

FDOT's Path to e-Construction

Amy Tootle, P.E. - State Construction Engineer

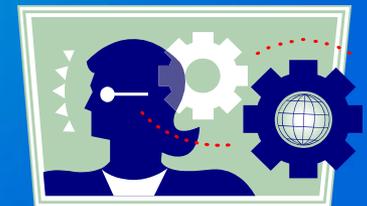


Leaping into the 21st Century – Why Now?

1. Antiquated way of doing business
2. Keep up with our partners
3. Work \$marter not harder
4. Transformational leadership
5. Generational change
6. Successful organizations continually improve
7. Design is already electronic

e-Construction Implementation

- Vision
- Systems Thinking
 - Overall picture
 - Interconnected relationships
 - There are no final answers
 - Every solution creates new problems
- Educate the Districts & Stakeholders



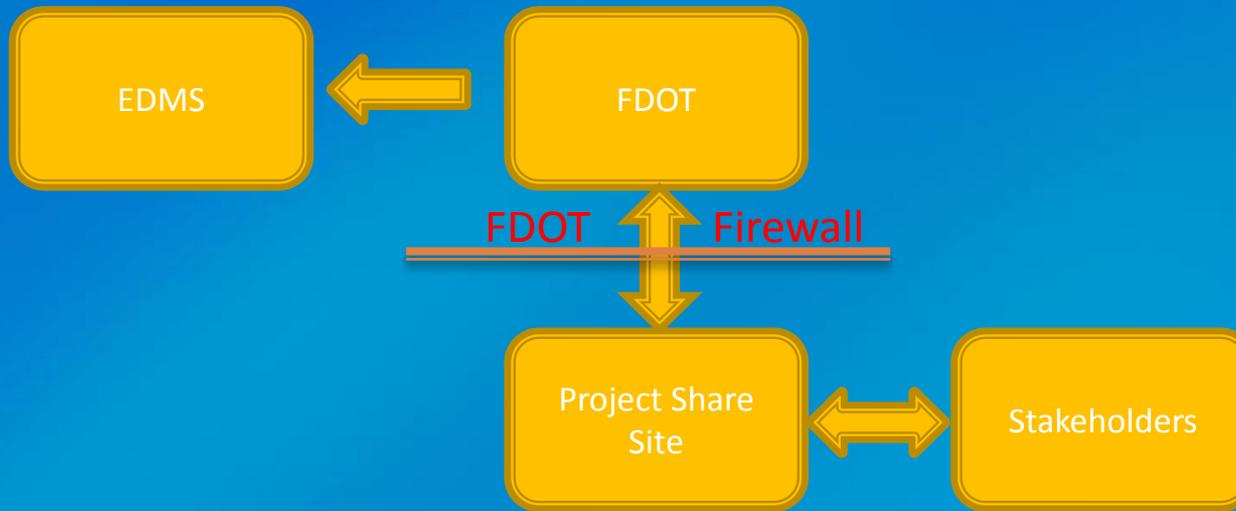
e-Construction Implementation – The Parts

- Collaborative Sharing Site
 - Phased Implementation – March 2014
- Mobile Devices
 - Phased Implementation – Winter 2015
- Digital Signatures
 - Ongoing Implementation
- Form Automation
 - Ongoing Implementation
- Electronic As-Built Plans
 - July 2015

Collaborative Sharing Site

- October 2013 – Management approval
- July 2014 – Procured consultant (Project Solve)
- August 2014 – First Project Activated (I-4 Ultimate)
- September 2014 – Team devising standard workflows
- March 2015 – Phased Implementation

Collaborative Sharing Site



Collaboration Process

Project Solve SP

The screenshot shows a web browser window displaying a SharePoint site. The address bar shows the URL: <https://fdot.pbid.com/sites/district6/fdotpsm/SitePages/Home.aspx>. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The browser's toolbar shows various icons for navigation and utility. The SharePoint interface features a blue header with the text "SharePoint" and the user name "Doug Martin". A left-hand navigation pane lists various site sections such as "Home", "Action Items", "CIM CPPR Link", "Citrix Link", "CIM Warranties Link", "Final Documents", "GIS Link", "Incoming Submittals", "Lane Closure", "Materials Link", "My Desktop", "Plan Review Manager", "Plans", "Progress Reports", "Project Calendar", "Project Contacts", "Project Documents", "Project Inbox", "Public Involvement Matrix", "Project Photographs", "Project Tasks", "QAs Performed", "Recent", "Review Manager", "RFIs", "Schedule", "Shop Drawings", and "Time File". The main content area is titled "ProjectSolve^{SP} Welcome to the nnnnnn project site!". Below the title, a paragraph states: "This site has been created to facilitate collaboration among the project team and to provide agency stakeholders with an easy means to access and comment on project deliverables." A second paragraph provides contact information: "If you have any questions about the content found here, please contact fdot@support.com; additional supporting documentation can be found here." To the right of the main text is a "Current Weather" widget for Hialeah, FL, showing a temperature of 75°F and "Light Rain". Below the weather widget is a "Click for weather forecast" link. The "Navigation" section contains a grid of icons for: Action Items, Project Documents, Incoming Submittals, Project Inbox, My Desktop, Project Slideshow, Plan Review Manager, Project Tasks, Project Calendar, RFIs, Project Contacts, and Shop Drawings. The "Project Photographs" section displays an aerial view of a multi-lane highway interchange. Below the photograph are navigation controls (back, stop, forward) and a zoom level of 100%.

Form Automation

- Adding digital signature blocks
- Forms to be pre-populated with project specific data
- Transmittal forms revised to require electronic file #'s

Mobile Devices

- May 2014 – Begin E&O Windows based pilot
- November 2014 – End Windows based pilot
- Summer 2015 – Construction pilot
- Winter 2015 – Phased implementation for construction

Mobile Devices

- Construction Specific Pilot Project
 - Interface with project specific SharePoint site
 - Access to eBooks (specifications, standards, manuals)
 - Video/meeting capability
 - As-Built Plans
 - Email/calendar access



Mobile Devices



Digital Signatures

- July 2, 2013 – Initial purchase of 390 digital certificate vouchers
- July 29, 2013 - Issued Memo of Understanding
- January 2015 – Approval by DFS for use of digital signatures on monthly estimates
- Winter 2015 – Contract Signature

Digital Signatures

● Laws

- Florida Statute 668 – Electronic Commerce
- Florida Statute 471.025 – Regulation of Professions and Occupations (Engineering)

● Rules

- Florida Administrative Code 61G15-23.003 – Procedures for Signing and Sealing Electronically Transmitted Plans, Specifications, Reports or Other Documents.

Digital Signatures



**Amy C
Tootle**

Professional Engineer
No. 88414
State of Florida
License Expires 12/31/2018

The above named Professional Engineer shall be responsible for the following sheet(s) in accordance with Rule 61G15-23.003, F.A.C. This project was constructed in substantial compliance with these plans as provided by the Engineer of Record. If changes were made, those changes are indicated by red ink revision.

Project Close out package -



ROADWAY PLANS

SHEET NO.

SHEET DESCRIPTION

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
3	FINAL "AS-BUILT" SIGNATURE SHEET
35	SUMMARY OF PAY ITEMS
36	SUMMARY OF QUANTITIES
37	SUMMARY OF QUANTITIES
39	SUMMARY OF QUANTITIES
47	SUMMARY OF DRAINAGE STRUCTURES
55	PLAN SHEET



**Amy C
Tootle**

Digitally signed by Amy C Tootle
DN: c=US, o=IdanTrust ACES Business
Representative, ou=FLORIDA
DEPARTMENT OF TRANSPORTATION,
cn=Amy C Tootle,
c.9.2342.19200300.100.1.1=A01097C00
000141A859403400005DD5
Date: 2014.10.17 13:16:16 -0400

The above named Professional Engineer shall be responsible for the following sheet(s) in accordance with Rule 61G15-23.003, F.A.C. This project was constructed in substantial compliance with these plans as provided by the Engineer of Record. If changes were made, those changes are indicated by red ink revision.

DATE		DESCRIPTION		DATE		DESCRIPTION	
10-5-14	Final "As-Built" Signature Sheet	10-15-14					

Florida Department of Transportation 505 Suwannee Street Tallahassee, FL 32301			STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			FINAL "AS-BUILT" SIGNATURE SHEET		SHEET 3
ROAD NO.	COUNTY	FINANCIAL PROJECT ID						
	Leon							

Electronic As-Built Plans

- Fall 2013 – Decision to go electronic with As-Built Plans
- Spring 2014 – Decision to use pdf software for As-Built Plans
- July 2014 – Evaluation of pdf software
- July 2015 – Implement electronic As-Built Plans

Electronic As-Built Plans

Revu File Edit View Document Form Markup Measure Window Help

New Open Save Print E-mail Studio Security Signatures Pages Headers & Footers Comparison Review Process Flatten Page Setup OCR Script View Settings

Mahan FAB (ReVu)* SummaryExample of Plan Shts(ReVu)*

END NEW CONSTRUCTION
BEGIN MILLING AND
RESURFACING
STA 32+60.00
@ DEMPSEY MAYO RD.
MATCH TO EXIST

+59.65 32.18 RT
@ DEMPSEY

+50.62 32.21 RT
@ DEMPSEY

LOCATION OF PROPOSED
HIGH VOLTAGE TRANSMISSION POLE
(BY OTHERS)

R/W LINE

BT

LOC

SR 10 (US 90) MAHAN DRIVE

CONST. 273 LF OF 18" PIPE

5' SIDEWALK

CURB & GUTTER TYPE F

8.5' TYPE I TRAFFIC SEPARATOR

704

705

706

CONST. 77 LF OF 18" PIPE

RESURFACING
STA 34+00.00
@ DEMPSEY MAYO RD.
MATCH TO EXIST

+09.11 29.33 LT
MATCH EXISTING
DRIVEWAY

+96.15 19.27 LT
END TYPE F
CURB & GUTTER
BEGIN DRIVEWAY
@ DEMPSEY

+78.58 24.80 LT
@ DEMPSEY

+60.00 24.75 LT
@ DEMPSEY

+32.84 10.15 RT
END TYPE F
CURB & GUTTER
@ DEMPSEY

MILLING AND RESURFACIN

128.82% 54 of 757

Subject	Page	Status	Author	Date	Color	Comments	Layer
Line	Page 54		CN982RM	6/17/2014 9:29:01 AM	Red		Markups
Typewritten Text	Page 54		CN982RM	6/16/2014 3:06:11 PM	Red	91LF	Markups
Cloud	Page 54		CN982RM	6/16/2014 3:06:15 PM	Red		Markups

Drag control points to resize, or drag cloud to move

Grid Snap Content Markup Reuse Sync 17.00 x 11.00 in (15.31, 6.99)

Summary



- Initial Investment: **\$1.5M**
- Annual Recurring Expense: **\$834K - \$1M**
- Reduction in Scanning Costs: **\$125K**
- Savings each year: **~ \$22M**
- Full Implementation: **July 2016**

Contact Information

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