

WV DOT Scanning Project



Highway Plans Locator

Search and View Scanned Highway Plans

ROAD COMMISSION
OF WEST VIRGINIA
PROJECT NO. I-64-I(31)O
ROUTE NO. INTERSTATE 64



Highway Plans Locator

Search and View Scanned Highway Plans

- The West Virginia GIS Technical Center (WVGISTC) is scanning West Virginia Department of Transportation (DOT) large format highway plan sheets into digital raster images.
- For every highway plan set a single Adobe PDF file is created along with spatially referencing the index map.
- An online application for managing, searching, viewing, and downloading all scanned highway plans is maintained.
 - Provides a fast discovery and online retrieval of the electronic highway plans.

WV DOT Scanning Project

The justification – Why do we need this system?

- **Improved Management and Archival System**
 - Electronic database manages the plan sets and associated documents
 - Eliminates lost drawings, misfiled drawings, and deterioration of drawings
 - Long-term digital storage integrated with ProjectWise content management system
 - Consolidates record plan sets in one location in digital database
 - Engineering plans, right of way plans, shop drawings, bridge plans, and roadway plans stored in multiple physical locations
- **Faster and Easier Access to Drawings**
 - **By anyone, at any time, from anywhere.**
 - Improved document accessibility for both internal and external users
 - Access by non-spatial or spatial map queries



Highway Plans Locator

Search and View Scanned Highway Plans

- How does this project benefit the Department of Highways overall business processes?
 - Enables the WVDOT to digitally store, retrieve, and share full scale plan sets along with their supporting engineering documentation in a geospatial interface for easy retrieval from multiple locations on many different fixed or mobile devices.

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- *Engineering and Right of Way divisions currently store approximately 1500 drawers and 200 rolled sets of plans.*

Currently we have shop drawings, bridge plans, roadway plans, design calculations, and other files in our District 1 storage room.



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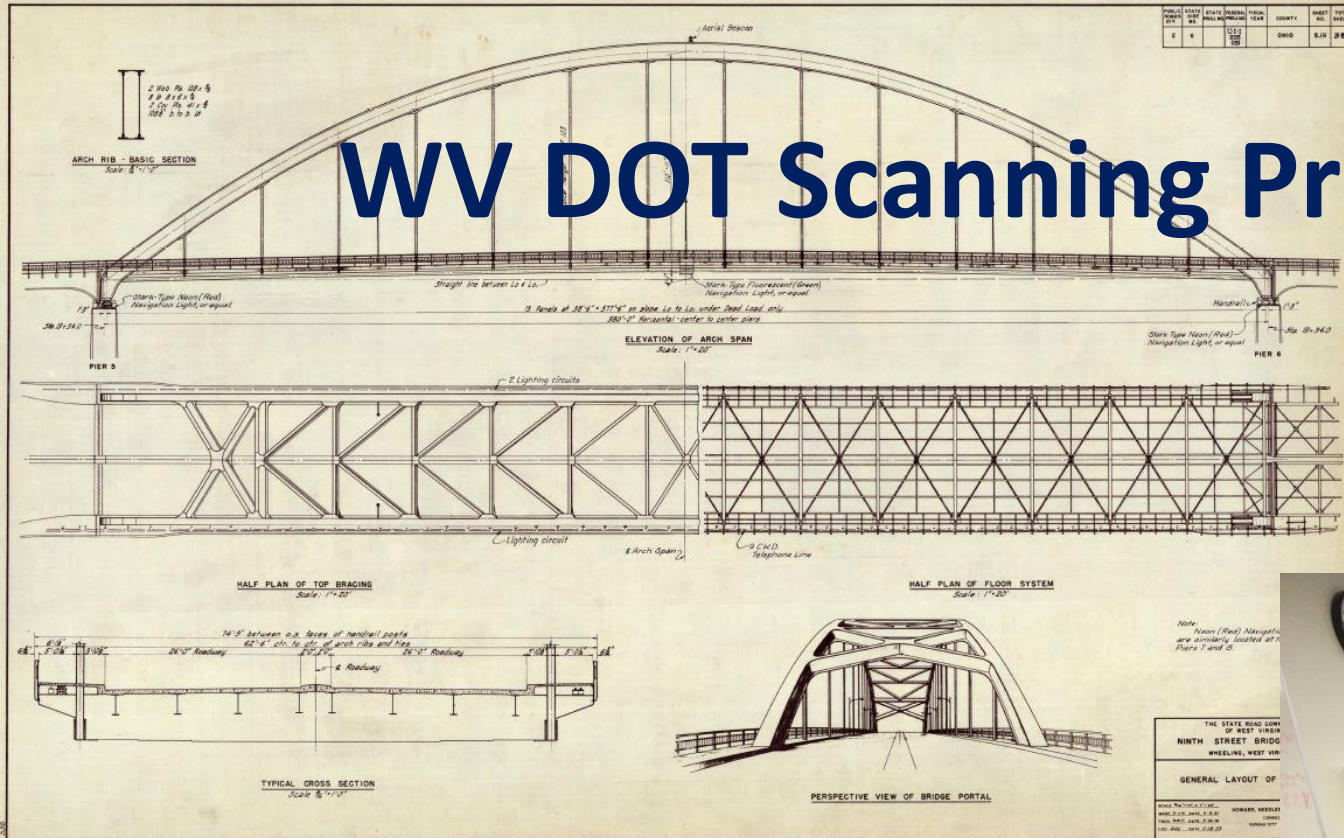




Water leak



WV DOT Scanning Project



THE STATE ROAD COMMISSION OF WEST VIRGINIA SITUATION PLAN OHIO RIVER 9TH STREET, WHEELING

PROJECT NO. U.I. 203 (S) River or Way
U.I. 203 (S) Substructure
U.I. 203 (S) Steel Superstructure
U.I. 203 (S) Deck, Lighting & Handrail Section
OHIO COUNTY
SCALE: 1" = 30' HORIZ. & VERT. JANUARY 19, 1950

OFFICE OF THE STATE CONSTRUCTION ENGINEER

#1830

ELEVATIONS BASED ON U.S. ENGINEERS DATUM

* Note: Profile of Main Ninth & Market Sts.
revised for wearing surface which
has been added.
** Line Shift

Revised March 2, 1950

" June 28, 1950

" Sept. 29, 1950

" October 9, 1950

Revised April 4, 1951

Revised May 14, 1951 for P.I.
at Sta. 10+00

RT. JANU
INSTRUCTION ENGI

U.S. ENGINEERS DATA

REVISED MARCH

" June 28

" Sept. 29

" October

Bld. Revised April 4

Scanning Project Process

- Book Preparation and File Naming
- Scanning
- Image Processing (semi-automated)
 - Crop Images & Create PDF Book
- Geo-reference Index Map
- Quality Control
 - Page sequence, scan orientation, image quality
- Publish to Web Application (automated)
 - Via SQL Server and ArcGIS Server

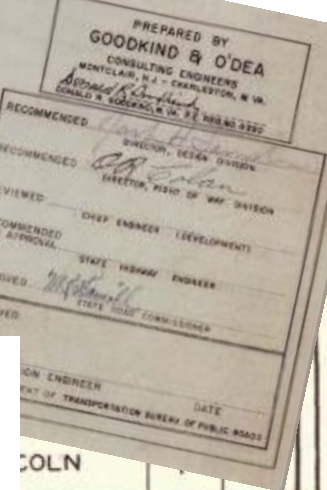
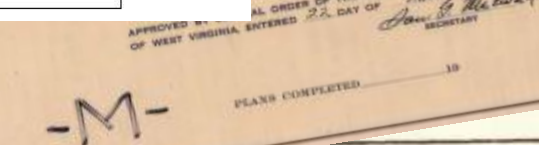
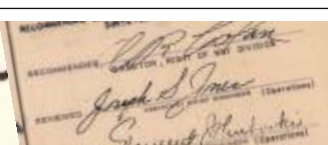
Transmittal Sheets

Developing the project key

Project Key										Project Title													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		18	19	20	21	22	23
H	1	3	1			6	4			1	4	3	1	9	8	3		S					
Type	County ID	Sign System	Route Number		Sub Route		Begin Milepost		Fiscal Year				Scan Order Number (To be completed by scan tech.)										

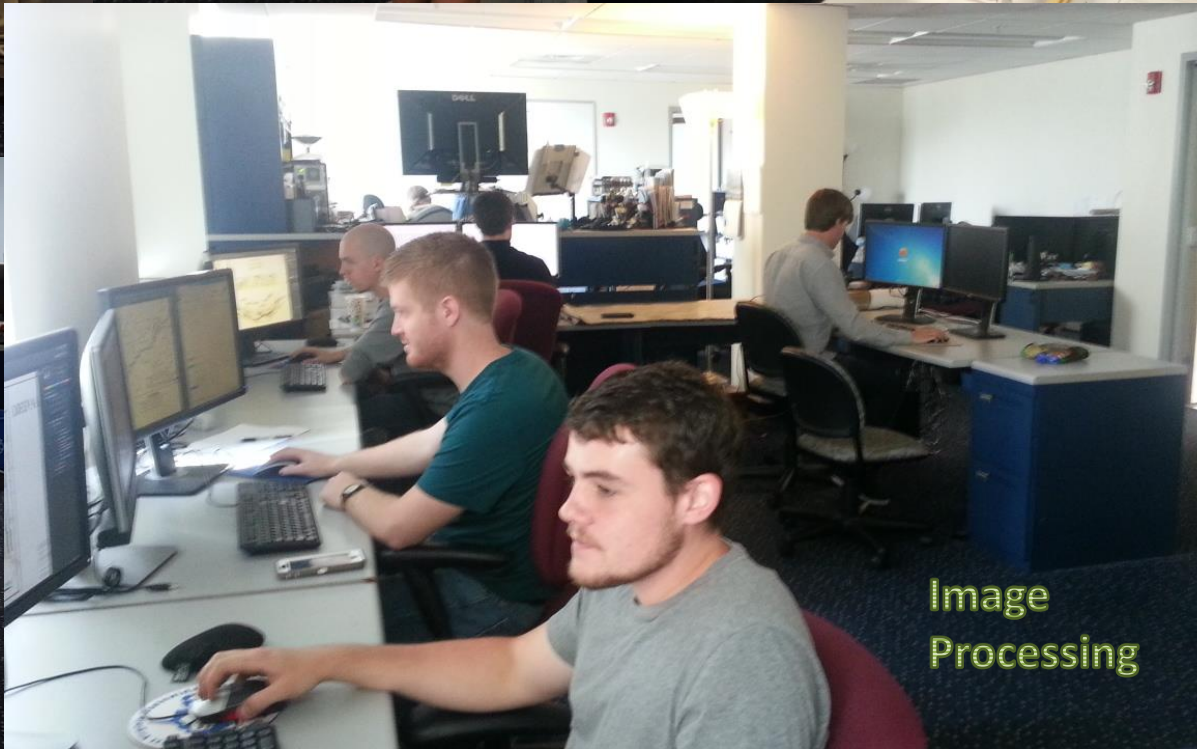
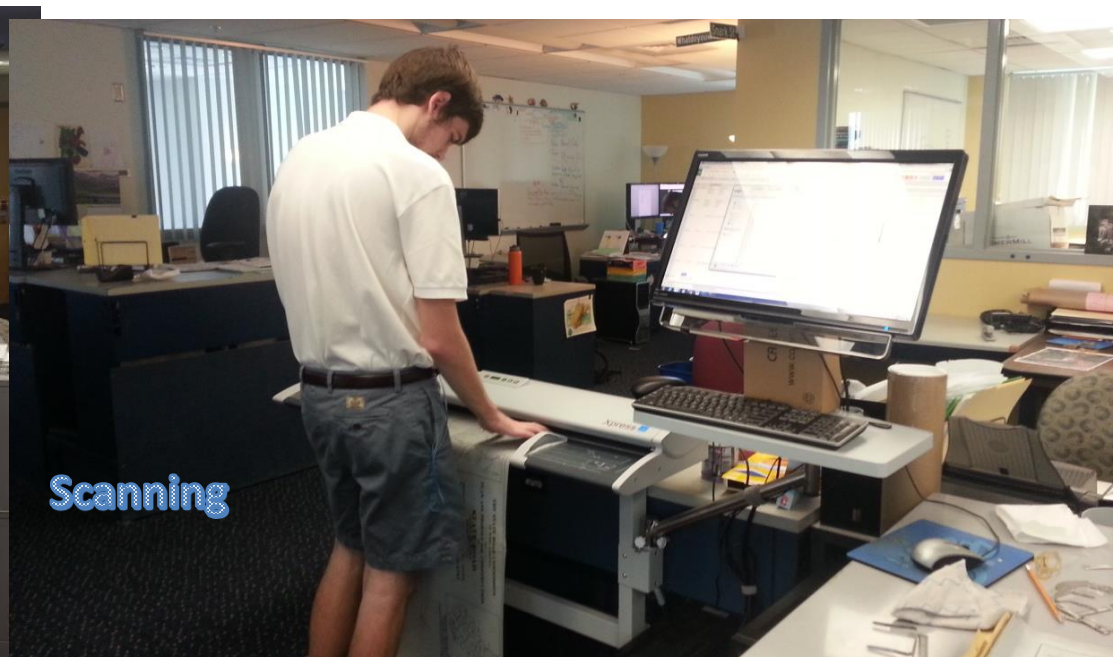
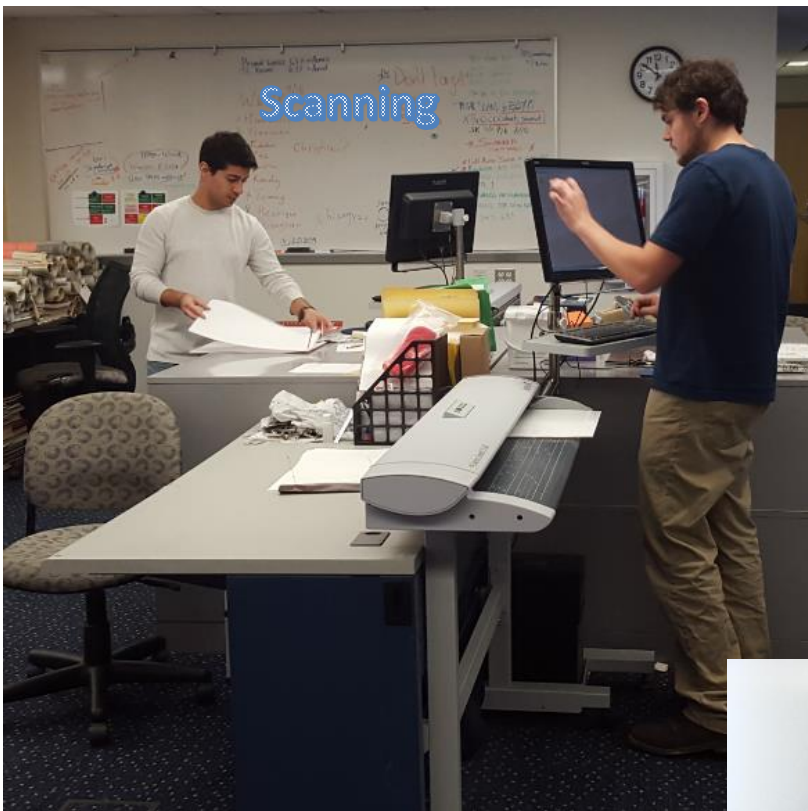
Supplemental Information														
1	2	3	4	5	6	7	8	9						
9	0	0_	_C	_2	3_	_0	0_	_	2	7	8	1	.	0
District #	Direction	Special ID	Status ID	Supplemental Code	Bridge # 2782									

Transmittal Information	
Date Scanned	Scanned by:
Notes:	



Plan Set Preparation





Online Highway Plans Locator



Highway Plans Locator

Search and View Scanned Highway Plans

[Overview map](#)

Enter one or more search criteria

Free Text:	<input type="text" value="search criteria"/>	Project Title:	<input type="text" value="search titles for..."/>
County:	<input type="text" value="Any"/>	Federal Project:	<input type="text" value="search federal projects for..."/>
Route:	<input type="text" value="79"/>	State Project:	<input type="text" value="search state projects for..."/>
Mile Marker:	<input type="text" value="starting mile..."/>	Project Key:	<input type="text" value="search keys for..."/>
Fiscal Year:	<input type="text" value="starting year..."/>	Bridge:	<input type="text" value="search for bridge numbers..."/>
	(Through:)		<input type="text" value="ending mile..."/>
	(End Year:)		<input type="text" value="ending year..."/>

☒ Show first 100 matches only

Query URL: <http://www.mapwv.gov/dotplans/index.php?county=Any&signSystem=Any&route=79>

75 matches out of 1140 published scans

ID			Project Key	Project Title	Federal Project	State Project	County	Sign System	Year	Route	Mile	Bridge
156			R 17 1 0079 00 132 1971 S00156	Right of Way Plans for State Road 79	I-79-3(42)132		Harrison	Interstate	1971	79	132	---
157			R 17 1 0079 00 122 1966 S00157	Right of Way Plans for State Road 79	I-79-3(34)122		Harrison	Interstate	1966	79	122	---
158			R 17 1 0079 00 118 1969 S00158	Right of Way Plans for State Road 79	I-79-3(5)118 C-2	X321-79-104.36	Harrison	Interstate	1969	79	118	---
159			R 17 1 0079 00 126 1971 S00159	Right of Way Plans for State Road 79	I-79-3(39)126	X-317-79-114.04	Harrison	Interstate	1971	79	126	---
160			R 31 1 0079 00 168 1968 S00160	Right of Way Plans for State Road 79	I-79-3(26)168		Monongalia	Interstate	1968	79	168	---
161			R 31 1 0079 00 164 1970 S00161	Right of Way Plans for State Road 79	I-79-3(20)164 SECTION 2		Monongalia	Interstate	1970	79	164	---
162			R 31 1 0079 00 161 1967 S00162	Right of Way Plans for State Road 79	I-79-3(17)161		Monongalia	Interstate	1967	79	161	---
163			R 25 1 0079 00 155 1966 S00163	Right of Way Plans for State Road 79	I-79-3(11)155		Marion	Interstate	1966	79	155	---
164			R 25 1 0079 00 150 1965 S00164	Right of Way Plans for State Road 79	I-79-3(3)150 Submission 4	SU 710(1)	Marion	Interstate	1965	79	150	---
165			R 31 1 0079 00 172 1970 S00165	Plan and Profile for Right of Way of State Road 79	I-79-3(29)172	X-331-79-153.54	Monongalia	Interstate	1970	79	172	---
166			R 25 1 0079 00 150 1962 S00166	Right of Way Plans for State Road 79	I-79-3(3)150 Submission 2		Marion	Interstate	1962	79	150	---
167			R 17 1 0079 00 130 1971 S00167	Right of Way Plans of State Highway 79	I-79-3(44)130		Harrison	Interstate	1971	79	130	---
168			R 31 1 0079 00 164 1967 S00168	Right of Way Plans for State Road 79	I-79-3(20)164		Monongalia	Interstate	1967	79	164	---
169			R 31 1 0079 00 175 1967 S00169	Right of Way Plans for State Road 79	I-79-3(32)175		Monongalia	Interstate	1967	79	175	---
170			R 25 1 0079 00 150 1964 S00170	Right of Way Plans for State Road 79	I-79-3(3)150 Submission 3		Marion	Interstate	1964	79	150	---
171			R 25 1 0079 00 150 1962 S00171	Right of Way Plans for State Road 79	I-79-3(3) 150 & F-155(12)		Marion	Interstate	1962	79	150	---
172			R 25 1 0079 00 158 1966 S00172	Right of Way Plans for State Road 79	I-79-3(14)158		Marion	Interstate	1966	79	158	---
173			R 17 1 0079 00 118 1963 S00173	Right of Way Plans for State Road 79	I-79-3(5)118		Harrison	Interstate	1963	79	118	---
174			R 17 1 0079 00 144 1965 S00174	Right of Way Plans for State Road 79	I-79-1(8)144		Harrison	Interstate	1965	79	144	---
194			R 17 1 0079 00 144 1965 S00194	Misc. Property Maps			Harrison	Interstate	1965	79	144	---
206			R 21 1 0079 00 097 1970 S00206	Courthouse & Hackers Creek Districts	I-79-2(26)97		Lewis	Interstate	1970	79	97	---
211			R 21 1 0079 00 056 1971 S00211	State Road R/W Project I-79-2(21)101 Section 1 Hackers Creek District			Lewis	Interstate	1971	79	56	---
215			B 17 1 0079 00 121 2000 S00215	Meadowbrook Bridge 2449.1		U317-79-121.32	Harrison	Interstate	2000	79	121	2449.1
221			R 21 1 0079 00 109 1968 S00221	East River Mountain Tunnel Planned and Proposed	I-79_2(8)109		Lewis	Interstate	1968	79	109	---
231			R 21 1 0079 00 104 1970 S00231	State Road Hackers Creek District	I-79-2(22)104		Lewis	Interstate	1970	79	104	---
263			P 20 1 0079 00 016 1975 S00263	Plans for Junkyard Relocation Richard Saunders	CJI-79-I(42)16		Kanawha	Interstate	1975	79	16	---
336			B 20 1 0079 00 021 2000 S00336	Left Hand Fork Bridge	IM-0791(090)E	S320-79-20.57	Kanawha	Interstate	2000	79	21	2922.1

Online Highway Plans Locator

Detailed Record

www.mapwv.gov/dotplans/ProjectDetails.php?scanID=157



West Virginia Department of Transportation

Project: R_17_1_0079_00_122_1966_S00157

Scan ID:	157
Project Title:	Right of Way Plans for State Road 79
Federal Project:	I-79-3(34)122
State Project:	
County:	Harrison
District:	4
Plan Type:	Right of way
Sign System:	Interstate
Route:	79
Mile:	122
Special ID:	N/A
Bridges:	
Fiscal Year:	1966
Supplemental Code:	(0) Not Applicable
Project Status:	Final Design
Book Location:	DOT
Scanning:	Scanned 07/23/2014, 35 Sheets, 35 Scans
PDF:	PDF
GeoTIFF:	GeoTIFF
Map:	Show on Map
Comments:	Missing sheet #3, #30, #31

Query URL: http://www.mapwv.gov/dotplans/DOT_Query.php?scanID=157

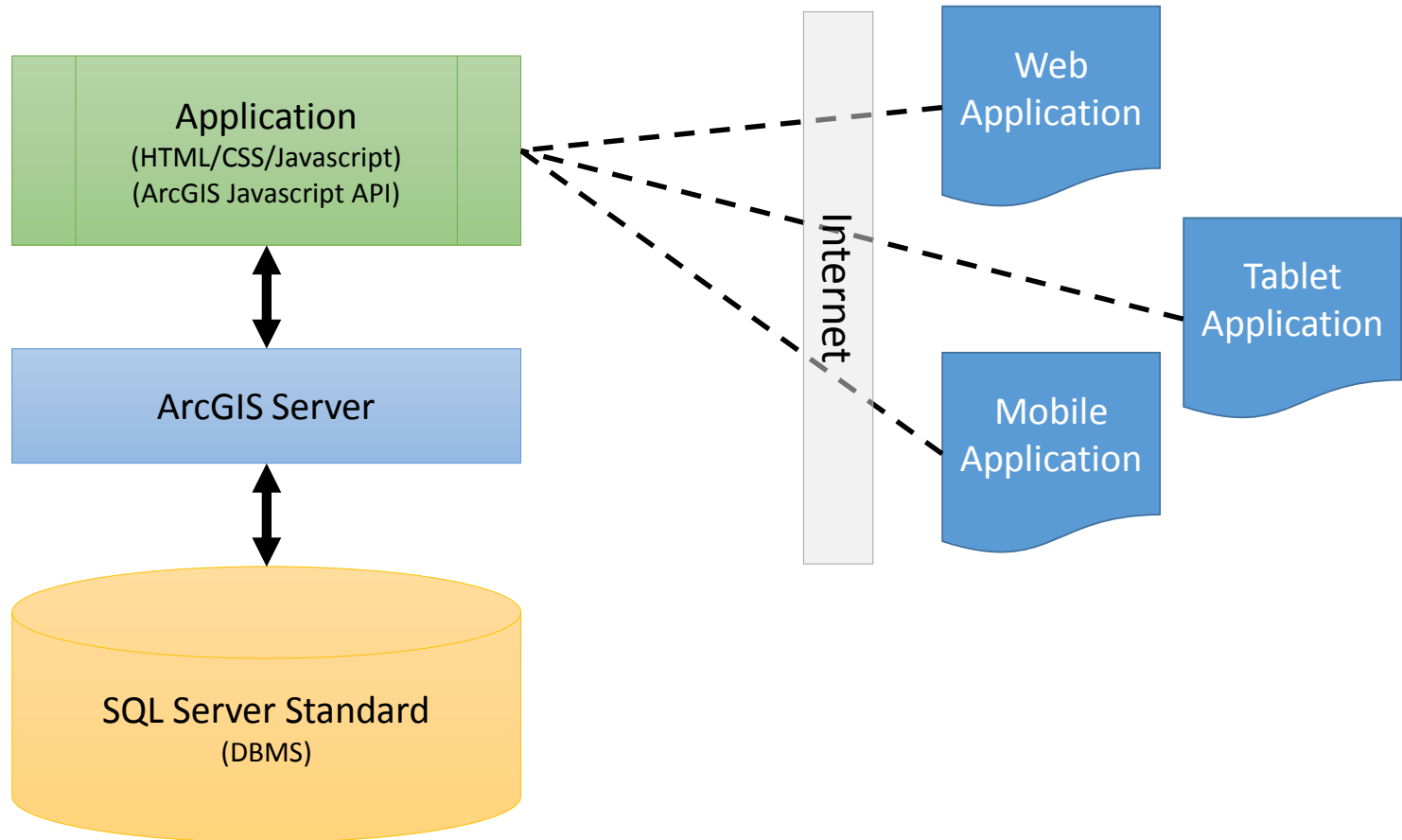
Email Address:

[Close](#)

Map It View



Microsoft SQL Server & Enterprise ArcGIS Geodatabase

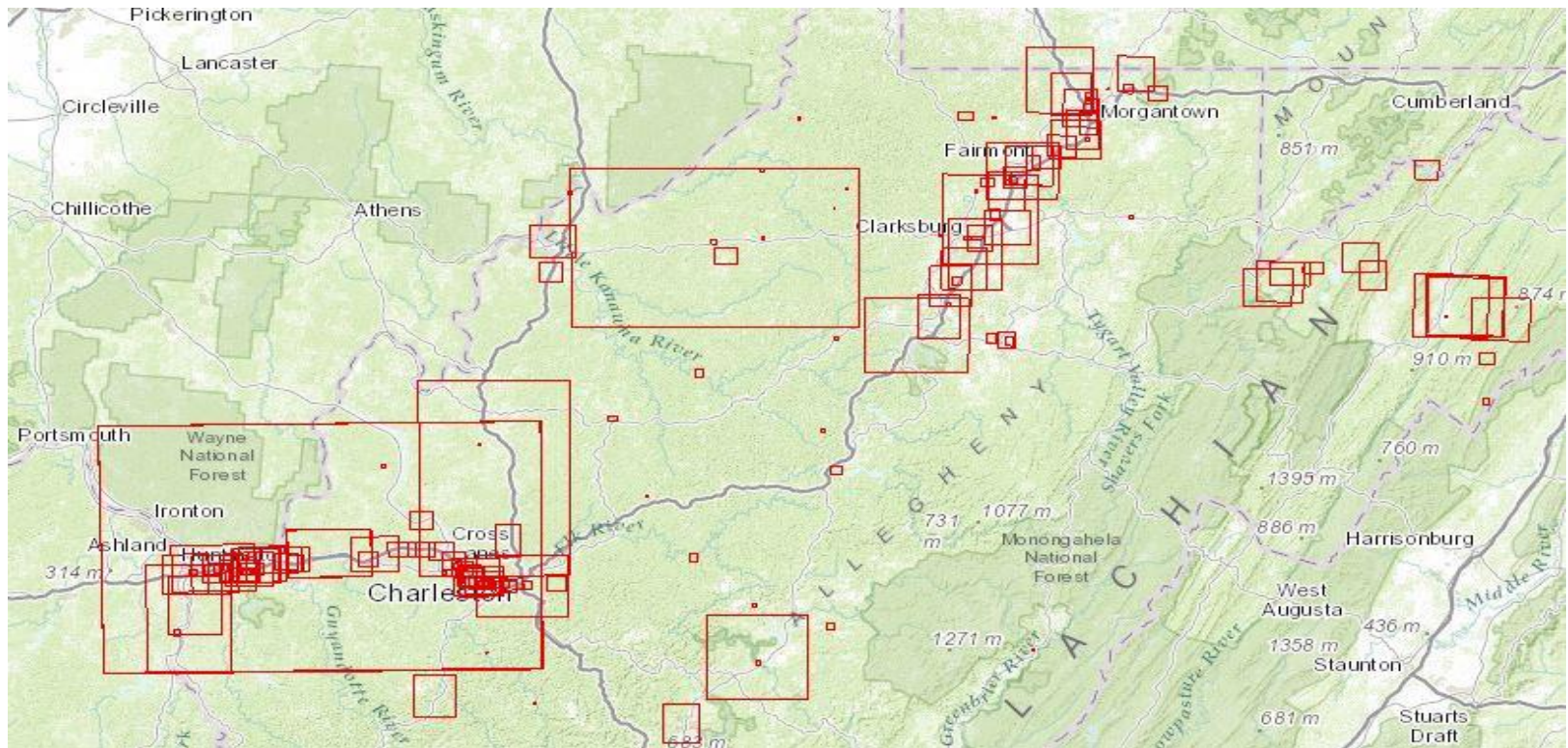


Microsoft SQL Server & Enterprise ArcGIS Geodatabase

- Multi-user ability
- Used for recording scanning activity
- Supports web feature mapping and image services
- Updates are made automatically; not necessary to re-publish ArcGIS services in order to add new scan rasters
- Backups are run using SQL Server Agent process
- Geodatabase contains 3 primary objects
 - Raster mosaic as source of image service
 - Feature class of map foot prints
 - Database view for published plans and web based query interface
- Python scripts automate processes
 - Renaming files
 - Calculate map extents
 - Copying GeoTiffs to publication folder
 - Building raster mosaic
 - Building footprints

WV DOT Scanning Project

- Initial scans were isolated to Right of Way plans on I-64 and I-79.



WV DOT Scanning Project

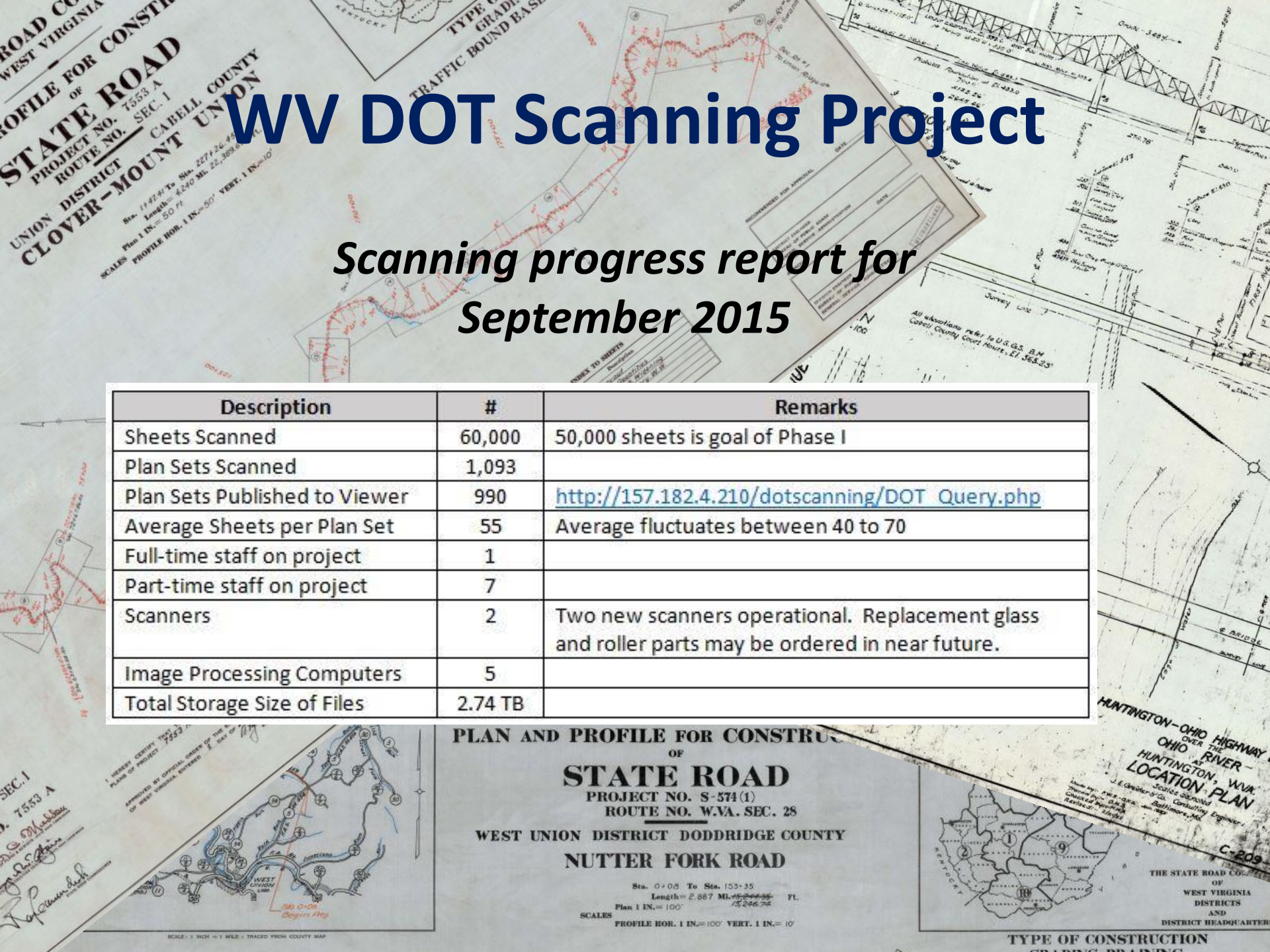


2105 Summer Students on Scanning Project

WV DOT Scanning Project

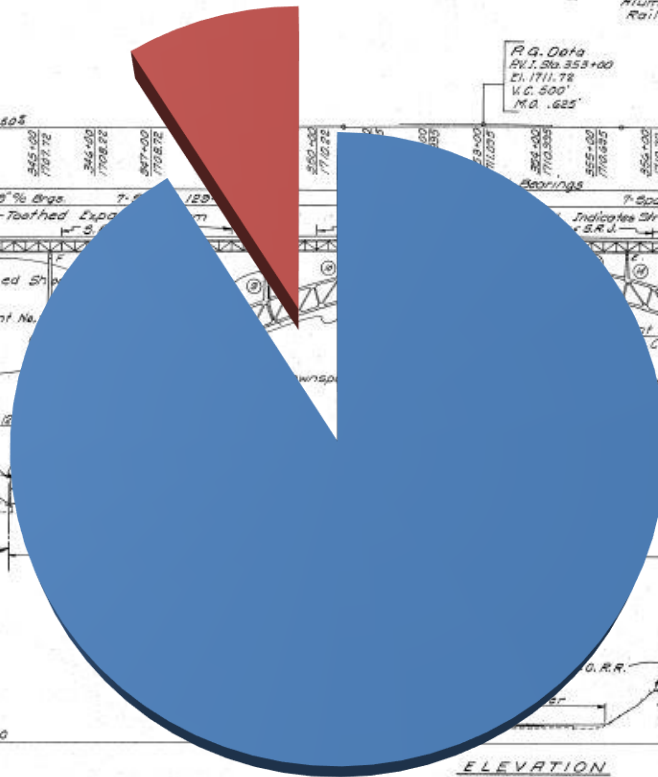
Scanning progress report for September 2015

Description	#	Remarks
Sheets Scanned	60,000	50,000 sheets is goal of Phase I
Plan Sets Scanned	1,093	
Plan Sets Published to Viewer	990	http://157.182.4.210/dotscanning/DOT_Query.php
Average Sheets per Plan Set	55	Average fluctuates between 40 to 70
Full-time staff on project	1	
Part-time staff on project	7	
Scanners	2	Two new scanners operational. Replacement glass and roller parts may be ordered in near future.
Image Processing Computers	5	
Total Storage Size of Files	2.74 TB	



WV DOT Scanning Project

Scanning Progress



■ Plans stored
■ Scanned

BENT STATIONS			
Bent	Station	Bent	Station
1	338+86.00	13	354+20.75
2	340+08.50	14	355+59.50
3	341+39.00	15	356+28.25
4	342+61.50	16	357+18.00
5	343+23.75	17	358+48.75
6	345+21.50	18	360+78.50
7	346+51.25	19	362+10.125
8	347+81.00	20	363+55.50
9	349+10.75	21	364+29.00
10	350+40.50	22	365+42.50
11	351+70.25		

WEST VIRGINIA DEPARTMENT OF HIGHWAYS			
NEW RIVER GORGE BRIDGE GENERAL PLAN AND ELEVATION			
MICHAEL BAKER, JR., INC. CONSULTING ENGINEERS		REVIEWED BY	
CHARLOTTE, N. C.		DATE	
DESIGNED BY		SCALE	
CHECKED BY		BRIDGE NO.	
DRAWN BY		DWG. NO.	
DATE		1 of 123	

50K Scan Party



50K Scan Party



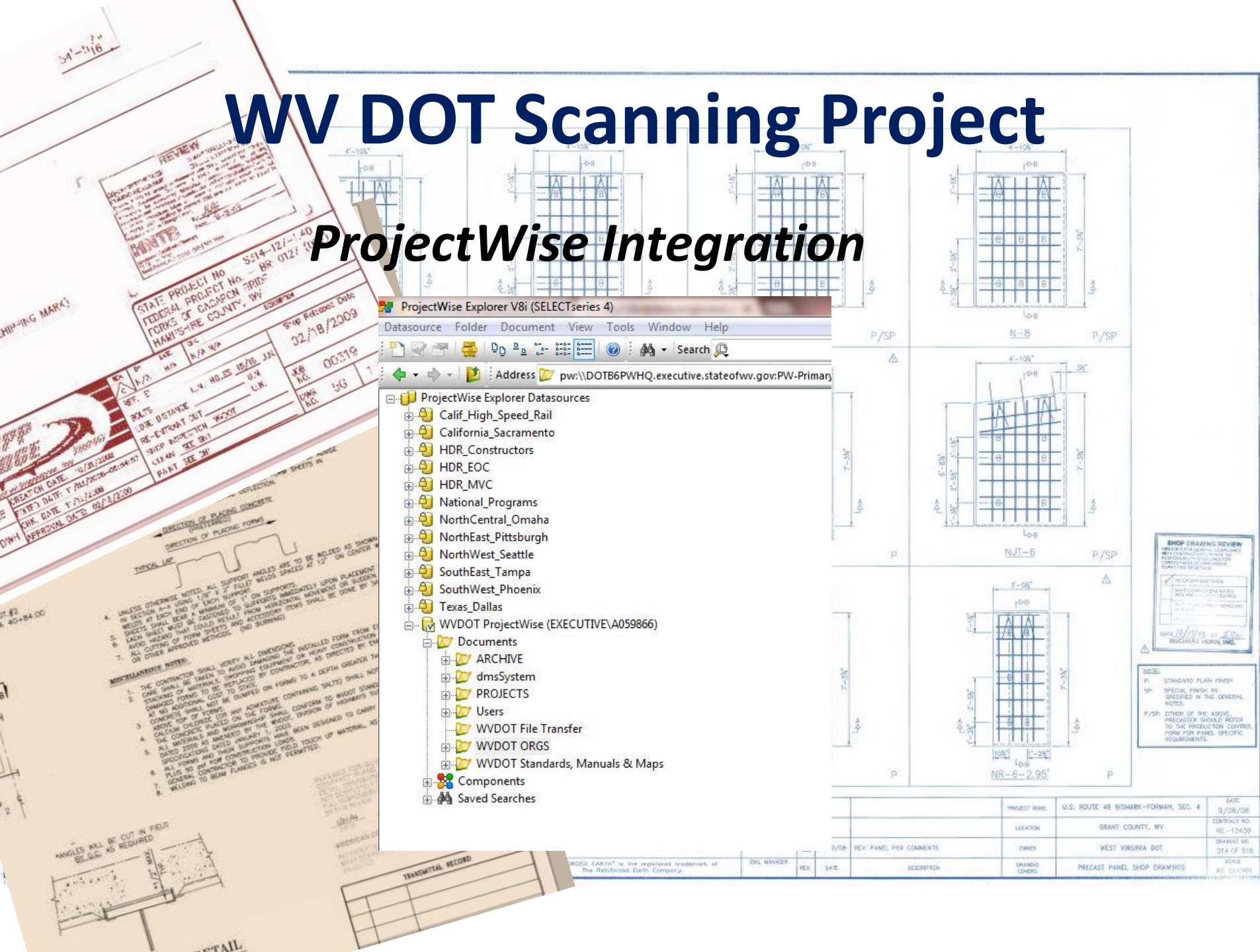


WV DOT Scanning Project

Phase 2 Highlights and Enhancements

- **DOT Scanning Database:**
 - fix records that have missing or incorrect information
- **Customized Spatial Viewer**
- **DOT ProjectWise Integration**
- **Scanned Files Stored on DOT Server**

ProjectWise Integration



WV DOT Scanning Project

- The Highway Plan Locator – Search and View



Highway Plans Locator

Search and View Scanned Highway Plans

[Overview map](#)

Enter one or more search criteria

Free Text:	<input type="text" value="search criteria"/>		Project Title:	<input type="text" value="search titles for..."/>	
County:	<input type="text" value="Any"/>	Sign System:	<input type="text" value="Any"/>	Federal Project:	<input type="text" value="search federal projects for..."/>
Route:	<input type="text" value="route number..."/>		State Project:	<input type="text" value="search state projects for..."/>	
Mile Marker:	<input type="text" value="starting mile..."/>	(Through:)	<input type="text" value="ending mile..."/>	Project Key:	<input type="text" value="search keys for..."/>
Fiscal Year:	<input type="text" value="starting year..."/>	(End Year:)	<input type="text" value="ending year..."/>	Bridge:	<input type="text" value="search for bridge numbers..."/>

☒ Show first 100 matches only

<http://www.mapwv.gov/DOTplans/index.php>