LA DOTD Electronic Plans
Breaking New Ground

Louisiana Transportation Engineering Conference
Baton Rouge River Center
February 13, 2007
Presented by Hollis Ward
Electronic Plans - A Team Effort

- Bridge and Road Duo (2001-2002)
  - Piloted DGNconform CAD standards system

- Plans Management Committee (2003-2005)
  - Evaluated plans management systems
  - Selected collaboration and publishing systems
  - Evaluated high-volume printing systems
  - Wrote specs for new plans printing system
Electronic Plans - A Team Effort

- Process Improvement Task Team 7.6 (2005-2006)
  Developed action plan for systems and standards for internal and external project development

  - Electronic Plan Room system
  - Contractor Q&A collaboration system
  - Project design data collaboration system
  - Standard software and data formats
  - Electronic standards for drawing and design
Electronic Plans - A Team Effort

- Electronic Standards Council (Late 2006-2007)
  - Assigned to pick up where Task Team 7.6 left off
  - Composed of DOTD & consultant technical experts

  - Deal with loose ends
  - Oversee pilot phases
  - Address implementation and technical issues
Electronic Publishing
A Driving Force
Plans Publishing Workflow 2003

- Archaic Workflow Slows Plan Publishing

1. Print Drawing to Film
2. Ink Signature
3. Transmit Film
4. Scan Film to Memory
5. Print / Build Bid Sets
Plans Publishing Workflow 2006

1. Print Drawing to Film
2. Ink Signature
3. Transmit Film
4. Scan Film to TIFF
5. Upload to Falcon SVP
6. View-Print-Download

- Océ Printing System becomes reality
- Web Publishing becomes reality

Print Bid Sets
- On Demand

Internal & External
- On Demand
Plans Publishing Workflow 2008

- Export to PDF
- Electronic Signature
- Transmit CD / DVD
- Upload to Falcon SVP
- View-Print-Download

- Electronic Signatures implemented
- PDF becomes document of record

- Print Bid Sets
  - On Demand
- Internal & External
  - On Demand
Falcon SVP Publishing System
Search Drawings Using Index Attributes
## Search Results: 31-45 (272 matches)

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Falcon SVP Publishing Components

❖ DOTD Electronic Plans Distribution Center
  ➢ Search/View/Print - bid set drawings
  ➢ Download bid set drawings - Search/View/Print

❖ Falcon SVP - Q&A Extension
  ➢ Posts contractor questions and answers
  ➢ Posts basic requests for information (RFI)
  ➢ Makes such communications available to all
  ➢ Automatic email alerts regarding postings
  ➢ For 90% ACP (complex projects) and Bid Plans
Submit Question for Project

Enter subject, Sheet # if appropriate, and question in the indicated fields and then click the 'Submit Question' button.

Subject: Haul Road Connectors
Sheet #: 180

Question:
Can haul roads be used on the connectors instead of the planned canals?
Administer Q&A Form for Project Managers

Can haul roads be used on the connectors instead of the planned canals?

The second "off of the record" opinion by the Permitting Agencies was that a haul road from existing Lai along the north connector to dredging limits past the pipelines may only require permits sketch changes without going on public notice. This is because the impacts from a haul road would be less than from a canal. Crossing the pipelines may require additional measures to be taken such as bridging or casing.
Falcon SVP - Q&A Extension

Review Question and Response

(1 of 2) Subject: Construction Canals

Plan Status: 90%

Submitted by: acme
Company: ACME Engineers
Date: 5/5/2006 2:08:05 PM

Can the construction canals along the connectors be shifted over?

Respondent: Andrew Synnott  Date: 5/5/2006 2:15:10 PM

We have discussed the first two bullets with the Permitting Agencies and have been given the "off of the record" opinion that shifting the canal over on the southern connector may only require permit sketch changes without going on public notice. This is because shifting the canal over does not change ownership nor increase impacts.

Submit Follow-up
Can the construction canals along the connectors be shifted over?

Respondent: Andrew Synnott  Date: 5/5/2006 2:15:10 PM

We have discussed the first two bullets with the Permitting Agencies and have been given the "off of the record" opinion that shifting the canal over on the southern connector may only require permit sketch changes without going on public notice. This is because shifting the canal over does not change ownerships nor increase impacts.

Can haul roads be used on the connectors instead of the planned canals?

Respondent: Hollis Ward  Date: 5/5/2006 2:16:49 PM

The second "off of the record" opinion by the Permitting Agencies was that a haul road from existing La1 along the north connector to dredging limits past the pipelines may only require permits sketch changes without going on public notice. This is because the impacts from a haul road would be less than from a canal. Crossing the pipelines may require additional measures to be taken such as bridging or casing.

Can a work bridge be used on the "end on" part of the project?


Yes.
Falcon SVP Q&A System Goes Live

- Each project requires some initial setup
  - Input of project Information
  - Input of Project Manager Information

- Responsibility for input must be established

- Implementation will bring other updates to SVP
Plans Publishing - Coming Updates

- Electronic Signatures for PDF Deliverable
  - Requires evaluation & selection of technology
  - Requires a secure process
  - Requires an efficient process
  - Requires approval
    - Division of Administration
    - Professional Engineering/Surveying Board
Plans Publishing - Coming Updates

- PDF Rendition Becomes Document of Record
  - Requires electronic signatures
  - Requires secure management of postings
  - Responsibility for posting must be established

- Fully Indexed Plans Empower System
  - Requires ControlCAD Indexer implementation (when “Submittal” tool is finished)
ControlCAD Indexer

Offline Indexing for Falcon SVP and ProjectWise

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Meta-data Version 1.0

Save Cancel

Save Cancel
ControlCAD Indexer Functions

- Enforces complete metadata (index)
- Delivers portable metadata (XML)
- Delivers metadata for Falcon SVP plans search
- Delivers metadata for ProjectWise design search
- Integrates with ProjectWise
ProjectWise - Design Data Management
Manages Project Design Data and Collaboration
ProjectWise Attributes Page

ControlCAD
Indexer
Integration
ProjectWise Workflow

Example Design Workflow
ProjectWise Security
Example Workflow Security - Plan Checking State

Plan Checking Properties

- Name:
  - Administrator
  - Bridge Data Manager
  - Bridge Designer
  - Bridge Reviewer
  - Consultants
  - Everyone

- Permissions:
  - Full control
  - Change permissions
  - Create
  - Delete
  - Read
  - Write
  - File Read
  - File Write
  - No access
ProjectWise Status Report

- Current ProjectWise Status (early 2007)
  - Pilot Phase 1 finished (I-10 Twin Spans Project)
  - Pilot Phase 2 well underway
  - Currently hosts 35 projects (7 in districts)
  - Project templates, attributes, users defined
  - Security, workflows, user settings defined
  - Available for consultant use as needed
ProjectWise Future Plans

- ProjectWise in Full Production (Late 2007-2008)
  - Upgrade to Project Wise XM
  - Incorporate workspace configuration
  - Full rollout for all new projects
  - Import in-progress projects
  - Bulk-load legacy projects (maybe later)
  - Pilot DOTD/consultant workflow collaboration
  - Indexer and Submittal tool integrated
  - Geospatial integration underway
Software and Deliverable Standards
Core Electronic Standards

- CAD Drafting Software
  DOTD - MicroStation
  Consultants - MicroStation or AutoCAD

- Deliverable
  MicroStation DGN
Core Electronic Standards

- Road Design Software (platform update)
  DOTD - Inroads on MicroStation
  Consultants - Inroads on MicroStation

- Deliverable
  MicroStation DGN
  Inroads ALG & DTM
Core Electronic Standards

- Plotting Software (updated name / version)
  DOTD - ProjectWise Plot Organizer
  Consultants - ProjectWise Plot Organizer

- Deliverable
  Matte Film in 2007
  PDF starting in 2008
Core Electronic Standards

- Standards Management Software
  DOTD - Altiva CADconform
  Consultants - Altiva CADconform

- Deliverable
  Certified MicroStation DGN
Core Electronic Standards

- Indexing and Submittal Software
  DOTD - Corporate Montage Indexer
  Consultants - Corporate Montage Indexer

- Deliverable
  XML Index
  Zip file created by “Submittal” Tool
  (includes all project deliverables)
Standards - General Information

- Effective Date of Standards and Data Certification
  - Consultants - Effective for 2007 advertisements
  - DOTD - Start phasing in Mid 2007

- Electronic Standards - [www.dotd.louisiana.gov](http://www.dotd.louisiana.gov)
  - Standards documentation
  - Link to CAD standards downloads at [Altiva Site](http://www.dotd.louisiana.gov)
  - ProjectWise Explorer Client for consultants
  - Bentley Redline software
Software Training Information

- Software Training Reimbursement via Louisiana Department of Labor - Incumbent Worker Training
  www.laworks.net
  - Small Firms - Small Business Employee Training
  - Large Firms (50+ Emp.) - Customized Training

- Software Training Providers
  - LSU Continuing Education (for DOTD and DOTD Consultants)
  - Bentley Systems, etc.
Plan Delivery Workflow for 2007

1. Draw to Standards (CADconform or Inroads)
2. Print to Film (ProjectWise Plot Organizer)
3. Ink Signature (Same as always)
4. Index Plans (ControlCAD Indexer)
5. Prepare Submittal (Indexer Submittal Tool)
6. Deliver Plans (Mail, CAD files via CD/DVD)
Plan Delivery Workflow 2008

1. Draw to Standards
2. Export DGN to PDF
3. Digitally Sign PDF
4. Index Plans
5. Prepare Submittal
6. Deliver Plans

Tools:
- CADconform or Inroads
- ProjectWise Plot Organizer
- Technology under study
- ControlCAD Indexer
- Indexer Submittal Tool
- CD, DVD or ProjectWise
CADconform Tools

Toolbox Options

- Connect to Database
- User Manager
- Feature Table Manager
- Conform Checker
- Report Generator & Certify Tool
- Drafting Menu
CADconform Feature Table Manager

Creating the Annotation Draft Menu
CADconform User Manager
Managing User Rights and Options

User Manager

- Login
  - admin: Hollis Ward
  - d0708: Pat Landry
  - d0774: Jacob Broussard
  - d2459: Karen Barrouse
  - d2503: Stephanie Cavalier
  - d2504: Ryan Reviere
  - d2505: Darrell Hymel

- Login Name: admin
- Full Name: Hollis Ward
- Login Password: ********
- Confirm Password: ********

- Tools
  - Administration
  - Locking
  - Certifying
  - Digitally Sign

- Options
  - Edit Feature Table
  - Conform
  - Generate Reports
  - View Feature Table
  - Append to Table
  - Drafting Menu

Save Cancel
CADconform Report Manager

Drawing Reports and Certification
CADconform Report Manager

Standards Certification Watermark and Info

Watermark Info

- Watermark Type: Certification Stamp
- Watermark Cell: BRIDGE
- Extra Info: BDraw, BText
- Stamped by User: Hollis Ward
- Date Stamped: Mon Mar 06 15:47:47 2006
- Expiry Date: No Expiry
- Computer Name: H25000DD042
- Total Elements Verified: 2091
- Number of Files: 1
- Excluded Cells: CERTX, BRIDGE
- Watermark Status: OK

This watermark was created by DGNconform Server v4.1 or higher.
This watermark certifies the master design file only.
This watermark certifies only visible elements and not graphical settings.

This watermark was certified against the following dictionaries:
BDraw: [Unspecified Version].
ControlCAD Indexer

Index after Plan Assembly

Enter Metadata Values

File

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Set Meta Data

Main
- Project Drawings
  - Bridge Superstructure
- Span
- ACP Plans

Louisiana DOTD

Lead Project Number (#####

450-17-0025

Discipline
- Bridge

Plan Phase
- ACP Plans

Document Class
- Project Drawings

Sheet Number

Series Number
- 1 of 4

Title
- EMERGENCY CROSSOVER SPAN_A

Description
- 135' Emergency Crossover

Remarks

Meta-data Version 1.0

Save  Cancel
Submittal Verification Workflow

Consultant Creates Drawings Using CADconform

In AutoCAD Translated to DGN MicroStation In MicroStation

Certify Drawings in MicroStation & Export to PDF

Consultant Runs Indexer, Creates XMLs of Metadata

Submittal Tool Creates Archive, Compliance Reports

---------- If Deliverables Verify ----------

Post Deliverables to ProjectWise and Falcon

DOTD Stds. Database

DGNs, refs PDFs, XMLs, reports
### ControlCAD Indexer Submittal Tool

Checks Submittal Against Certification Settings

![ControlCAD Submittal 0.0.81](image)

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ControlCAD Indexer/Submittal Tool

- Ensures electronic deliverables are accounted for
- Ensures CAD reference file delivery and integrity
- Ensures valid CAD drawing standards certification
- Ensures valid feature tables used for certification
- Ensures valid PDF electronic signatures
- Ensures PDFs created using ProjectWise Plot Org.
- Ensures PDF created from delivered CAD drawing
- Ensures that all deliverables are indexed
- And more checks later
Project Manager Responsibilities

- **Notice to Proceed**
  - Advise project team regarding latest e-standards

- **60% ACP**
  - Remind project team to maintain latest standards
  - Require preliminary deliverable to check if needed

- **90% ACP**
  - Provide project team with submittal requirements

- **PDD Plans - Verify Electronic Deliverables**
  - Verify submittal completeness via “Verification” tool
  - Forward deliverables to Plans Manager for upload
Plans Manager Responsibilities

- Upload PDF plans to Falcon
- Upload all deliverables to ProjectWise?
- Manage Revisions and Plan Changes
- Manage Falcon SVP Q&A Extension
Electronic Standards – Why?

- Improve Plan Quality
- Improve Electronic Collaboration
- Facilitate Electronic Publishing
- Speed up Project Development
- Reduce Plan Errors
- Reduce Project Costs
- Reduce CAD Support Costs