

# SCOPE of WV DOT SCANNING PROJECT

## Major Project Objectives:

- Finish scanning all the archival highway plans located at the WV DOT warehouse on Smith Street, estimated to be 0.5 million sheets.
- Transfer primary control of the enterprise system for managing, publishing, hosting, and retrieval of the scanned archival highway plans from the WV GIS Technical Center to the WV Division of Highways.

**Overview:** The West Virginia GIS Technical Center (WVGISTC) scans the West Virginia Department of Transportation's (DOT) large format highway plan sheets into digital raster images. One of the oldest archival plans scanned is a [highway right-of-way plan](#) traced from a blueprint of Charleston-Dunbar Traction Company, dated 24 April 1911, and signed by John S. Cole, Chief Engineer, State Road Commission of West Virginia.

For every highway plan set, a single Adobe PDF file is created along with a spatially referenced index map. An online application named the Highway Plans Locator ([www.mapwv.gov/DOTplans](http://www.mapwv.gov/DOTplans)) allows for the searching, viewing, and downloading all scanned highway plans. A companion plan viewer product ([www.mapwv.gov/dotplans/viewer](http://www.mapwv.gov/dotplans/viewer)) allows for spatial queries and geographical map views of each plan's extent. Importantly, the web search application permits fast discovery and online retrieval of the electronic highway plans.

## Project Phases:

- **Phase I Scope (2015-17):** The first phase of the project included the project research and setup. It also included the purchase of two large format scanners in 2015. The initial phase scanned 50,000 highway plan sheets or 852 highway plan books during a two-year time period. A web viewer called the WV Highway Plans Locator ([www.mapwv.gov/DOTplans](http://www.mapwv.gov/DOTplans)) was created for searching and downloading all the highway plans. Other features of the online tool included a view of the plan's geographic location and integration with the ProjectWise content management system.
- **Phase II Scope (2017-2021):** The second phase scanned 225,000 sheets or more than 6,000 highway plan books during the three-year time period. Scanning production increased significantly during this phase in which all the ROW and Bridge plans were scanned. An interactive map viewer with spatial query functions was added to the online Highway Plans Locator ([www.mapwv.gov/dotplans/viewer](http://www.mapwv.gov/dotplans/viewer)) application.
- **Phase III Scope (Proposed 2022-26):** The third and final phase will scan another 225,000 sheets or an estimated 6,000 highway plan books during a three-year time period, finishing the scanning of all the highway plans located at the warehouse on Smith Street. Highway plan types include ROW plans, Bridge plans, Construction plans, Half-Sized plans, Shop drawings, and As-Built plans. During this phase, the computerized enterprise system for managing, publishing, hosting, and retrieval of the scanned archival highway plans will be transferred to the WV Division of Highways for primary operational control. Depending on WV DOT's priorities, other tasks for this phase may include incorporating existing digital highway plans from the District Offices; or improving the cross-referencing of specific plan sets by linking other highway databases such as the bridge BARS# database to the scanning database.

# EXPECTED ACCOMPLISHMENTS AND DELIVERABLES

Phase III of the scanning project is organized into four major work tasks and deliverables.

## **Task 1: Finish Scanning all Archival Highway Plans located at the Headquarters' Warehouse**

- Scan 225,000 highway sheets (estimated 6,000 plan sets) provided by the WV DOH
  - Scan individual sheets as Tagged Image File Format (TIFF) image files that correspond to page number of plan set. Files are compressed to ZIP files to reduce file sizes.
  - Image process all individual plan sheets according to specifications
  - Create a PDF Book of all multi-page documents combined into a single portable document format (.pdf) for each plan set.
  - Geo-reference the index map of each project book
  - Publish PDF plans to WV Highway Plans Locator ([www.mapwv.gov/DOTplans](http://www.mapwv.gov/DOTplans)) application

## **Task 2: Migrate WV Highway Plans Locator system to WV Division of Highways**

- Transfer primary control of the enterprise system for managing, publishing, hosting, and retrieval of the scanned archival highway plans from the WV GIS Technical Center to the WV Division of Highways.
- Provide technical support in transferring WV Highway Plans Locator applications, data files, and management components (includes programming scripts) of the system.
  - Schindling LLC is lead technical consultant for SQL Server component, non-spatial DOT Plans Viewer ([www.mapwv.gov/DOTplans](http://www.mapwv.gov/DOTplans)), and management software components.
  - Yibing Han and Frank LaFone are lead technical contacts for ArcGIS Server mapping application component ([www.mapwv.gov/dotplans/viewer](http://www.mapwv.gov/dotplans/viewer)).
- Host System Specifications: Requires SQL Server, ArcGIS Server, and Web Server for hosting
- Transfer of Operational Management of Scan Productions: VPN hookup or File Transfer Mechanism options
- System documentation for migration and operational control

## **Task 3: Expand Functionality of Highway Plan Locator System**

- **Add an estimated 1,000 highway plan sets from other District Offices**
  - Add ROW and construction highway plan sets already scanned at District Offices
  - Evaluate quality and completeness of digital scans at District Offices
  - Create procedures for processing and adding digital highway scans
    - Develop online transmittal form for creating project and scan identifiers
    - Create a field identifier or modify project key to denote scans from District Office
    - Set up FTP protocols for transferring digital files
- **Develop Crosswalks between Scanning & Other DOH Databases**
  - Explore procedures for linking Scanning Database to supplemental or archival highway information
    - Link bridge plan numbers to BARS# numbers database
    - Link to microfilm database of 1960-70's era

#### **Task 4: Project Management, Outreach, and System Administration Services**

- **Provide Project Management and Outreach Services**
  - Maintain Scanning Project Tracking Database (SQL Server/Access Databases) which records all relevant information about scanned highway plan sets
  - Maintain and update the Highway Plans Locator ([www.mapwv.gov/DOTplans](http://www.mapwv.gov/DOTplans)) application that includes allowing users to perform non-spatial queries of scanned highway plans
  - Coordinate with client to develop user specifications for new work-flow protocols
  - Submit quarterly progress reports about objectives and milestones accomplished
  - Publish special reports that summarize plans by type or other data elements
  - Create customized reports that indicate, for example, duplicate or related plan sets
  - Update Scan Procedural Manual and System Technical Document
  - Write and update utility programs
  - Hiring and training of new personnel
  - Present project at meetings, user groups, conferences, etc.
- **Provide System Administrative Services**
  - Perform system administration and maintenance of application. Technical support services include hardware and software operating system upgrades. Maintain backup system with virtual servers. Update monthly security patches on all servers. Install and maintain all necessary hardware and software licenses (Esri software, MS SQL Server, etc.).
  - Maintain Highway Plan Locator application on production servers at a high level of performance. Provide technical support of application include the processing of troubleshooting calls.