



**ODOT ProjectWise**

**eConstruction  
Why,  
How,  
&  
When**

**WASTHO Construction & Materials Conference**  
April 5, 2016

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## Five Phases of Paperless Technology

**Denial** “Paperless! Are you kidding me!! Hugh! 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 giving me a wet signature! I’ll make you!! **AND** I want it in triplicate **and** scanned **and** in color **and** sent through the US Mail!”

**Bargaining** “Alright already. If you tutor me 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. Gosh, I miss my ‘banker boxes’.”

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

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# eConstruction

## 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.*



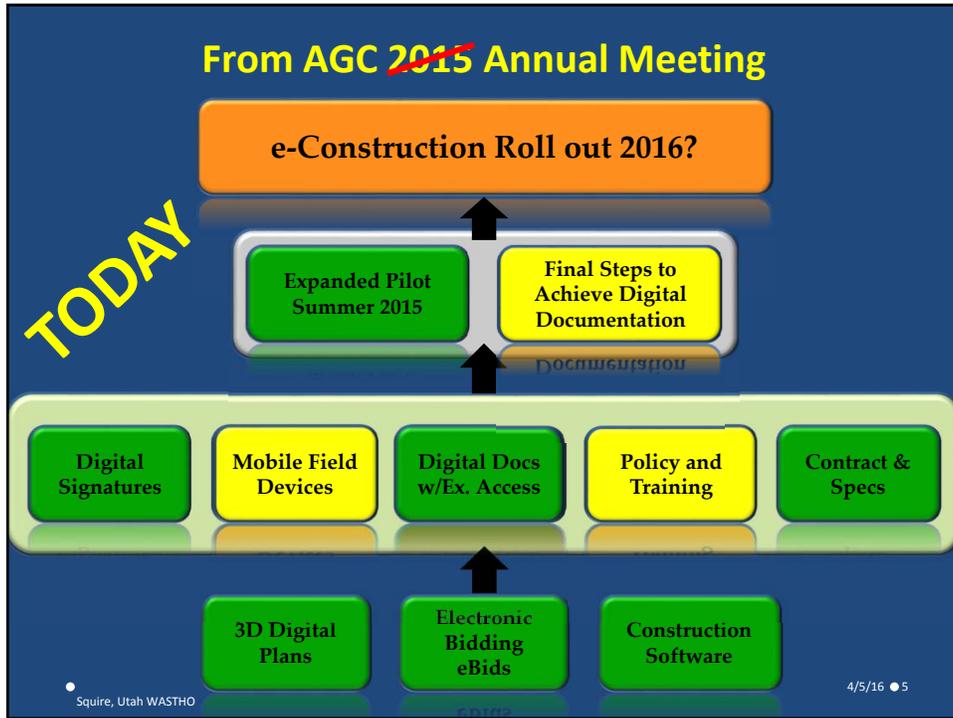
## From AGC 2015 Annual Meeting

*“Create it; print it, sign it, scan it, email it, print it, sign it, scan it, email it, repeat again, and again, and again!”*

- Form and Paper Value? If none then delete
- Re-thinking long-held paper systems
- Tweaking Forms
  - Fractional efficiency gain vs. digital

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# What have we learned?



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~~

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# Safety Awareness



JHA – Safe Zone, Look Up, Spotter



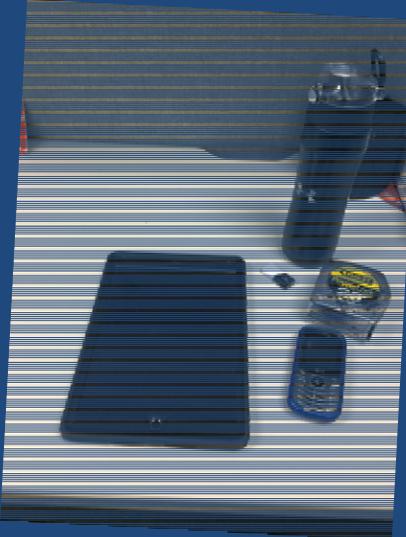
JHA - Caution Night Blindness Possible

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# Paper

# Tablet

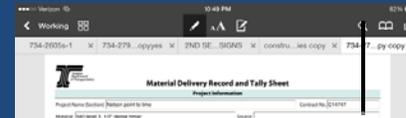
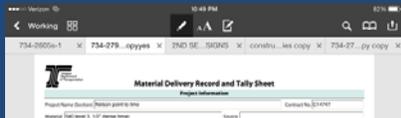


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# Original

# Markups



23.76	<del>24.70</del>	332.67	7:00 am	Incorrect load quantity, see corrections
23.46		332.67	7:00 am	



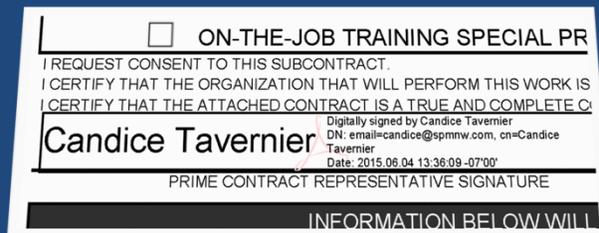
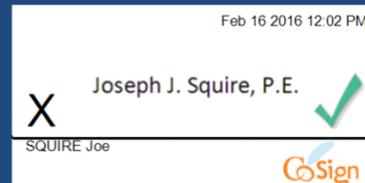
**Same Document now Audit Trail with Red-line markup**

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## Digital Signatures

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



- ✓ Special Provision 00170.08

## eConstruction 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
- THINK BEYOND THE NEXT CUSTOMER

# Why ProjectWise & Benefits

The screenshot displays the Bentley ProjectWise interface. On the left is a tree view of project folders. The main area shows a file list with columns for Name, Description, and Out to. A file named 'EnglishTest.dgn' is highlighted, with an arrow pointing to it from a green callout box that says 'MicroStation Reference Files Linked'. Below the file list is a 'Properties' pane with a 'Project Properties' tab. This tab contains a table of project metadata.

Properties (Project Type - ODOT)	
ODOT Federal ID Number	123456
ODOT Contract Number	
ODOT Project Number	987654
ODOT Project Name	Admin Meeting
ODOT Project Description	eye
ODOT Project Manager	Holeman
ODOT Project Leader	McGe
ODOT Area Manager	
ODOT Local Agency Liaison	
ODOT Region Number	1

Another green callout box at the bottom right says 'Scoping, Design, & Construction'.

## Applications Utilized



Bentley ProjectWise

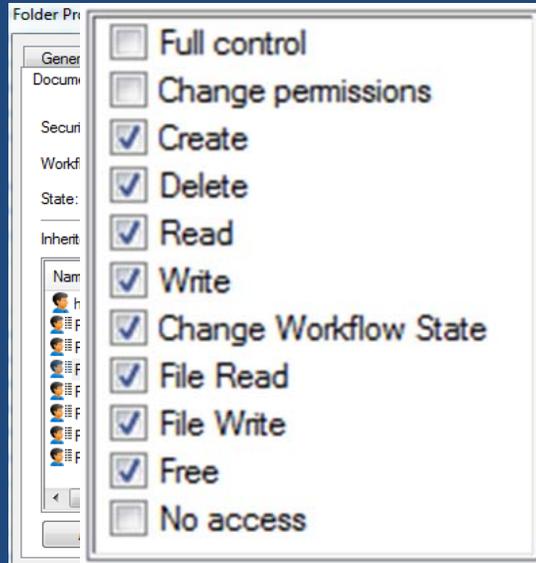
- Highly configurable
- Collaboration software
- Integrates with engineering programs
- Single file location with check out capabilities
- Widely used by other DOTs and corporations



- Secure validated digital signature
- Integrates with engineering programs
- More efficient paperless environment

# Folder Properties

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



# Audit Trail

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

PW Feb 16 2016 AGC Annual MTG.pptx

General Security Attributes More Attributes File Properties Audit Trail Workspace Components

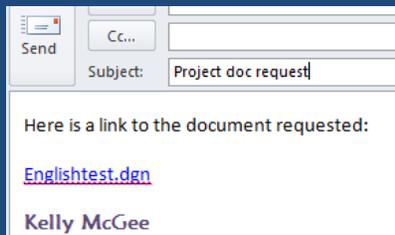
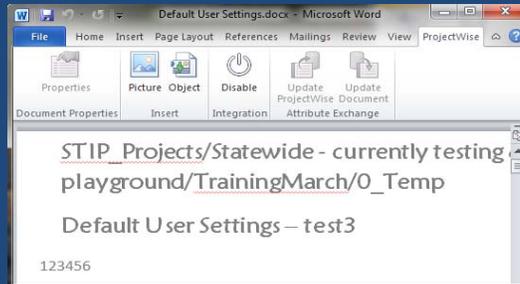
Records from the last 30 days

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	Copy left	
Checked in	2/16/2016 12:54:37 PM	hwyr33a		
Checked out	2/16/2016 12:56:37 PM	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

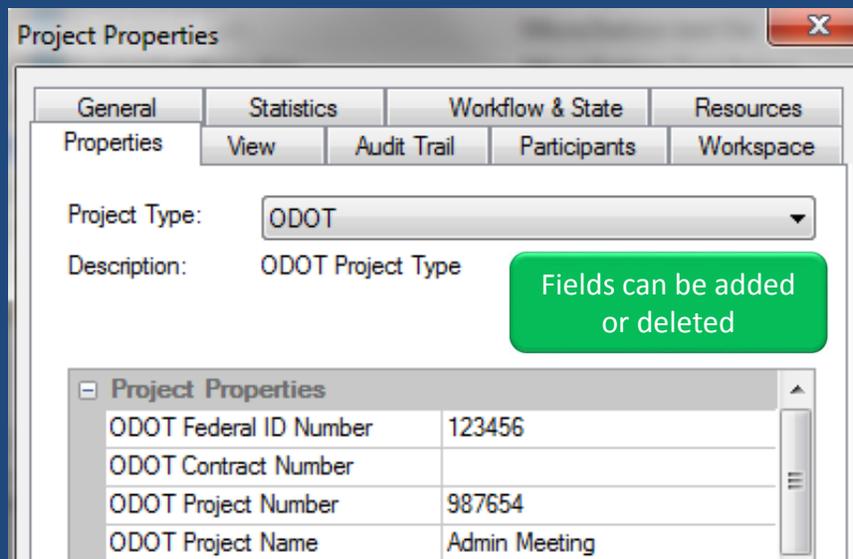
# MS Office and Outlook

✓ Integrated system with other systems & applications



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

# Configurable folder & document properties



## Advanced search and filtering capabilities

Search by Form - PW\_ODOT

General | **Attributes** | More Attributes | File Properties | F

Document

Name:

Description:

Version:

Sequence:  ...  Only Current

Application:

Status:

Status set by:

Created By:

Updated By:

A portion of Filtering / Search Fields

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## 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	
5	Internal	

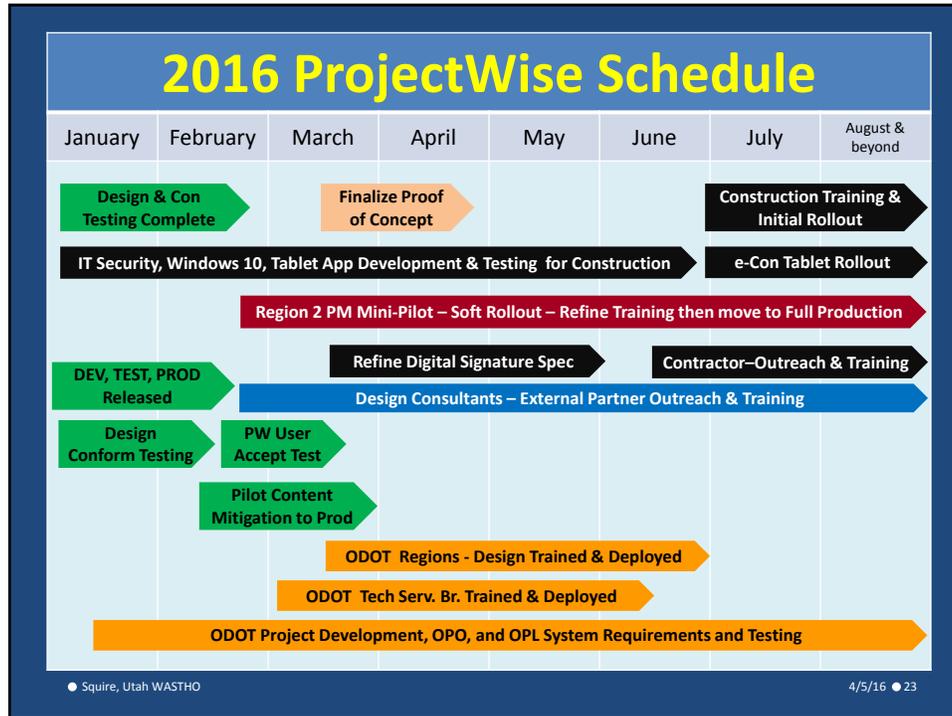
## ProjectWise e-Con File Naming Conventions

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

## 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



## R2 Salem PM office mini-pilot

Hi fellow future eCon folk,

I am Shane Ottosen R2 PM.

My office is undertaking a mini-pilot that started this month 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
    - About 3 months after launch migrate some existing projects into PW - Contract Admin to determine with PM
    - CPMs and Local Programs to follow in 2017
  - Support by CAU PW Team, Support Desk and Field Services Unit

## Internal & External Training

4, due to extensive “why” and culture questions

- Takes about ~~2~~<sup>4</sup> hours
- Contractor specific training
- Coming late Summer to 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

## Added Modules increase functionality as system evolves – PW Deliverables

Municipal Office Building

Track submittals ea

**Near Future**

Subject	Classification	Received	Status	Due date
Master Schedule Update - May 2013		07/30/2015 3:04 P	✓ You have acknowledged	08/22/2015 11:32 AM
Master Schedule Update - September 2013		07/30/2015 3:06 P	🕒 15 days response overdue	08/27/2015 11:32 AM
Submittal and Procurement Schedule		08/20/2015 11:32	🕒 2 days to acknowledge	09/12/2015 11:59 PM
Master Schedule		09/11/2015 1:01	🕒 8 days to respond	09/18/2015 11:59 PM
Submittal and Procurement Schedule		07/30/2015 3:04 P	✓ You have acknowledged	08/01/2015 3:04 PM
Master Project Schedule Update July 2013		07/30/2015 3:03 P	No response required	

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## Surface 4 in ODOT - IT Configuration Testing

Rollout in July with Windows 10  
ODOT Construction - Early Adopter

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**ODOT launched ETA in Fall 2016  
though not public, some links are functional & contact info provided**

**Engineering Technology Advancement (ETA)**



Department

- Home
- Contact Us
- 3D Roadway Design
- Automated Machine Guidance
- Digital Signatures
- e-Construction
- Engineering Automation
- Inspector Positioning Tablets
- Intelligent Compaction
- Mobile LiDAR Applications
- ProjectWise
- Up & Coming Initiatives

**Welcome to Engineering Technology Advancement**



This site is currently Under Construction!  
Content is not ready for Public Use.

We are a new unit under the new Engineering Automation Section within Technical Services. ETA is a specialized resource for all design and construction engineering within ODOT, including all Region Tech Centers.

The purpose of the Engineering Technology Advancement unit is to research and develop requirements for new engineering technology initiatives as well as explore new and innovative technology methods for design and construction engineering within a state department of transportation.

**Here's how we can help**

**Survey training and technical support**

The Engineering Technology Advancement unit provides training and support to ODOT surveyors for project development, construction and highway right of way/boundary surveys in support of STIP projects. To learn more...

**ODOT construction personnel training and technical support**

The Engineering Technology Advancement unit provides personnel training and technical support to all ODOT construction. For example, we provide inspector positioning equipment operation training on tablets, Global navigation satellite systems

**Current Initiatives**

**3D Design**



Visit the ODOT 3D Roadway Design site to learn all ODOT is doing to implement 3D Roadway Design. This site is geared to both internal ODOT staff and our external Consultants and Contractors.

**Automated Machine Guidance**

Automated Machine Guidance (AMG) uses data from 3D engineered models to guide construction equipment. The equipment leverages

**Resources**

- ODOT Home
- Highway Home
- Technical Services
- Engineering Automation
- Geometrics
- ODOT 3D Roadway Design
- Construction Machine Automation Plan
- Engineering Automation Key Concepts Plan
- Design to Paver
- FHWA Every Day Counts

<http://www.oregon.gov/ODOT/HWY/ETA/Pages/default.aspx>

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# Thank you

## UDOT and WASHTO

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