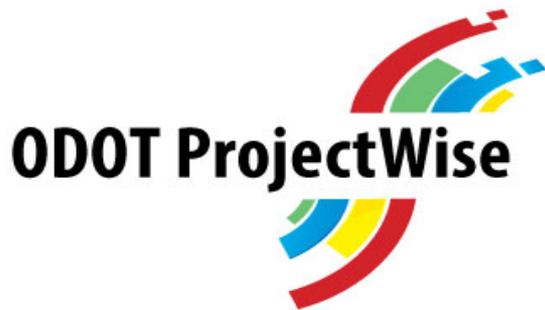


e-Construction Why, How, & When

EA Conference 2016

Vanessa Baker - e-Construction Program Analyst

Vanessa.baker@odot.state.or.us



Five Phases of Paperless Technology

Denial “Paperless! Are you kidding me?!! I’ll have none of it. Get me a Rite in the Rain Book, and Pencil – I’m good to Go!”

Anger “You’re not going to give me a wet signature? I’ll make you!! AND I want it in triplicate, scanned, in color, **and** sent through the US Mail!”

Bargaining “Alright already. If you give me some training on that techno – gizmo, I may take a few things paperless.”

Depression “Everyone is against me, the world was great when I had everything in filing cabinets. I miss my banker boxes.”

Acceptance “I save time, I have Wi-Fi access, and no one disputes I sent something, and more! WOW!!

e-Construction

DEFINITION:

- e-Construction is the collection, review, approval, and distribution of highway construction contract documents in a paperless environment.

OBJECTIVE:

- The goal is to increase efficiency of construction staff by streamlining communications and improving transparency with internal and external partners by the automation of document processing using digital technologies.

***If it is created on a computer,
keep it on a computer.***

What have we learned From Paperless Pilots?



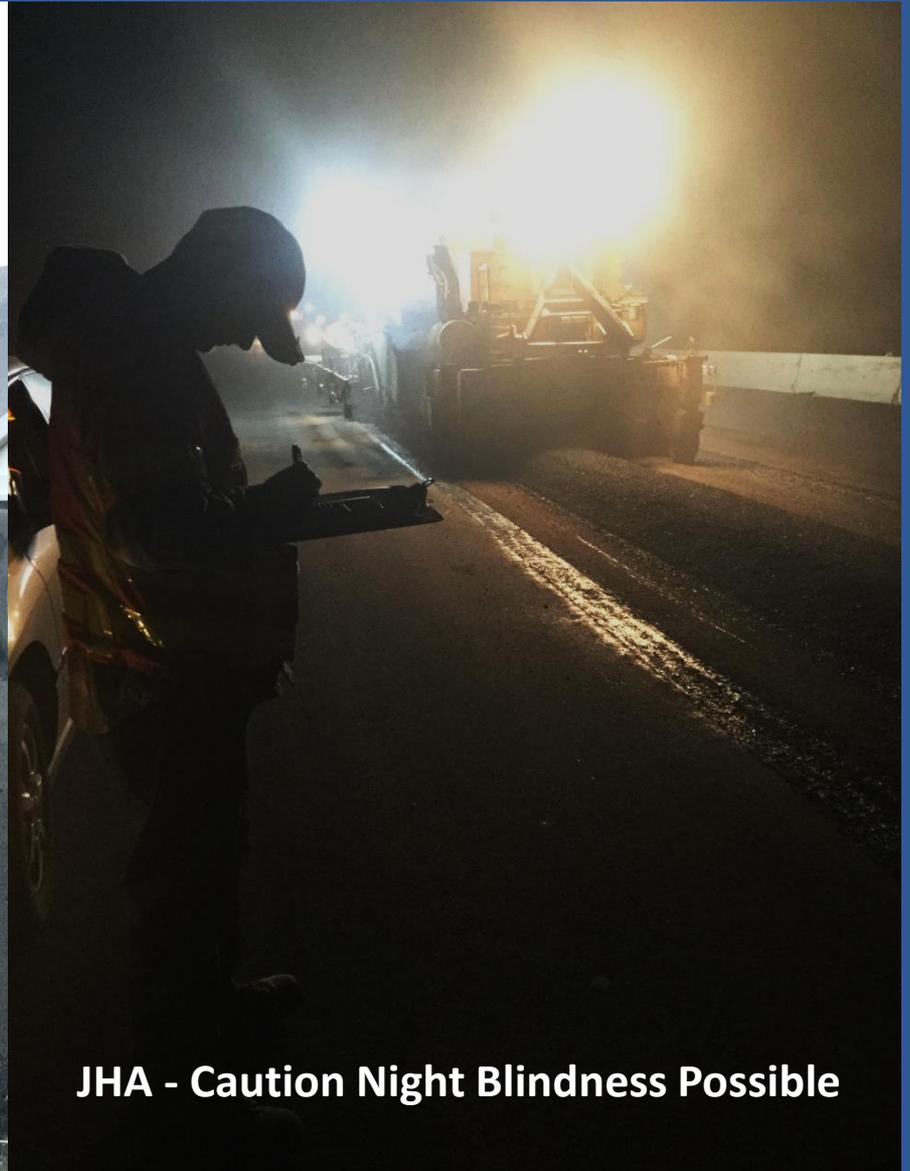
*Anita Muhly
Oregon State University
CECOP Intern*

- Safety
- Connectivity
- Apps Available
- Training Issues
- Security Issues
- Digital Signature Issues
- ODOT / Contractor Transfers
- Original / Markups
- Roles and Responsibilities
- ~~Apple iPad Air 2~~ vs. MS Surface 4

Safety Awareness with Tablets



JHA – Safe Zone, Look Up, Spotter

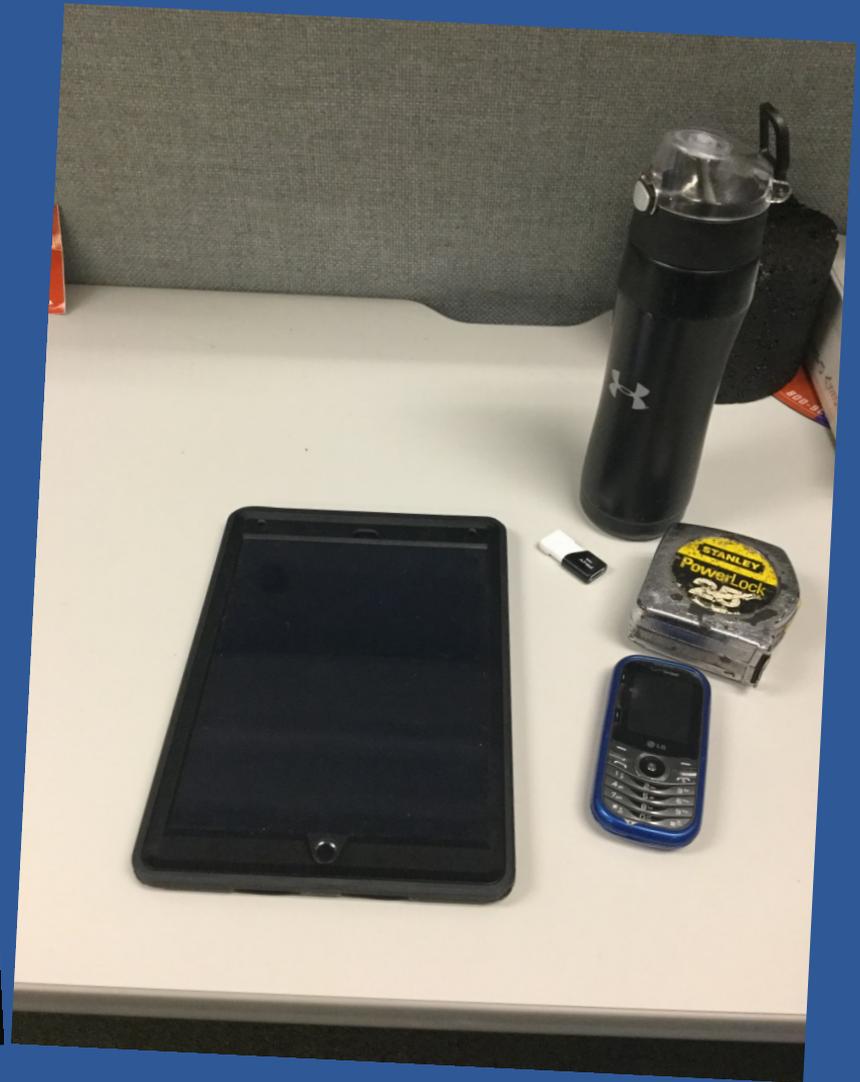
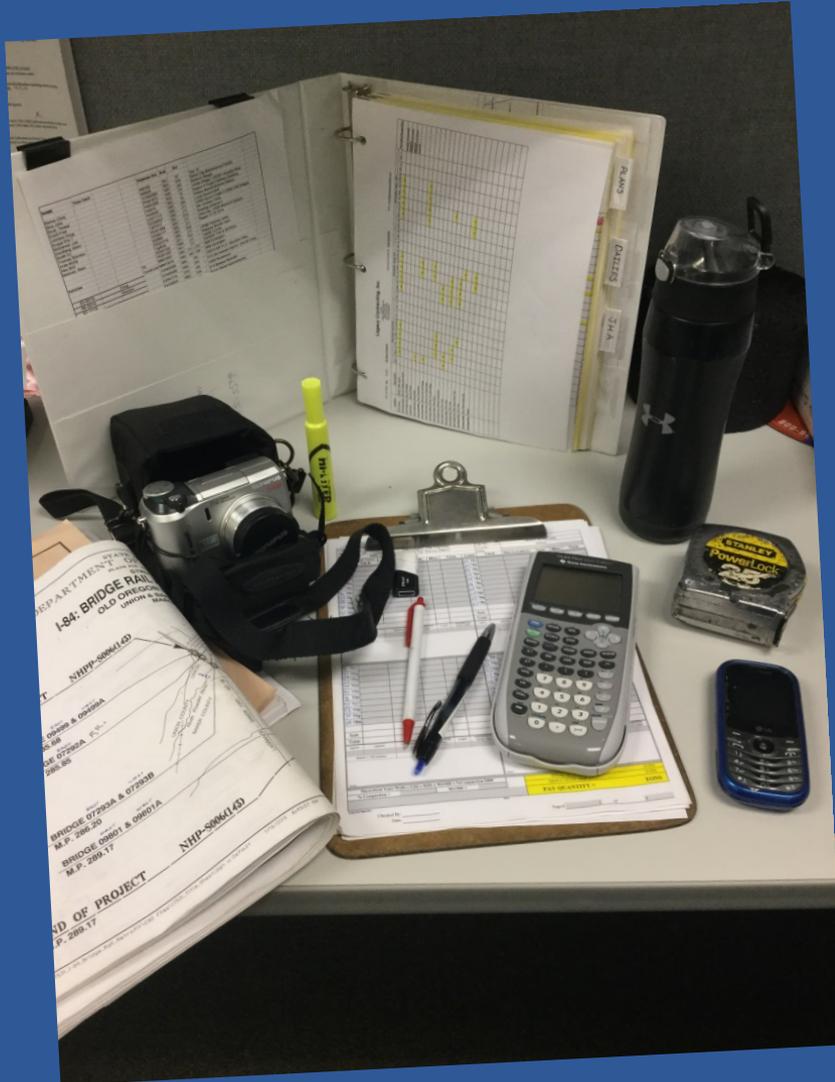


JHA - Caution Night Blindness Possible

Paper

VS

Tablet



e-Construction Vision

- Remain secure
- Establish one source of truth
- Return on investment demonstrated
- Accessible to all – Internal and External
- Leverage geospatial data
- Capture As-Built Assets, plus QBR or RFI Tags
- THINKING BEYOND THE NEXT CUSTOMER

Applications Utilized



Bentley ProjectWise

- Highly configurable
- Collaboration software
- Integrates with engineering programs
- Single file location with check out capabilities
- Widely used by other DOTs and corporations



- Secure validated digital signature
- Integrates with engineering programs
- Paperless environment is more efficient

What is ProjectWise?

- Highly configurable
- Collaboration software
- Integrates with engineering programs such as MicroStation
- Single file location with check out capabilities
- Widely used by other DOTs and corporations

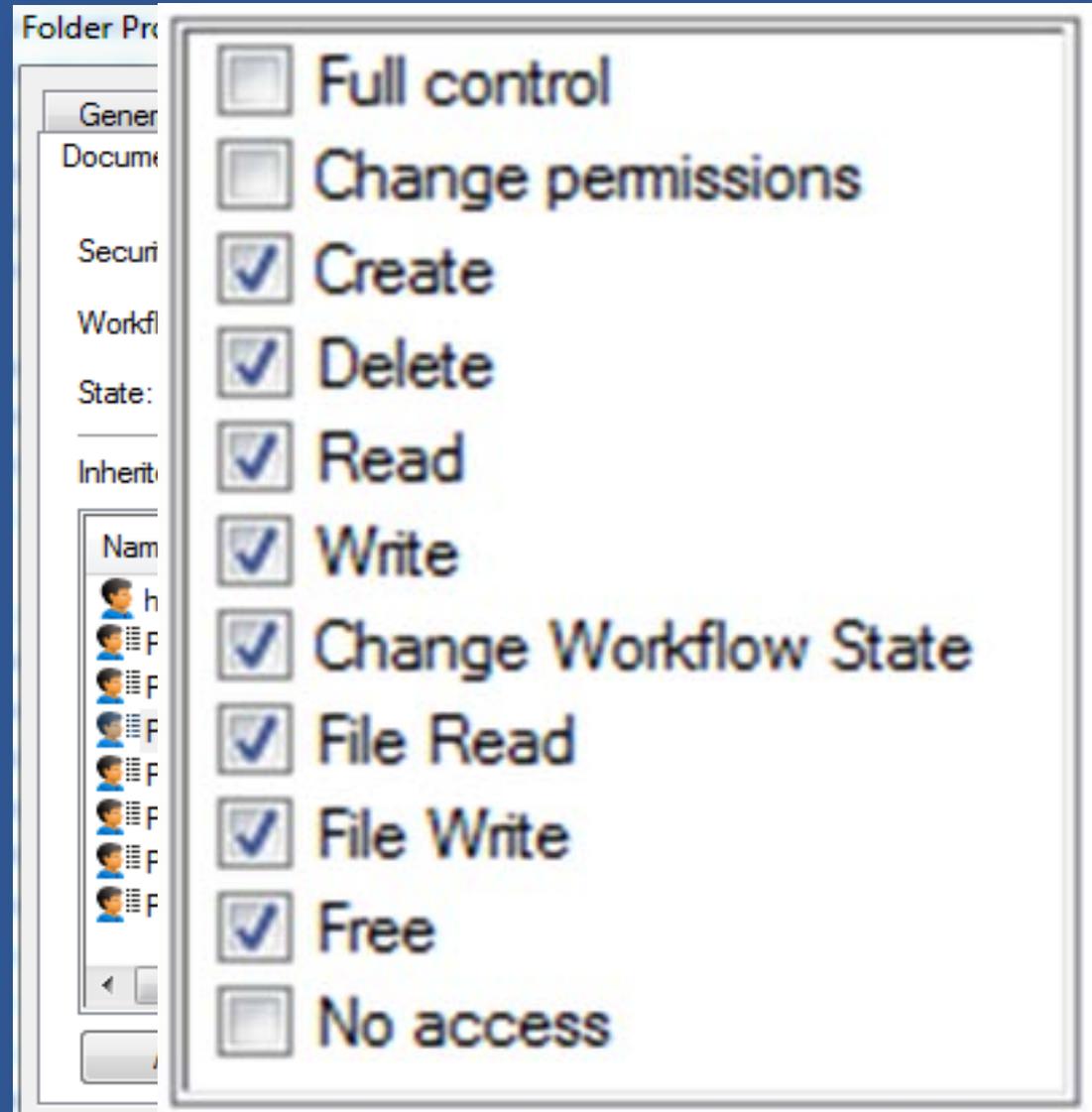


Bentley ProjectWise



Folder Properties

- ✓ Separate permissions for folder and documents
- ✓ Folders & File Names are fixed for Statewide Consistency



Audit Trail

PW Feb 16 2016 AGC Annual MTG.pptx

General Security Attributes More Attributes File Properties **Audit Trail** Workspace Components

Records from the last 30 days

Action Name	Date/Time	User Name	Additional Data	Comments
Created	2/16/2016 10:30:09 AM	hwyr33a	In folder 'Project Management - Construction'	
Copied out	2/16/2016 10:30:18 AM	hwyr33a		
Checked out	2/16/2016 10:30:31 AM	hwyr33a		
Checked in	2/16/2016 10:41:56 AM	hwyr33a	Copy left; File not changed	
Checked out	2/16/2016 11:15:54 AM	hwyr33a		
Checked in	2/16/2016 12:54:37 PM	hwyr33a	Copy left	
Checked out	2/16/2016 12:56:37 PM	hwyr33a		

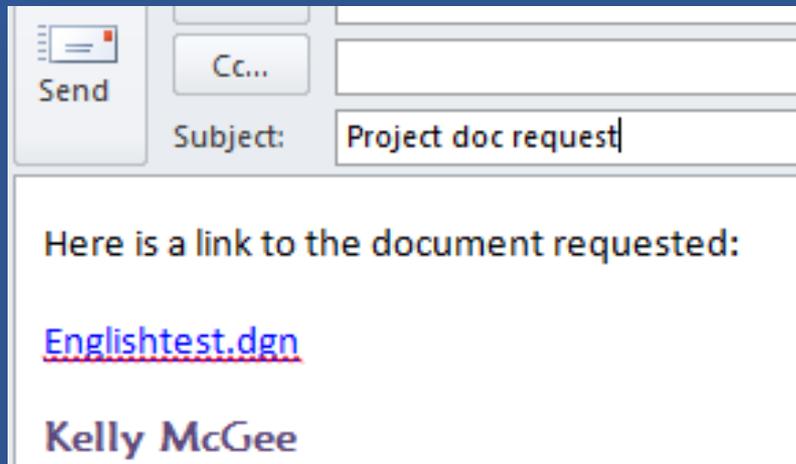
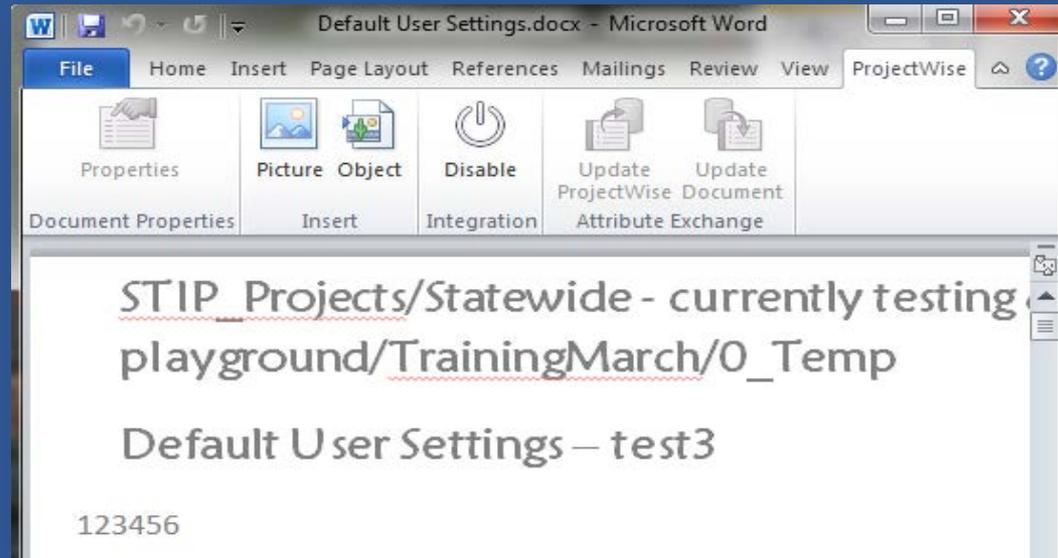
Save Undo Close 17/29

✓ Available to see what happened, when it happened, and by who did it to a file.

	10:30:18 AM		
Checked out	2/16/2016 10:30:31 AM	hwyr33a	
Checked in	2/16/2016 10:41:56 AM	hwyr33a	Copy left; File not changed
Checked out	2/16/2016 11:15:54 AM	hwyr33a	
Checked in	2/16/2016 12:54:37 PM	hwyr33a	Copy left

MS Office and Outlook

- ✓ Integrated system with other systems & applications



- ✓ Links to files are sent via email instead of actual files

ProjectWise e-Con Folder Structure

Contractor Submits
e-Documents here

Attributes and search
capabilities enable reducing
the number of named folders,
thus reduces computer latency

Construction	
5	Design Deliverables
5	Contract Documents
5	Correspondence
6	Meetings Minutes
6	Draft Correspondence
5	Subcontracts
5	Submittals
5	Req. for Information
5	Orders
5	Construction Reports
6	Photos
5	Quality/Quantity
5	Payments
5	Labor Compliance
6	Certified Payrolls
5	Civil Rights
6	Compliance Audits
6	Subs Paid Reports
6	OJT
6	Monthly Emp. Utilization R.'s
6	DBE
6	TERO

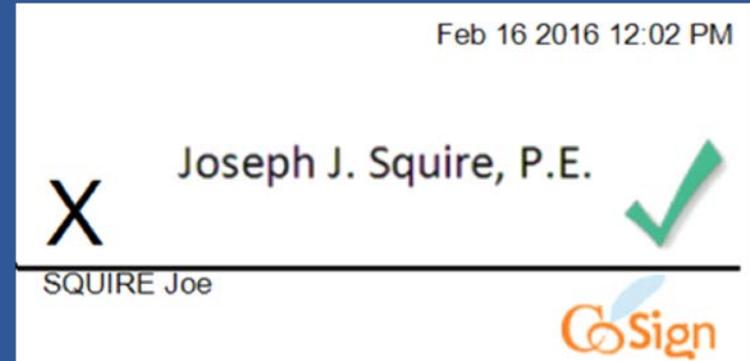
ProjectWise e-Construction File Naming Conventions

Document	Naming Convention
A/T Approval Request	731-0294_[first_last name].pdf
As Constructed Plans	AsConstructed.pdf
BOLI - Complaint	Complaint.pdf
Certificate of Materials Origin (CMO)	BI###_CMO#.pdf
Certified Payrolls	YYYYMMDD_Cert_PR_NAME of Contractor/Sub.pdf
Check Weights	BI033_CW_01.pdf

Snipped from Actual

Digital Signatures

- ✓ Digital Signatures instead of wet signatures for select outgoing and incoming files



ON-THE-JOB TRAINING SPECIAL PROVISION

I REQUEST CONSENT TO THIS SUBCONTRACT.

I CERTIFY THAT THE ORGANIZATION THAT WILL PERFORM THIS WORK IS

I CERTIFY THAT THE ATTACHED CONTRACT IS A TRUE AND COMPLETE COPY

Candice Tavernier Digitally signed by Candice Tavernier
DN: email=candice@spmnw.com, cn=Candice Tavernier
Date: 2015.06.04 13:36:09 -07'00'

PRIME CONTRACT REPRESENTATIVE SIGNATURE

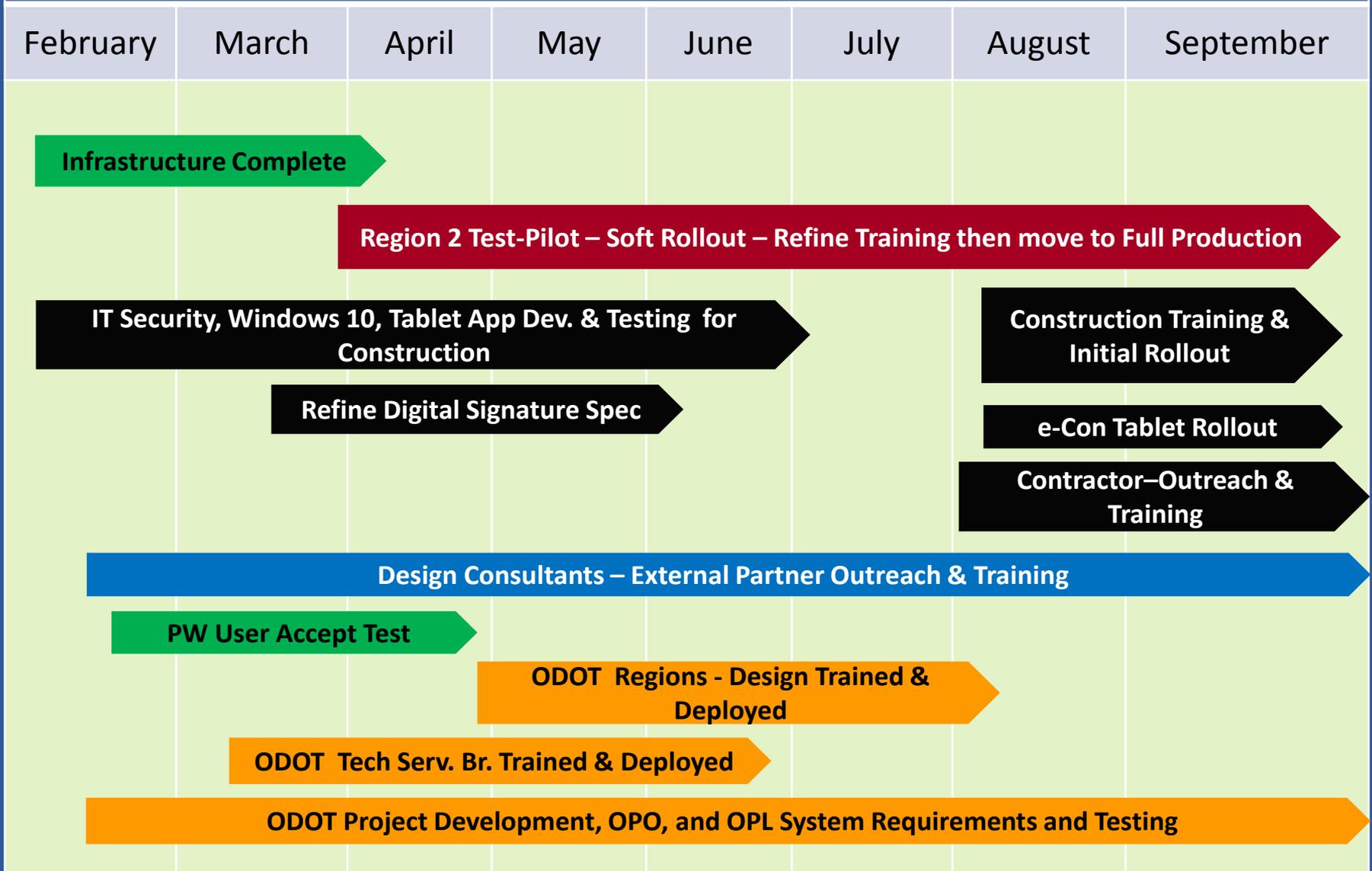
INFORMATION BELOW WILL

- ✓ Special Provision 00170.08

User Access

- Current State:
 - ODOT and external users can use existing access methods i.e. tokens
 - User Access Gateway does not allow access for IE 10 systems
 - Not ideal for ODOT and contractors
- Near Future State (a few months):
 - **Final stages of testing now!**
 - No tokens to login to ProjectWise
 - Remote ODOT Users login through PW Gateway
 - Users accounts needed with ODOT and ProjectWise
 - The PW Gateway provides secure access through ODOT's Firewall
 - **Construction contractors** and consultants login through PW Gateway

2016 e-Construction Schedule



What's happening now?

- Test Pilot in Region 2 Started
 - Training Received
 - Controlled start using Dailies and Installation Sheets only for first month
 - Looking for feedback on: naming conventions, folder structure, and document processes
- Tablets for the field – Surface Pro 4 in process of being configuration

Test Pilot R2 Salem PM office

Hi fellow future e-Con folks,
I am Shane Ottosen R2 PM.

My office is undertaking a test
pilot to help with training de-
bugging and refining
ProjectWise Attributes.

I can tell you I am really, really
excited about this opportunity!

Right-on!



Implementation Strategy

- ProjectWise rollout be a “soft” approach
 - A readiness assessment prior to deployment
 - Deployment staged by Geography over a few months
 - 15 construction projects, 1 per PM crew
 - CPMs and Local Programs to follow in 2017
 - Support by CAU PW Team, Support Desk and Field Services Unit

Training

- Takes about 2 hours
- Contractor specific training available
- Coming late early Fall
- Scheduled similar to Inspector Training
- Some differences for Construction vs. Design
- Design consultants will get the same training as ODOT design staff – if requested

Surface 4 in ODOT - IT Configuration Testing

Rollout in July with Windows 10
ODOT Construction - Early Adopter



Use if power fails



713 CSC

C.B.13

STN	TIME	PARO ⁺	PARO ⁻	Z _{bottom}	Z _{top}
1	10:17	2398.0	1472.0	12.5m	31.2m
2	10:33	1888	1471	10.1m	22.0m
3	10:50	1239	695.5	11m	21.6m
4	11:05	2145	1370	7.5	29.3
5	11:40	1800	834	7	13.3
6	12:03	1315	725	6.25	11
7	12:13	1444	750	6.5	7
8	12:23	1440	750	PARO ⁺ = 17.55	5.6
9	12:38	1400	725	@ 4m	
		T	29.55	PH	7.96
		Dm	4.9	4.2	
Water			29.57	7.98	
			4.9	7.0	
			30.14	7.95	

H₂O collection

T	S _{PSU}	PH
15.7	30.07	7.77
15.3	30.1	8.01
14.9	30.13	8.01
14.9	30.14	8.01
29.62		8.01

03213
03313
034136m
03513 LH Om.

02813
02913
03013
03113

STN TIME PARO⁺ PARO⁻ 15 20
131 10:02 2350 1415 12.1 33.3
232 10:30 720 307 10.3 28.6
334 10:56 1060 100.2 8.9 10.0
35 11:10 525 190 7.3 10.7
6 11:40 655 255.4 6.2 6.3
7 11:56 406 12.6 5.9 5.8
8 12:03 287 130 6.9 2.5
9 12:25 275 91 @ 2.5m

Thank you

Vanessa Baker, PMP
E-Construction Program Analyst
Vanessa.Baker@odot.state.or.us

Automated Machine
Guidance
Asphalt Milling

April 2016



Subsurface Utility Engineering

Chris Pucci, PLS

Engineering Technology Advancement Unit
Oregon Department of Transportation

ODOT

Engineering Automation Conference
May 4, 2016



SUE what?

- SUE = Subsurface Utility Engineering
- Combination of traditional and advanced geophysical techniques for locating underground utilities
- Application of Engineering and experience to find conflicts and mitigate BEFORE construction
- ODOT is developing a SUE program
- Pilot project(s) this summer
- Developing a model contract and best practices



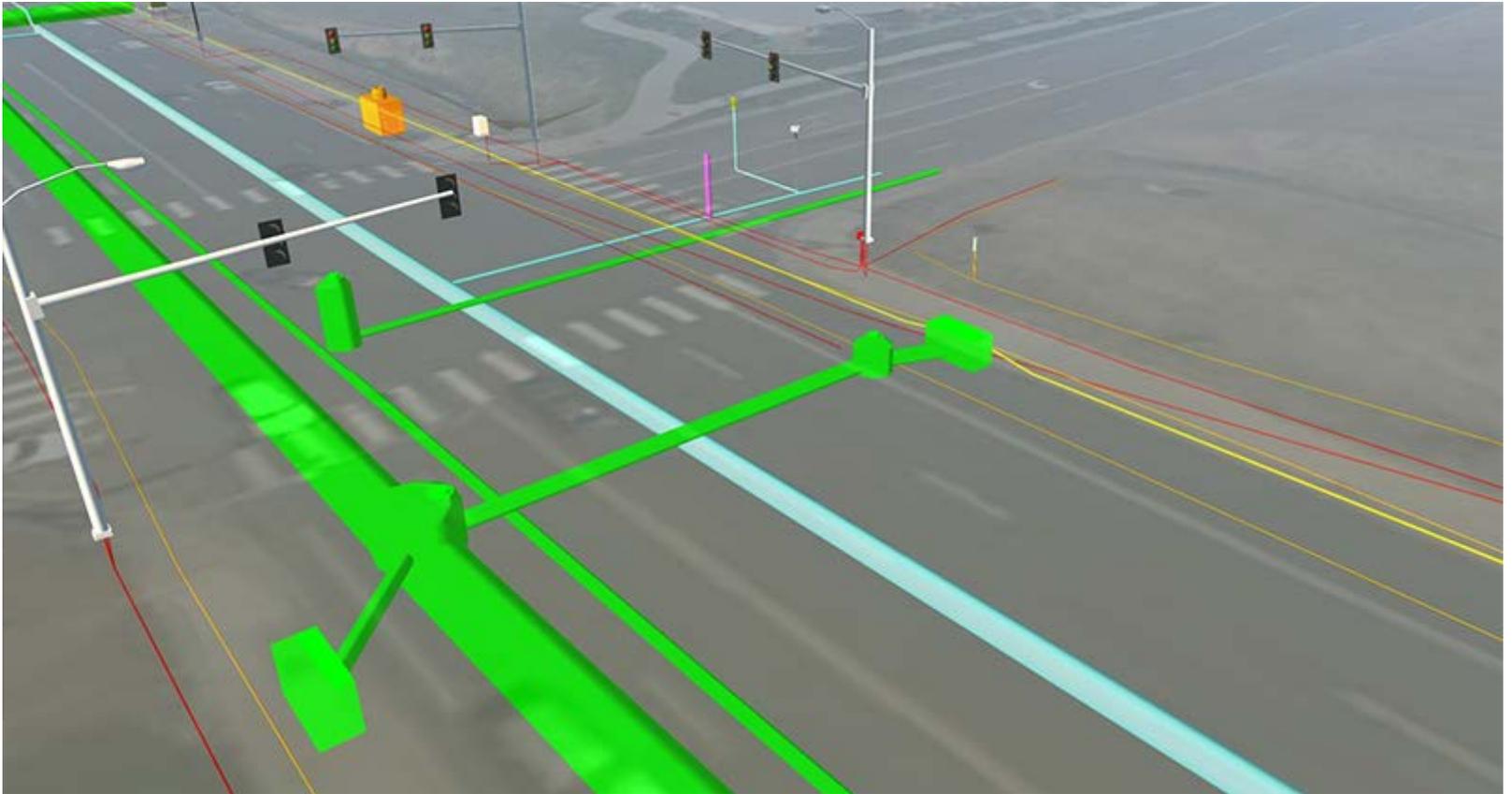
Why SUE, why now?



- Lots of utilities
- Lots of unknowns
- Can result in huge cost savings
- Huge time savings
- Huge increase in safety



SUE in 3D





Need more info?

- Contact:
Chris Pucci
Construction Automation Surveyor
Engineering Automation Section
christopher.pucci@odot.state.or.us
503-986-3542



ProjectWise and InRoads Upgrade

An update on existing
Engineering Automation
Projects

2016 Engineering Automation Conference

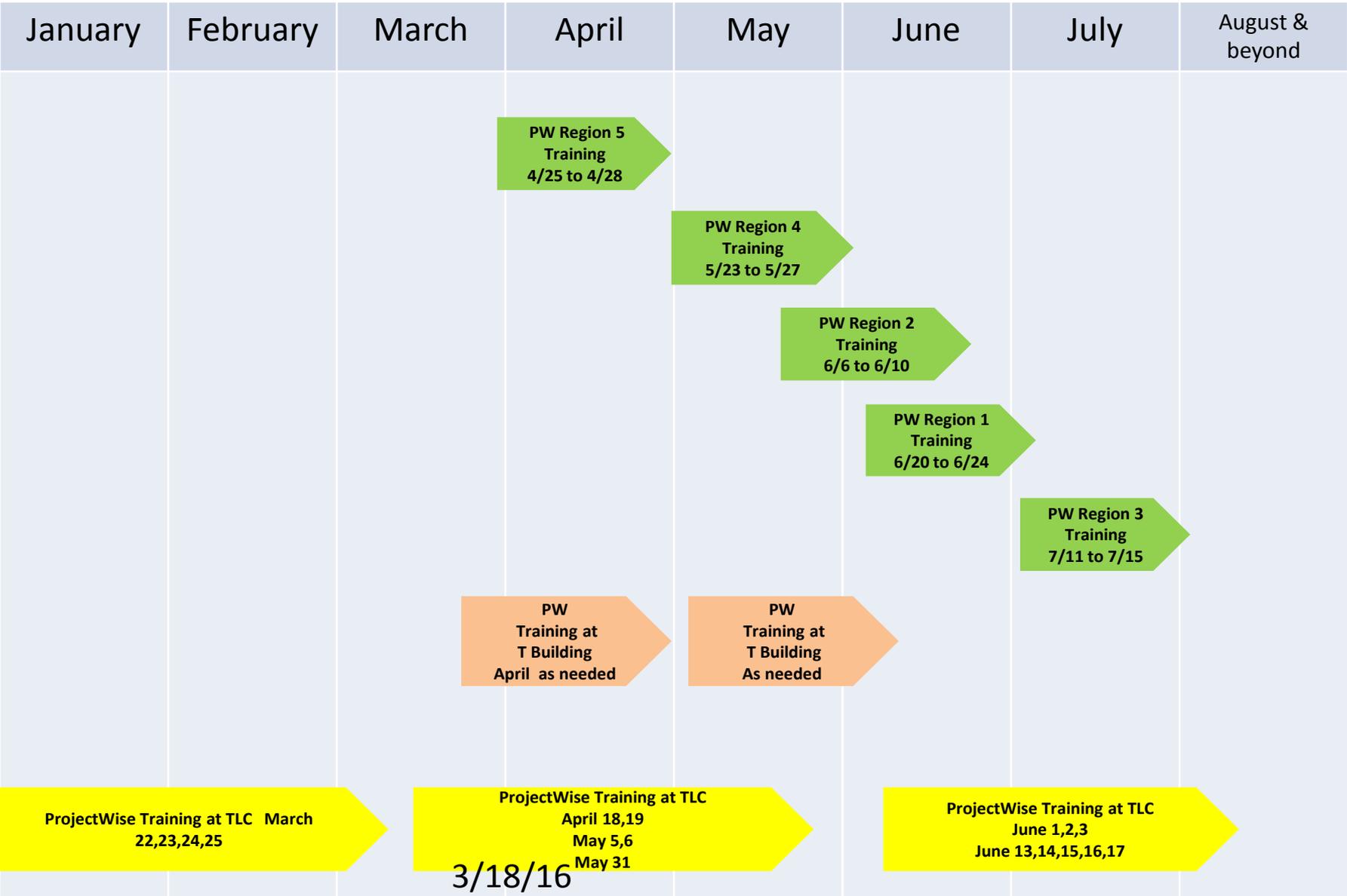
Gary Holeman, Sr. Design and Automation Engineer

May 4, 2016



ProjectWise

2016 ProjectWise Design Training Schedule



ProjectWise Training Course choices

Installation will occur after a user is trained.

- For Non-CAD users – I don't have MicroStation
 - Sign up for Basic
- For CAD users – I use MicroStation, including other software like InRoads, AutoTURN, GuidSIGN, etc.
 - Sign up for CAD Basic
 - Sign up for CAD
 - Yes, that is two classes.



ProjectWise Frequent Questions

- Classes are being scheduled through iLearn
 - Try to attend with your Region
 - If you can't, schedule another time.
- If I use MicroStation, do I need both classes
 - Yes
- When will I get the application
 - Soon after training
- When do I need to use it.
 - All new projects after July 1, 2016
 - Before July 1, 2016 dependent on Region drivers and Administration availability



InRoads Upgrade

InRoads Upgrade

- Scheduled for completion this biennium
- Version to be determined by July 2016
 - Dependent on ODOT needs and vendor timelines
- Multiple drivers
 - Civil Cells
 - Survey interface



InRoads Upgrade: potential complications

- Issue compatibility with other Bentley applications
- Resource need overlap with ProjectWise
- Vendor missing deadlines

We work around these issues and any others.

