastructure

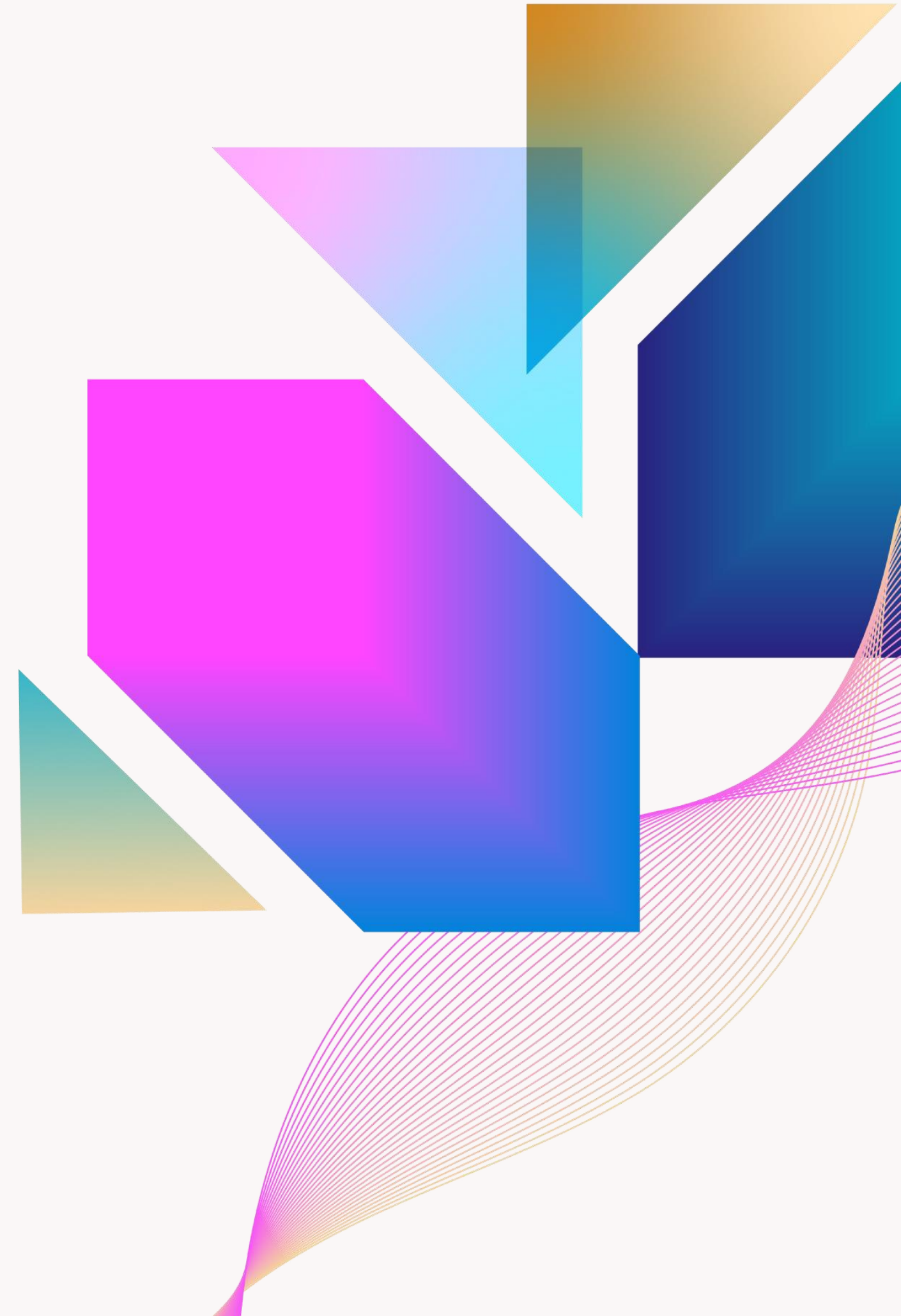
Bluebeam

Parth Tikiwala, Head of Government and Academic Affairs

Josias Tchatchoua, Customer Success Manager, Public Sector

Steven Younkin, PE, PTOE, RSP1; Deputy Chief Engineer, City of Greeley

Pavan Batchu, CEO, sitenotes



Agenda

Introduction

EDC-6: Digital As-Builts (DABs)

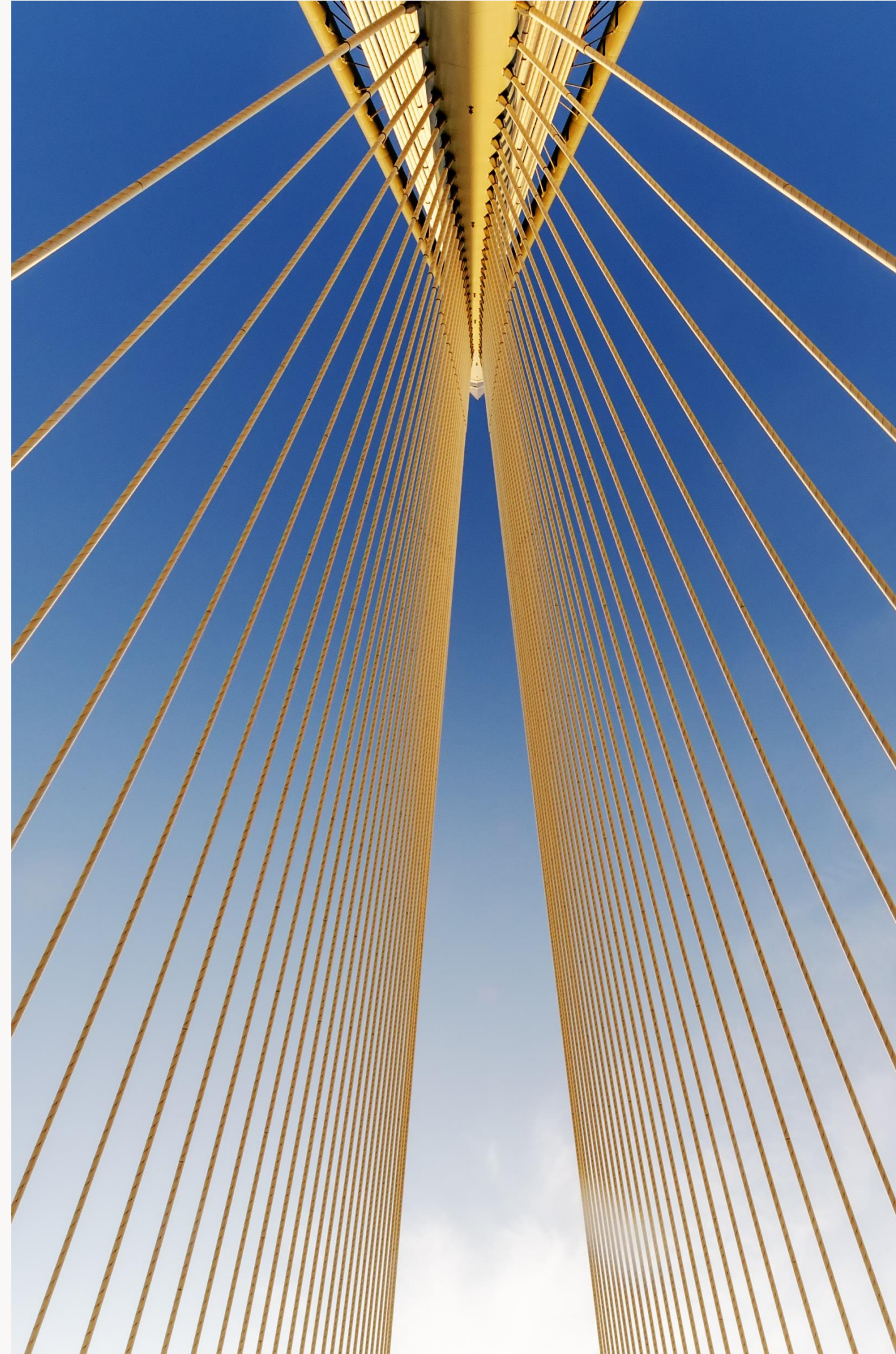
Looking Back

Examples of Bluebeam within Agencies

Looking Ahead: Bluebeam API

Possibilities

Q&A



FHWA Every Day Counts (EDC)

Every Day Counts (EDC):

“is a state-led program that accelerates the adoption of proven but underused innovations to make U.S. transportation systems more **efficient, sustainable, equitable, and safe.**” – FHWA

7 Rounds to Date

- Drive performance goals in 2-year cycles
- 57 Innovations promoted to make roads and bridges better, faster, and smarter
 - 26 EDC innovations currently utilized by all states

FHWA EDC-6: Digital As-Builts (DABs)

- Using digital data to resolve issues *before* they reach the field, and
- To create accurate as-built records that support maintenance, asset management, and future rehabilitation.

Traditional As-Builts

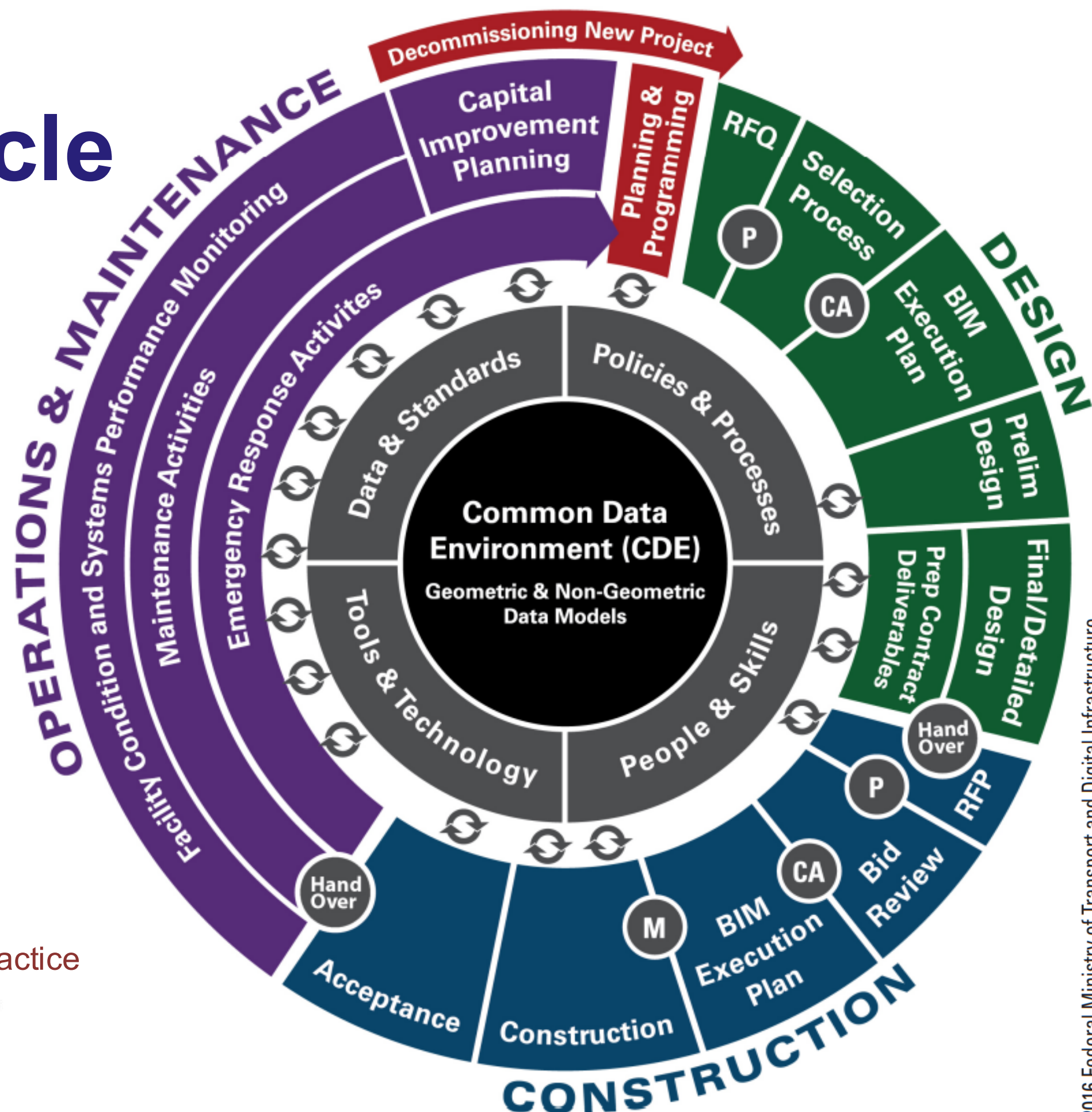
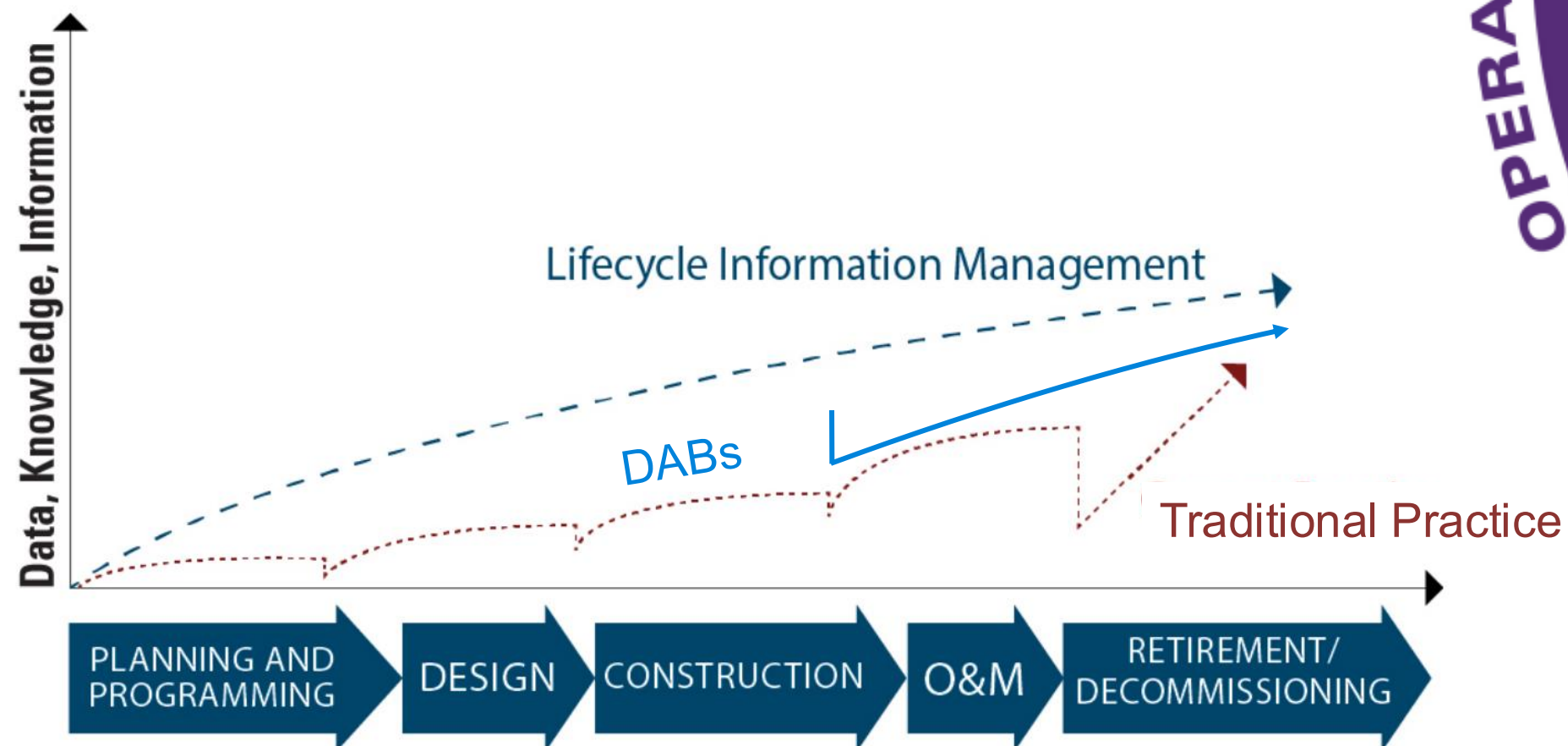
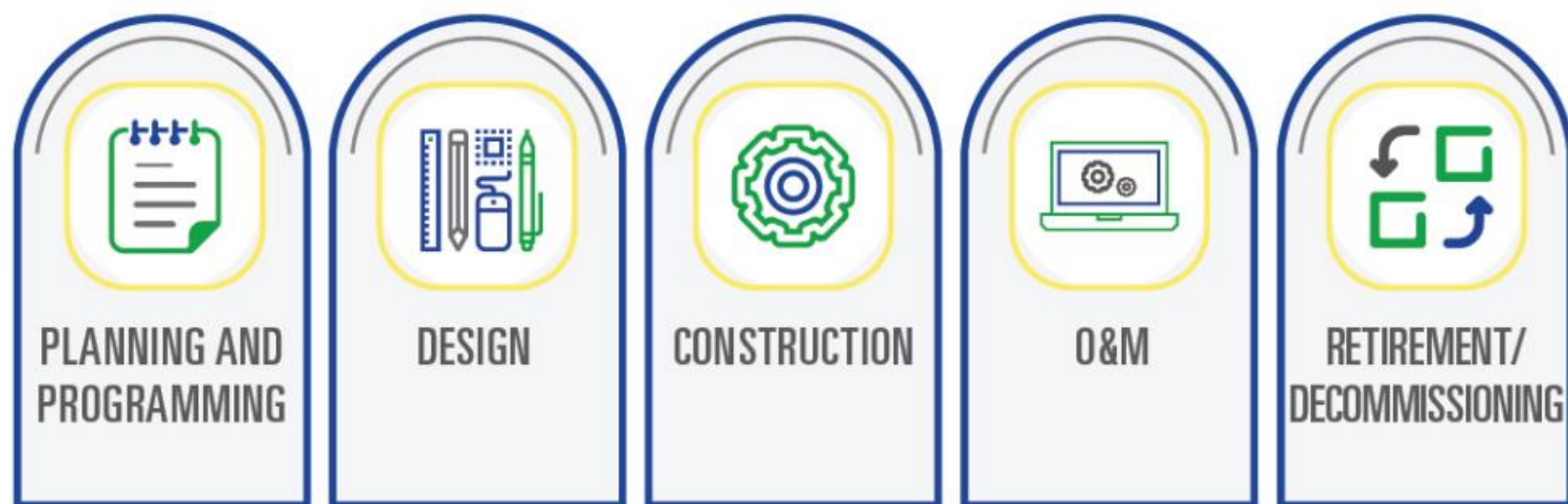
Hard-Paper Plans
Pen-Redlines

Digital As-Builts (DABs)

Eliminate Paper
Digital Data
Collaborative Coordination
Readily Accessible Data
Data-Driven Decision Making
Streamlined Project Delivery

US Project Lifecycle

Siloed Data and Information Management



Maturity Levels of Digital As-Builts



Paper/Mylar-based
Markup



Image-based
Scan



Document-based
PDF



Object-based
Model



Data – based
Dataset

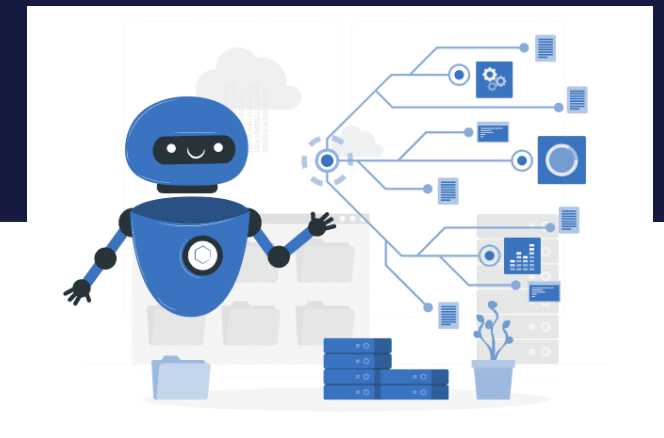
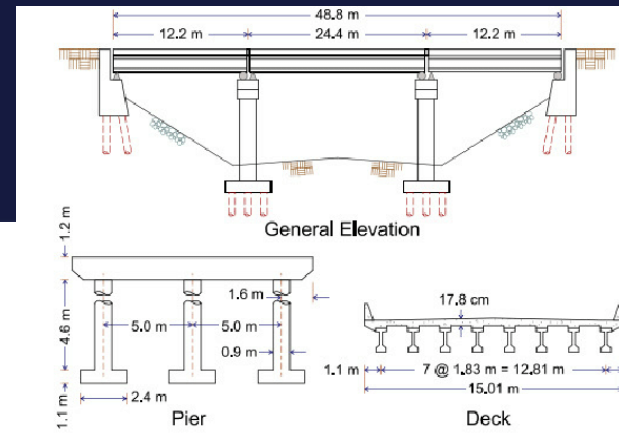
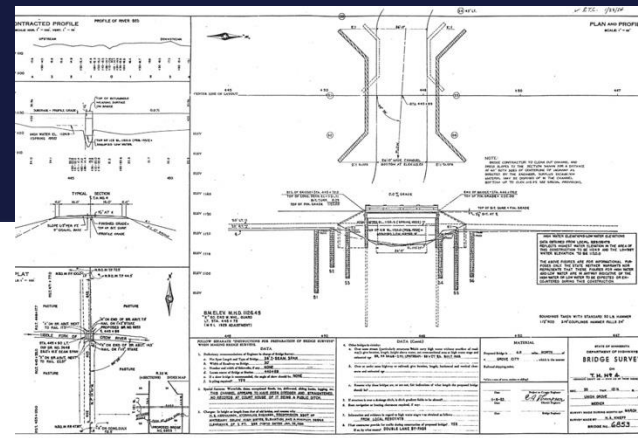
Paper

Paperless

Electronic

Digital

AI

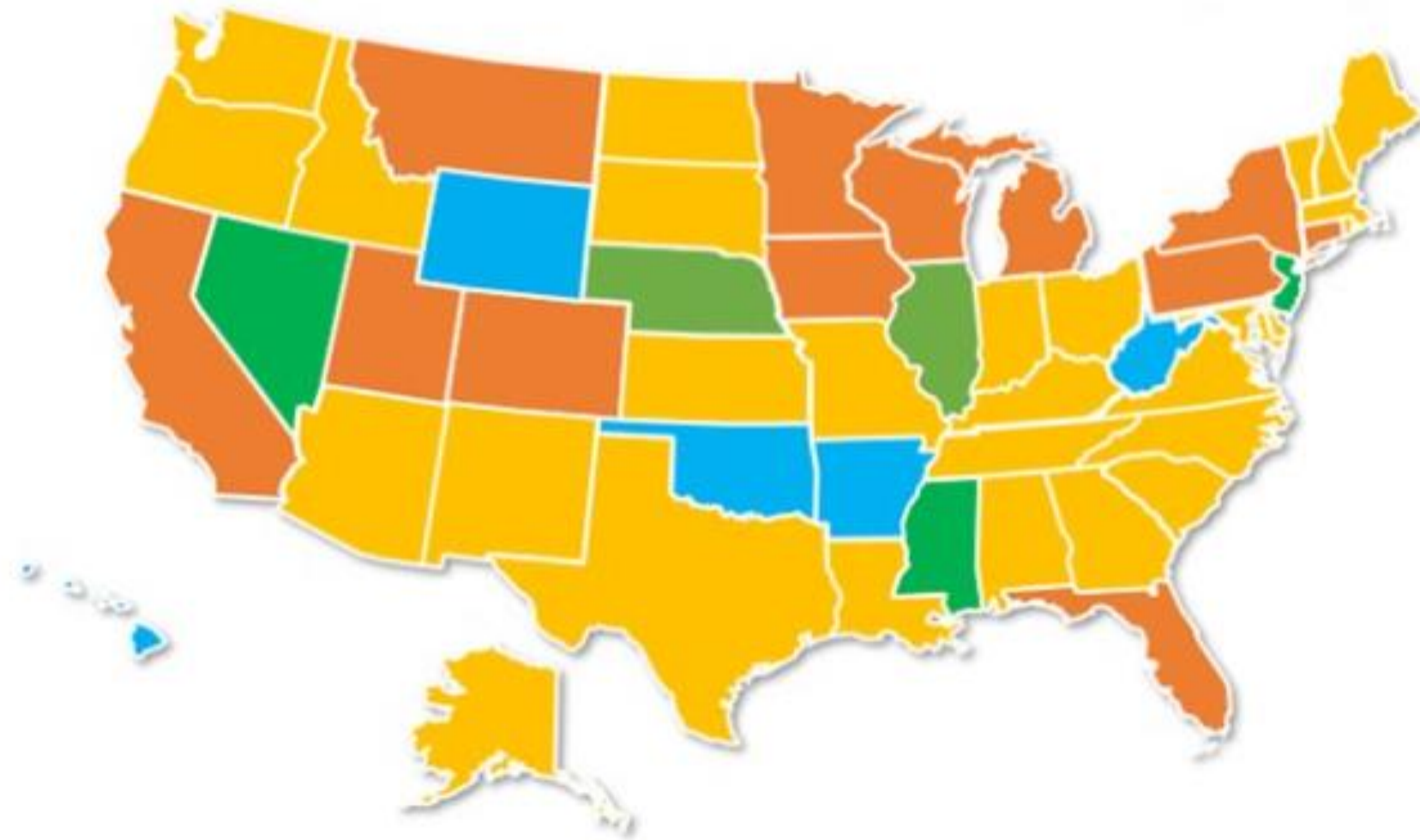


python

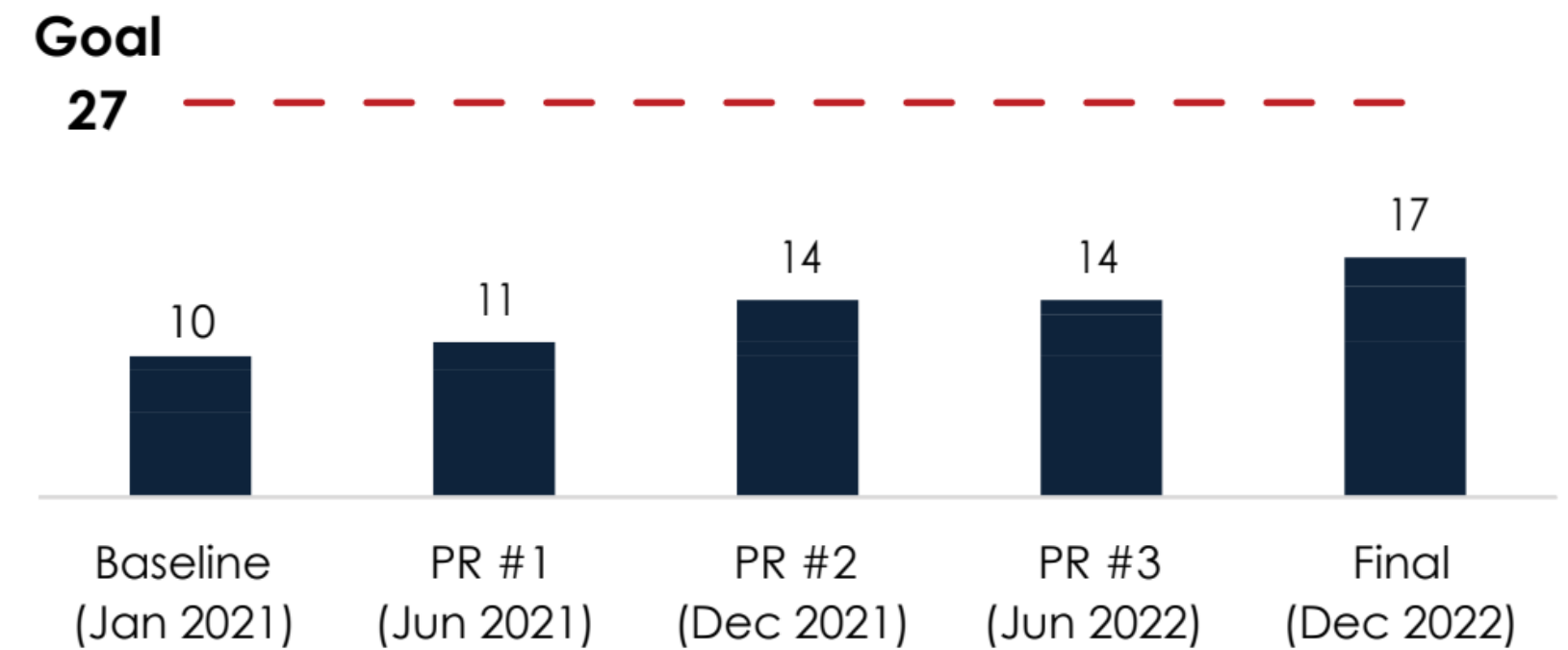


Digital As-Builts Progress

DIGITAL AS-BUILTS: STATE OF THE PRACTICE (2023)



Attainment of Demonstration, Assessment, or Institutionalized Implementation Across All States

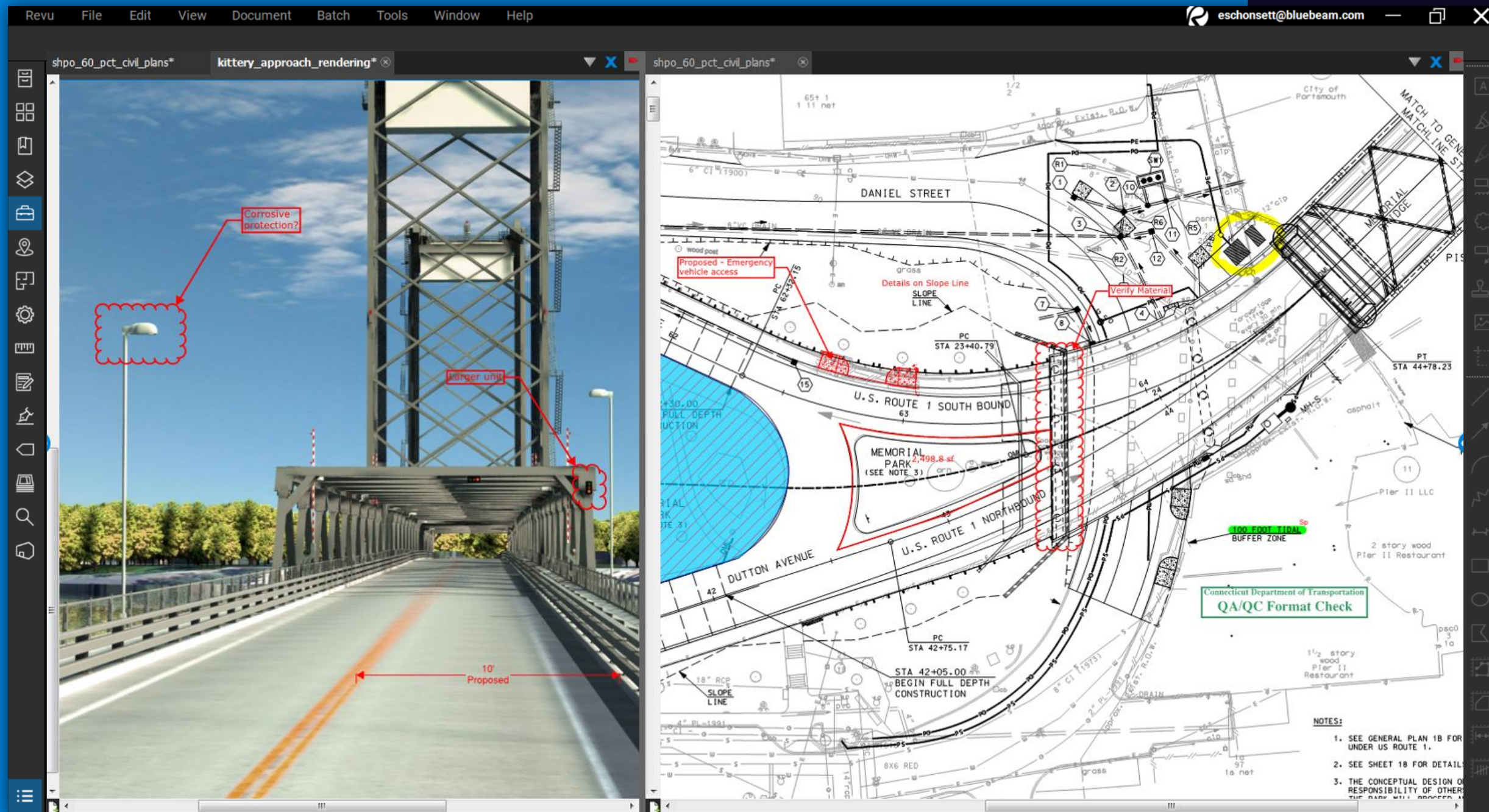
























Current DABs Challenges

Lack of:

- Data Governance
- Asset Lifecycle Requirements
- Workflow Standards
- Interoperable Tools
- Industry Adoption
- Resources
- Siloed Workflows
- Missing Organization Direction
- Major Cultural Shift
- Insufficient Trained Workforce

Digital Redlines

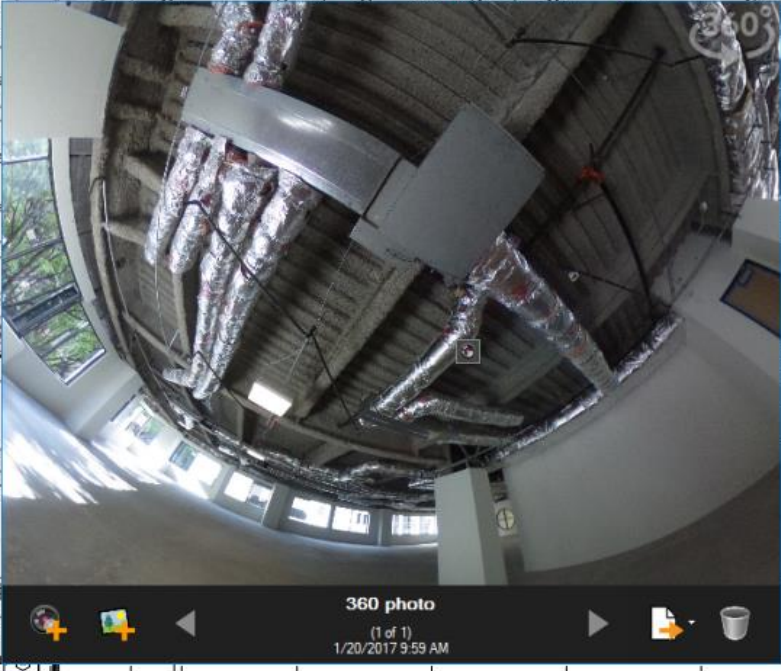


CTDOT Review Tools		
Subject	Comment	
 T	Inserted Text	
 A	Text Box	Normal Text
 Sp	Spelling Error	Spelling Error
	Callout	
	Cloud	
	Length Measurement	2 in
	Area Measurement	3 sq in
	Stamp	The plans have been checked that the follo...
CTDOT Shop/Working Drawing Review ...		
Subject	Comment	
	Submittal	Contractor Submittal Review Stamp
	Highlight	
	Highlight	
 A	Text Box	Use to Add text
	Callout	Use to Add a Callout
	Cloud	Use to Cloud Corrections
	Line	Use to Cross Out
CTDOT As Built Tools		
Subject	Comment	
	Construction Started and Completed Date	Construction Started and Completed Date
	As-Built Stamps	This sheet not corrected
	As-Built Stamps	This sheet corrected
	As-Built Stamps	Typical Section corrected
	As-Built Stamps	These quantities not corrected
 A	Text Box	
	Callout	Use to Add a Callout

Standardized & Say
what you need to say

Accountability

1.1.1 - 1ST FLOOR PLAN - SOUTH 09 22 16 Non-Structural Metal Framing RFI 101_Closed



COMPANY NAME
APPROVED
APPROVED AS CORRECTED
REVISE AND RESUBMIT
REJECTED
FOR INFORMATION ONLY
DISCLAIMER
BY: [signature] DATE: 10/30/17

360 photo
(1 of 1)
1/20/2017 9:59 AM

Subject	Comments	Page Label	Space	Author	Date	Status
Contractor	how far does fence extend beyond ramp?	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH		Chris Johnson	11/2/2016 7:43:57 PM	
Contractor	is there a badge scanner for elev access?	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH		Chris Johnson	11/2/2016 7:43:57 PM	
Contractor	provide detail	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	BAGGAGE CLAIM 145	Chris Johnson	11/2/2016 7:43:57 PM	Accepted set by James Chambers on 10/3/2017 at 10:20:31 AM
Contractor	are there any lights or elec outlets on patio?	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	PATIO PL-1	Chris Johnson	11/2/2016 7:43:57 PM	
Engineer	change to double door to fit elec equipment	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	INBOUND BAGGAGE 129	Steve Chung	11/2/2016 7:43:37 PM	Rejected set by James Chambers on 10/3/2017 at 10:20:41 AM
Engineer	GFCI outlet required near sink	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	OPERATIONS 120A	Steve Chung	11/2/2016 7:43:37 PM	Rejected set by James Chambers on 10/3/2017 at 10:20:45 AM
Engineer	elec outlets needed on columns	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	BAGGAGE CLAIM 145	Steve Chung	11/2/2016 7:43:37 PM	Accepted set by James Chambers on 10/3/2017 at 10:20:45 AM
Engineer	does planter need sprinklers?	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH		Steve Chung	11/2/2016 7:43:37 PM	
Engineer	provide elec outlets and internet at each check-in counter	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH		Steve Chung	11/2/2016 7:43:37 PM	

control points to resize, or drag text box to move. Double click to edit text

Snap To: Grid Content Markup | Show Grid | Reuse Sync 42.00 x 30.00 in

Proj 323232 - Markup Summary

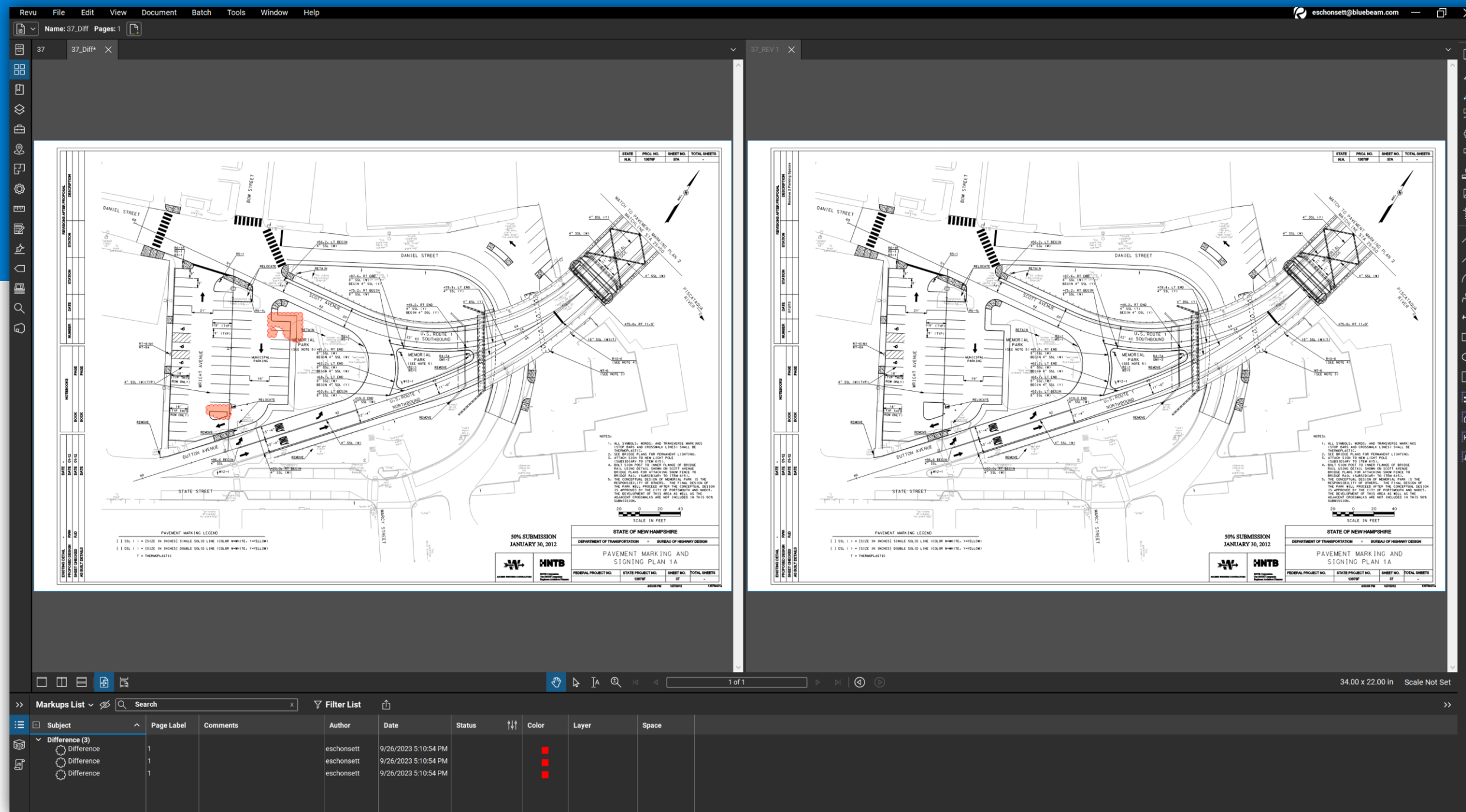
Architect (12)

Subject	Page Label	Space	Author	Date	Status	Page Index	Capture
Architect	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH		Mike Brady	11/2/2016 7:43:11 PM		1	No
Architect	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	Refer to spec section 05524	Mike Brady	10/3/2017 10:24:52 AM		1	Yes
Architect	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	add guardrails per ADA guidelines for automatic opening doors	Mike Brady	11/2/2016 7:43:11 PM		1	No
Architect	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	see Landscape sheets for planter wall details	Mike Brady	11/2/2016 7:43:11 PM		1	No
Architect	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	wall type missing	Mike Brady	11/2/2016 7:43:11 PM		1	No
Architect	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	verify ADA access	Mike Brady	11/2/2016 7:43:11 PM		1	No
Architect	Sheet: A1.1.1 - 1ST FLOOR PLAN - SOUTH	add banister details	Mike Brady	11/2/2016 7:43:11 PM		1	No

Tracking &
Accountability



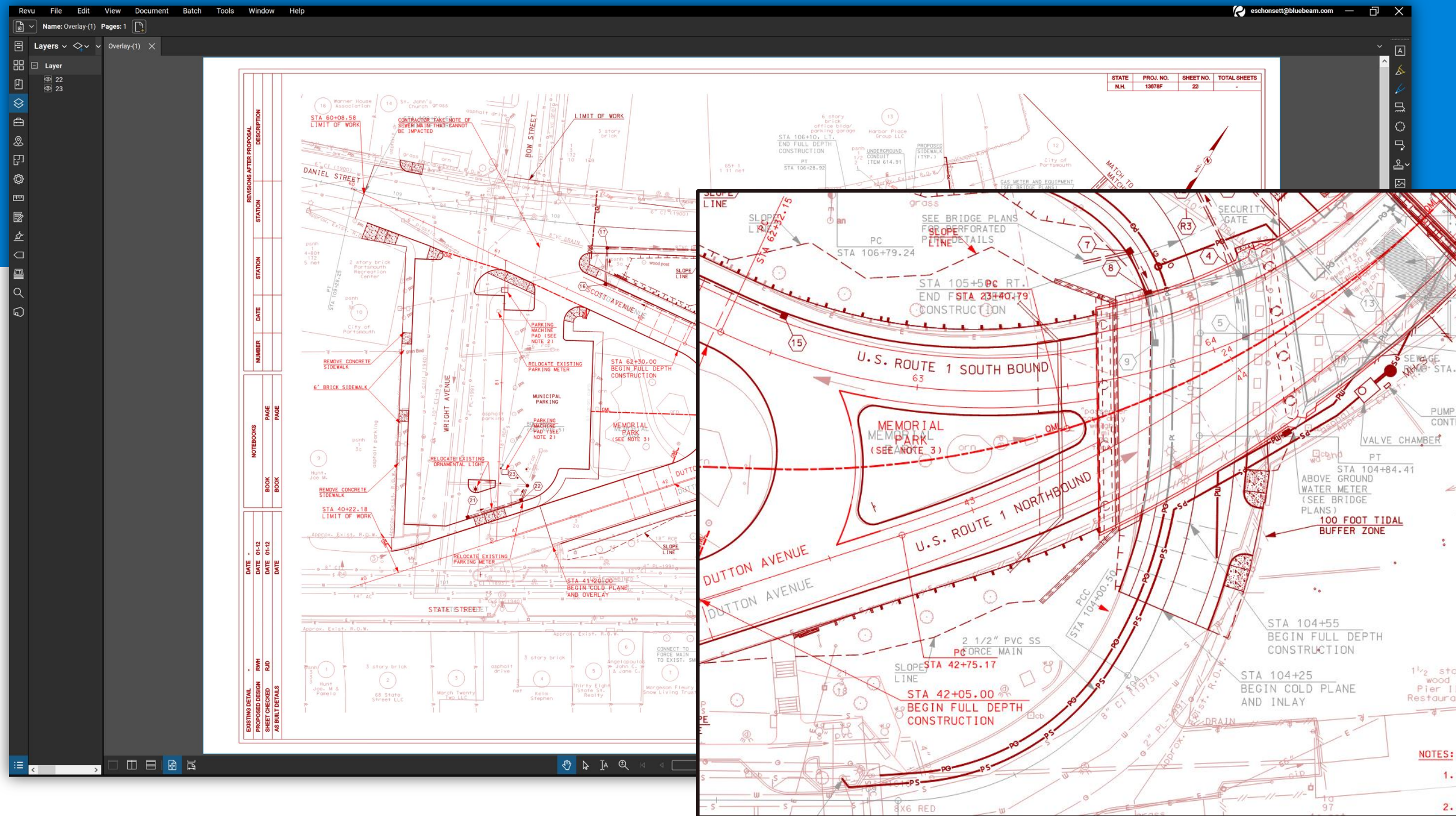
Drawing Management



Compare Documents

- Automatically cloud changes between two drawing sheets
- Run reports on changes

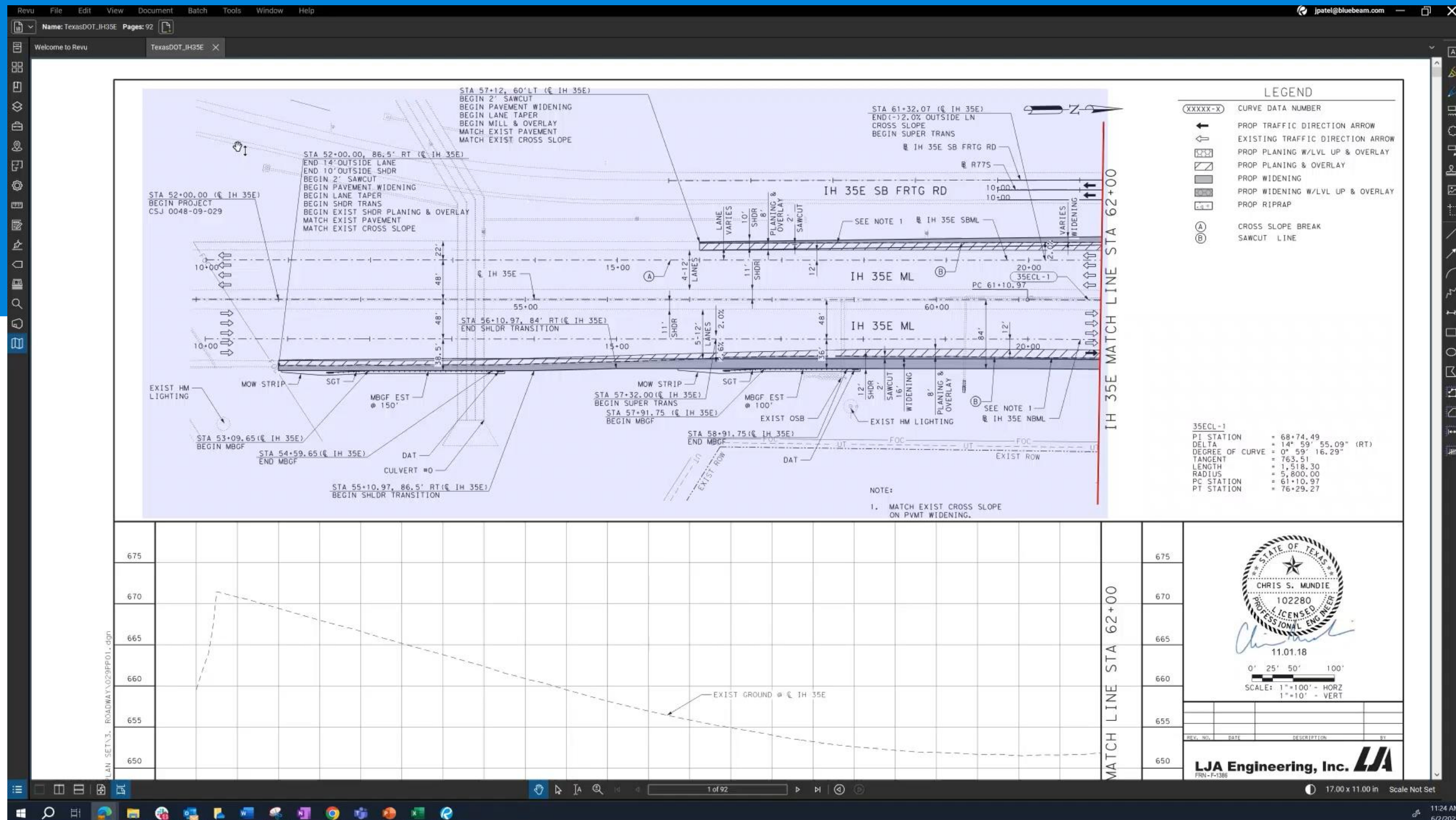
Drawing Management



Overlay Pages

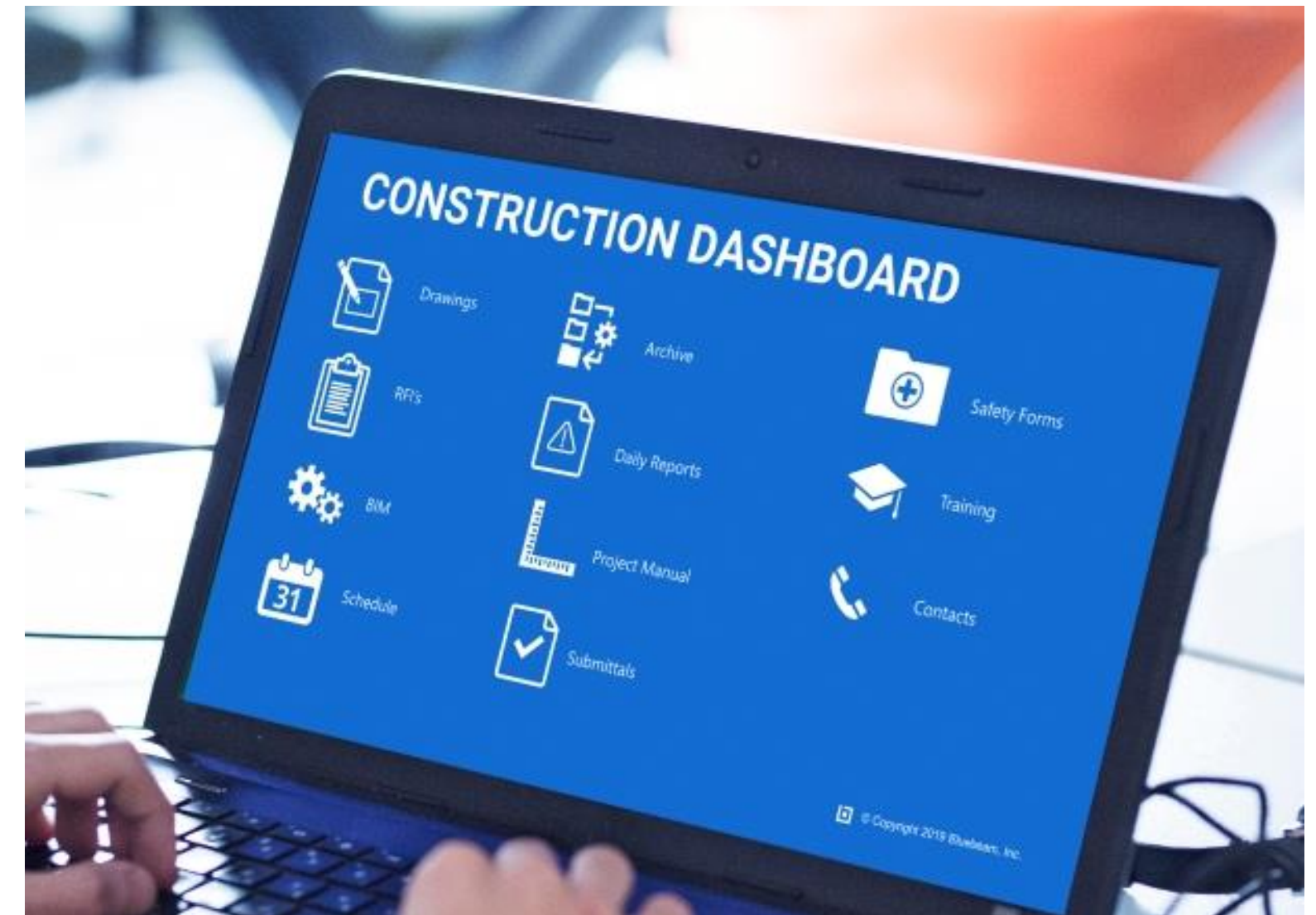
- Overlay multiple PDF files at once
- Look for clashes
- Identify changes

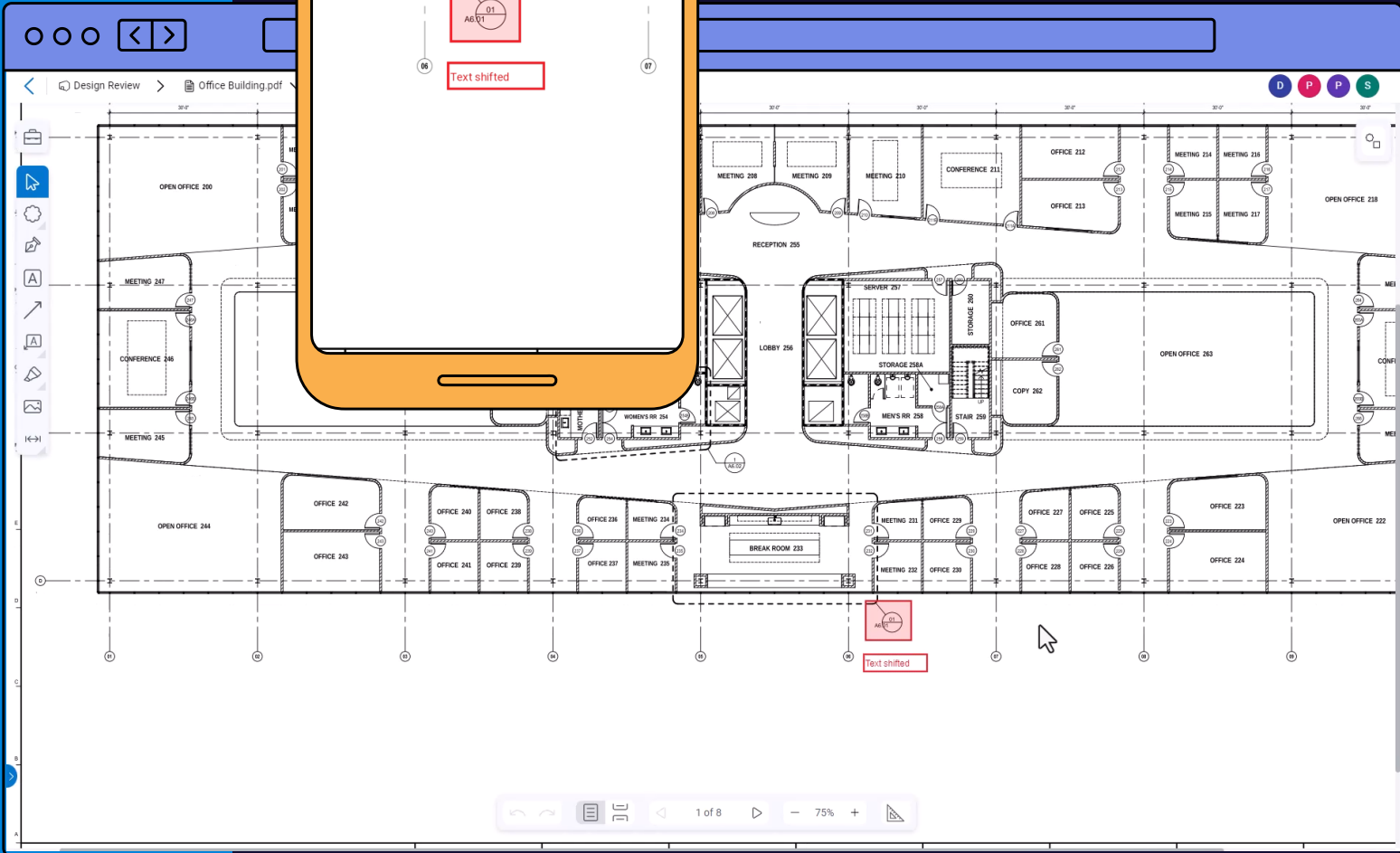
Auto Align, Powered By AI



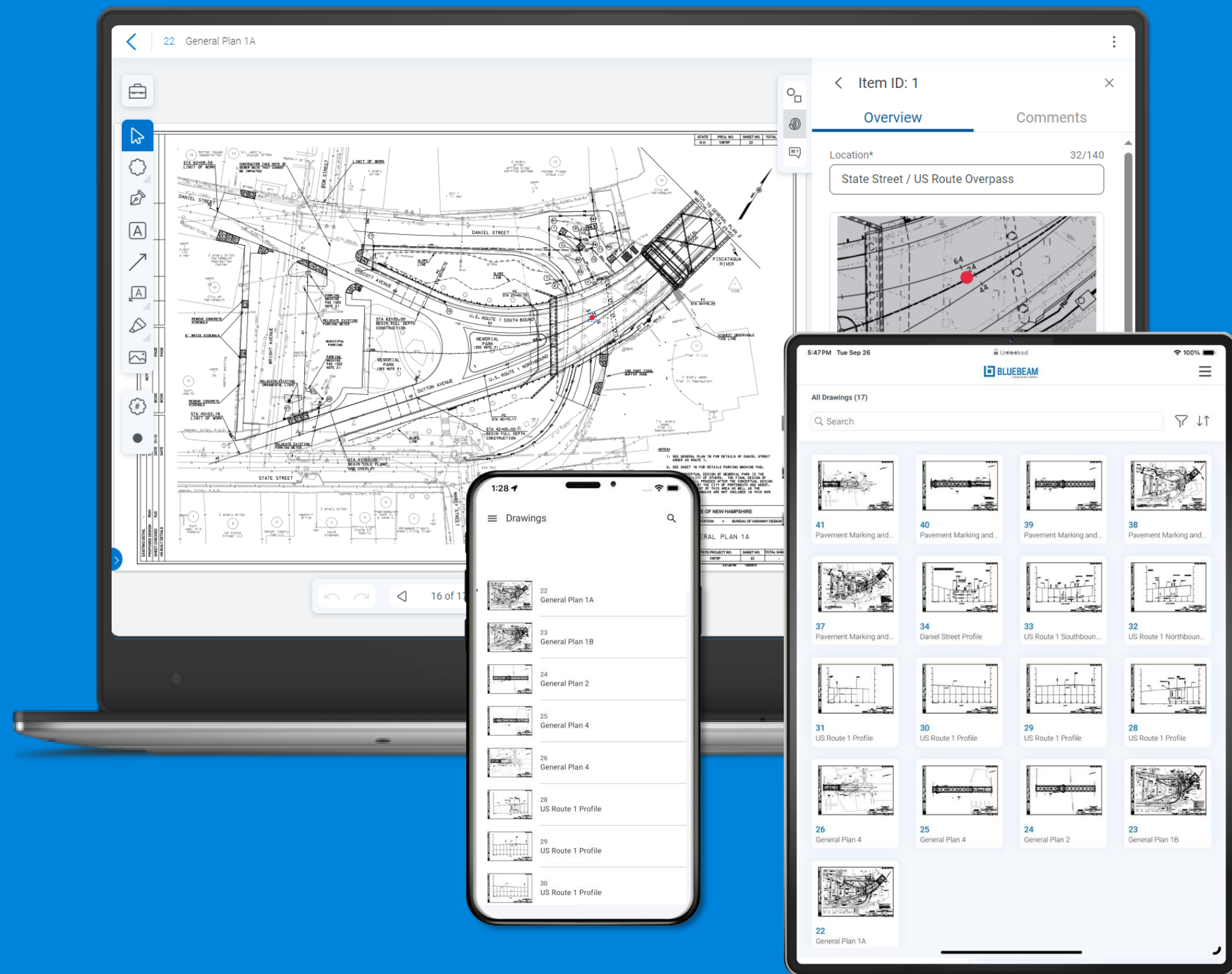
NY-OGS DABs

- Standardize entire digital plan review process
- Transparent & Consistent Workflows
 - Internal & External
- Dashboard:
 - Project States
 - Standards
 - Discipline Specific Tools
 - Templates
 - Training





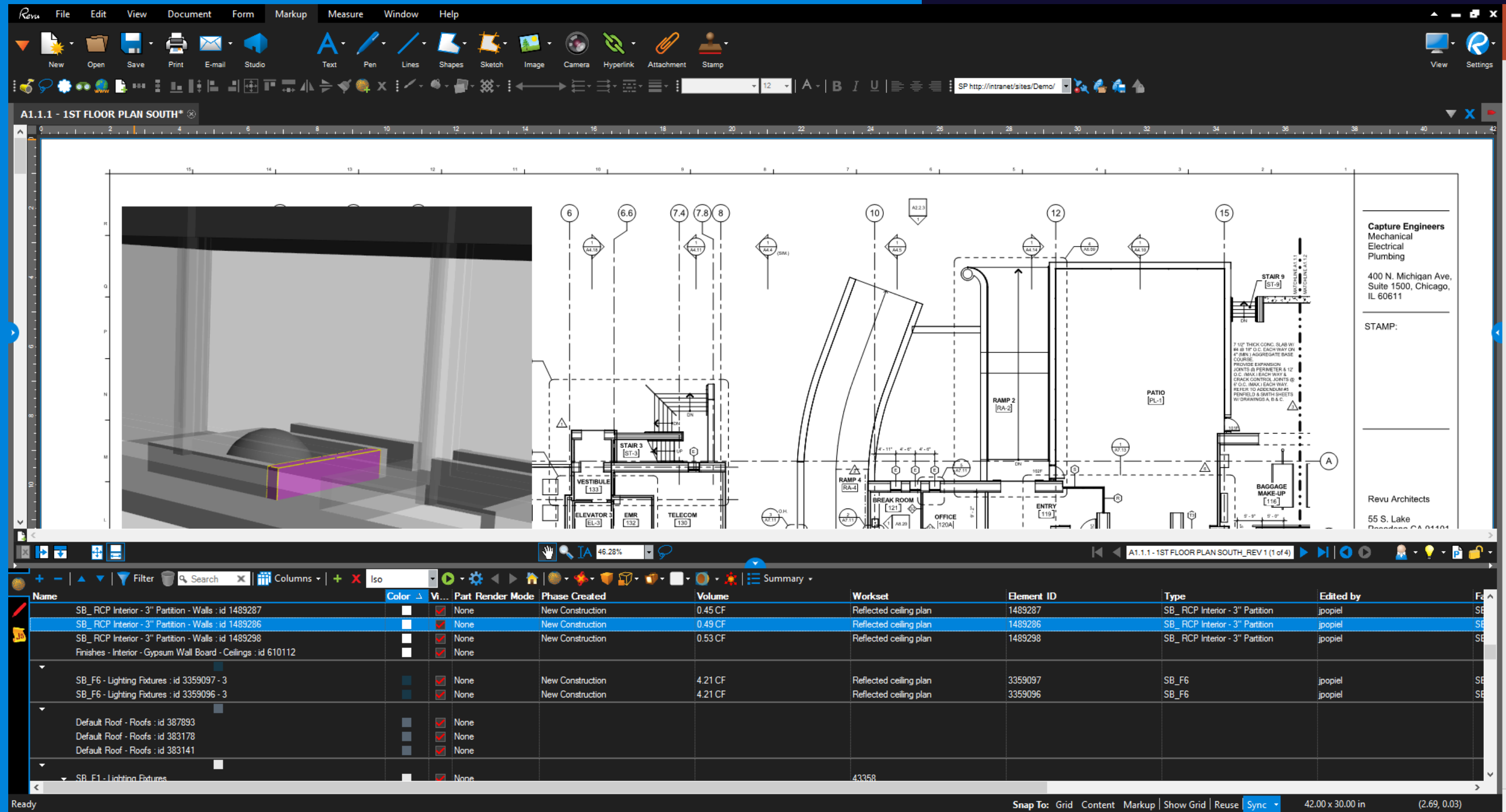
Field Access



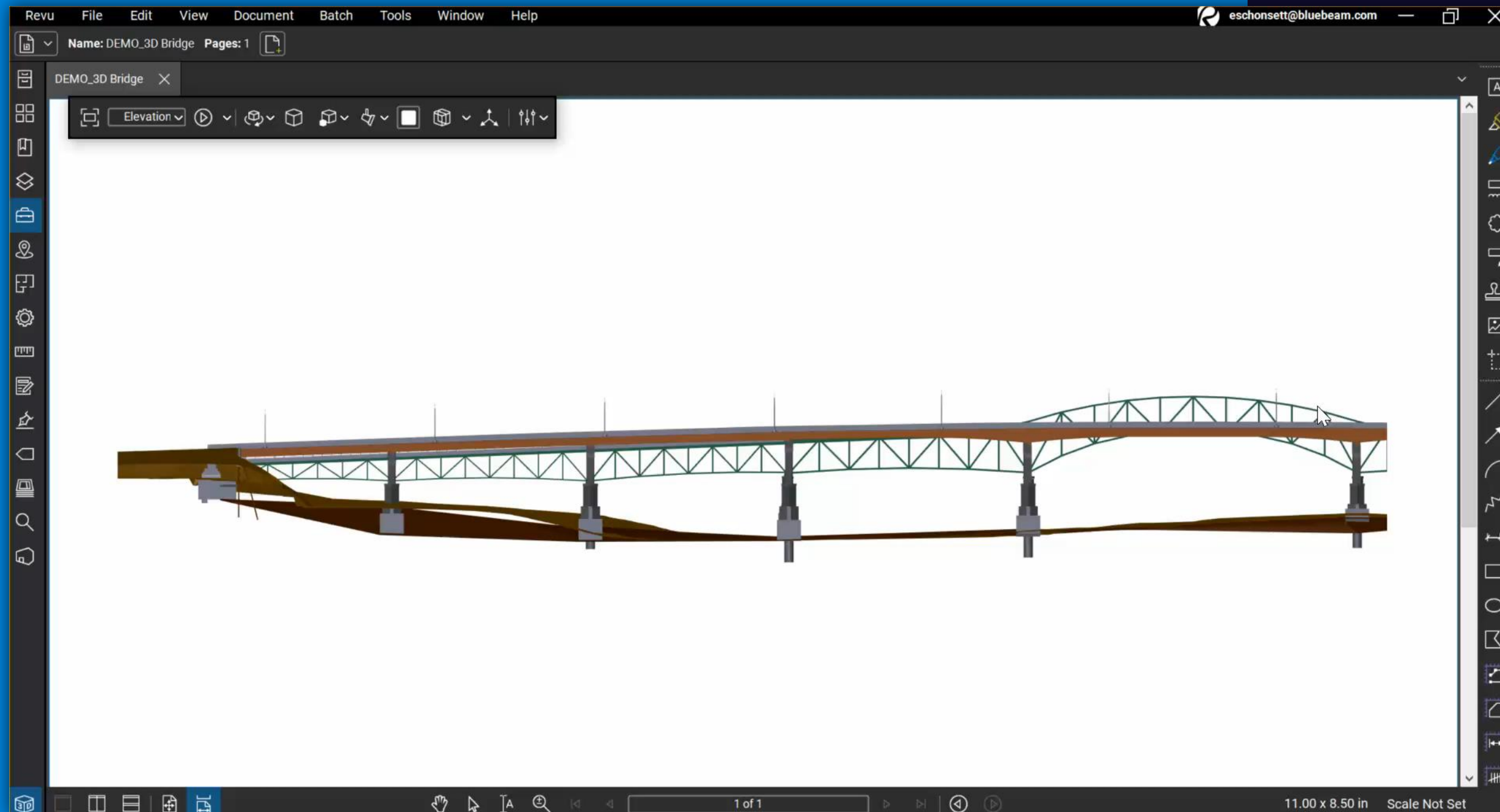
Device & Platform Agnostic

- Bring your documents and tools wherever you go.
- Invite others for easy viewing, markups and real-time collaboration.
- Manage Punch items, RFIs and Submittals on the go.
- Enrich project drawings with digital maps and GPS.

2D & 3D



3D & Model Data



Working with different forms of data

- Leverage 3D & Model Data: .IFC, .U3D or 3DPDF formats
- Navigate model directly in Bluebeam Revu
- Add Markups to 3D PDF
- Access all inherent model data

- Nov. 2018: Memo by Chief Engineer
- Hard copies (multiple sets) to Bluebeam PDFs
- Standardized Project Review
- Enhanced Collaboration Among Stakeholders
- Improved Data Accuracy
- Time Reduction in Design Review by 50%

Bluebeam → **Project Info** → **ArcGIS**



- 2011: Retired Mylars with PDF Contract Plans and Design Review
- 2012-2014: Progressed towards Digital Delivery by defining:
 - Transportation Asset Management
 - Linear Reference Systems
 - Transportation Enterprise Data
 - Electronic Engineering Data
 - ATLAS/COMPASS (Esri, SharePoint and OneDrive)
- 2024: Digital Delivery Roadmap

CTDOT Dynamic PDF Sets



AutoMark™ – Standardize,
Read Drawing information
to propagate Sheet Names



Batch Link® – Automate the
Sheet Navigation



Extract Pages – So they can
live as individuals



Studio™ – House Project
Files / Information



Sets – Bring it all back
together

CTDOT Dynamic PDF Sets



View all Project files, Holistically, Managing Changes

SharePoint / DMS



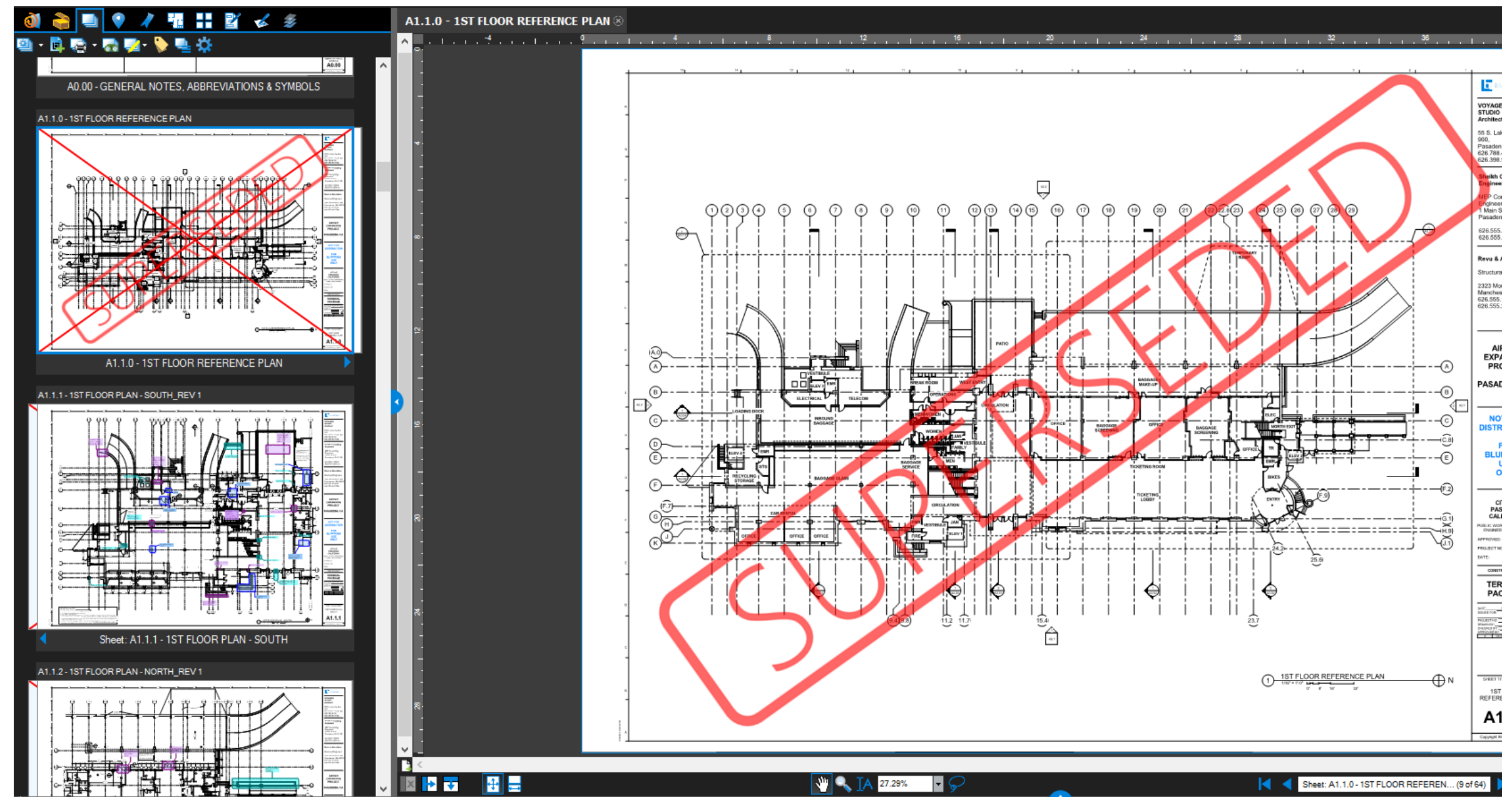
Desktop



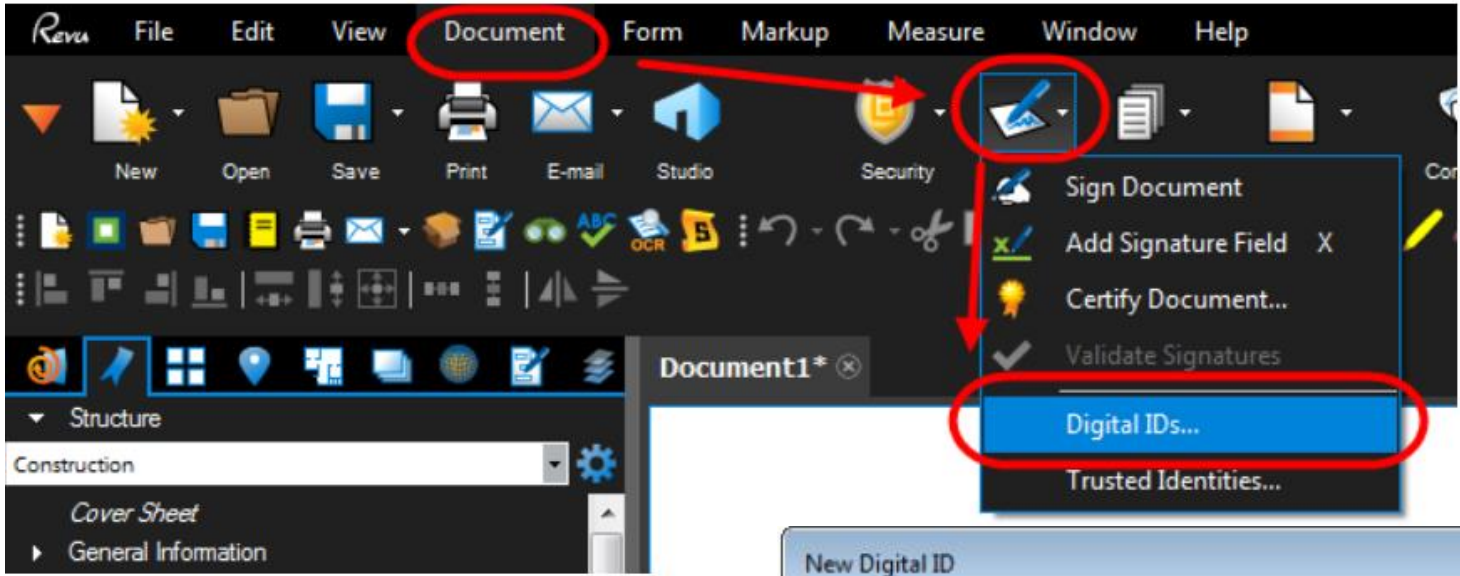
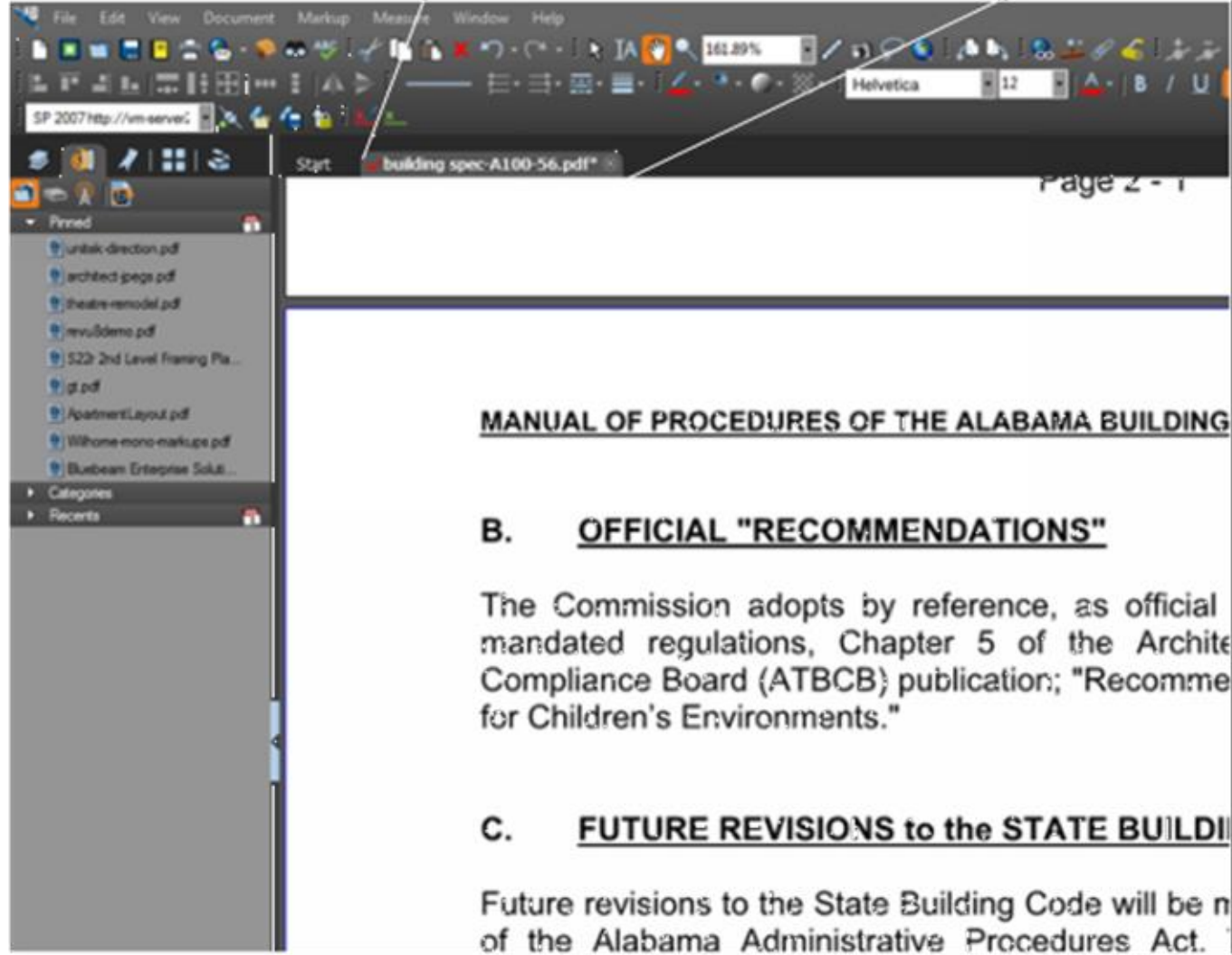
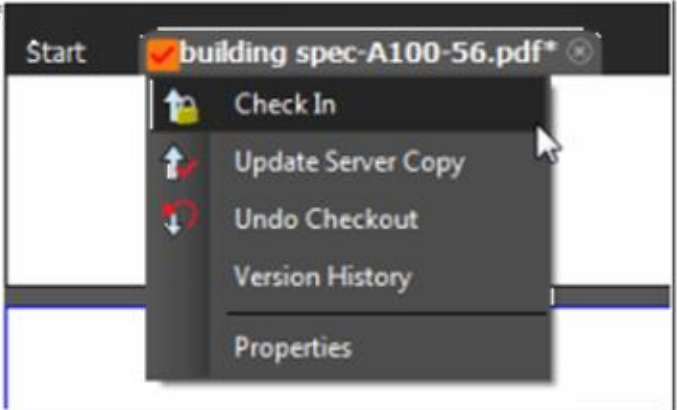
Company Network



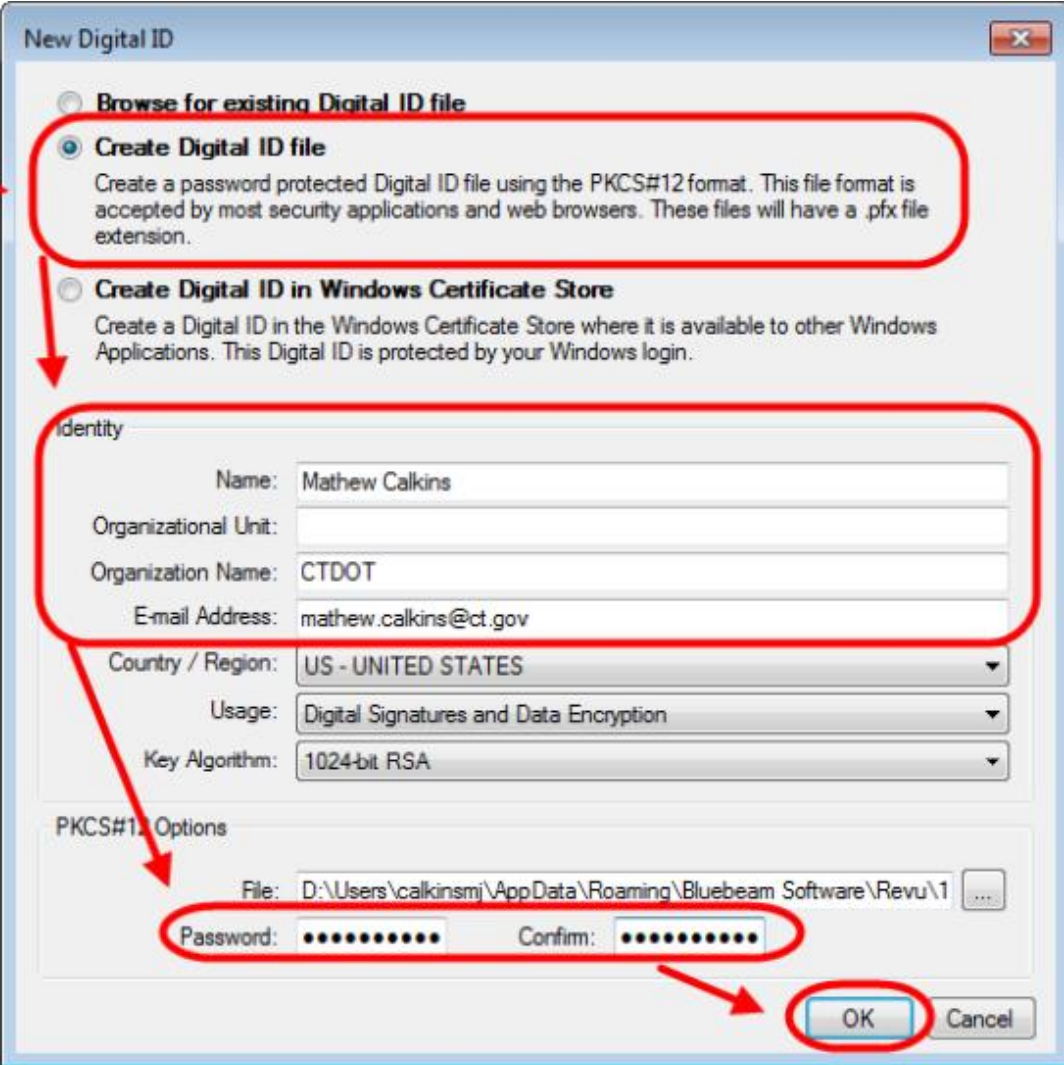
Collaborators / Field



SharePoint & PW Integrations



Digital Signatures Through Digital ID



- Started piloting Dec. 2015
- Full implementation by 2018
- Reduced allowed review time from 30 days to 15 days
- Average of 25% reduction in review times
- 12x productivity
- Increased DB awards to \$1.2B in a calendar year

A construction worker wearing a white hard hat and a yellow safety vest is looking at blueprints on a construction site at night. The background shows a building under construction with windows and scaffolding. The text "City of Greeley & sitenotes" is overlaid in white.

City of Greeley & sitenotes



Bluebeam Overview



2002

Bluebeam Was Founded

3m+

Users Around the Globe

160+

Countries Using Bluebeam

35+

Bluebeam User Groups

74%

Of Top International Design Firms

27b

Collaborative Transactions

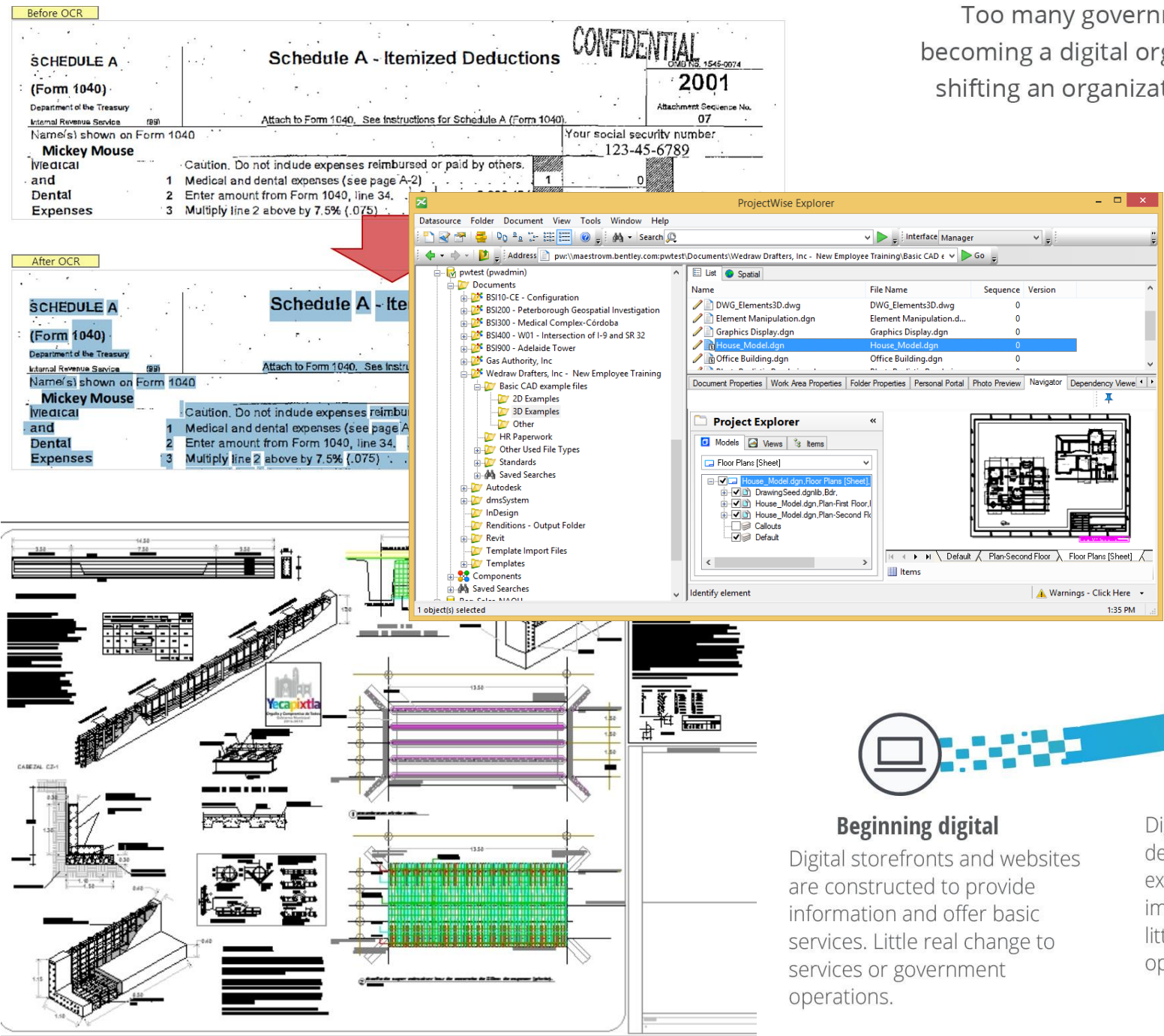


Move Forward Together...

FIGURE 1

Governments must move from “doing” digital to “being” digital

Too many government agencies feel that developing digital services is adequate for becoming a digital organization; however, digital transformation focuses on fundamentally shifting an organization’s operations and mindsets from “doing” digital to “being” digital.



Many agencies swirl in an endless loop of “doing” digital things—an illusion of being digital—rather than making changes to their digital mindset, service delivery, and operating models.

Being digital

The human experience is elevated. Human-centered design and advanced technologies like AI, cyber, and cloud are used to radically improve service delivery by transforming government operating models.

Becoming digital

Advanced digital strategies are employed to fully digitize some services but most are still a hybrid of physical and digital. Advanced changes are made to service delivery processes and operations but they still lack the cognitive intelligence to enable continuous improvement.

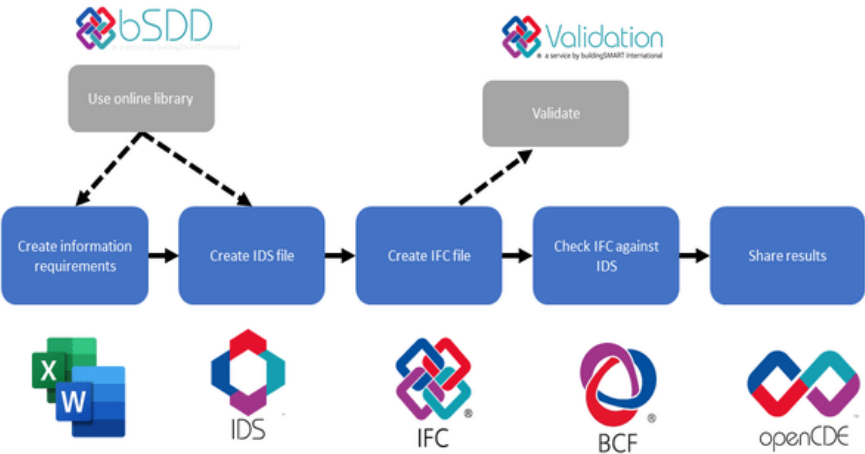
Doing digital

Digital technologies are deployed to improve customer experience resulting in improved services but very little change to government operations.

Beginning digital

Digital storefronts and websites are constructed to provide information and offer basic services. Little real change to services or government operations.

Ethical and Trustworthy AI



Source: Deloitte analysis.



 Join us in



**BLUEBEAM
LABS**



**BLUEBEAM
COMMUNITY**

THANK YOU!

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