



Project Summary

Organization

Philadelphia Water Department

Solution

Government

Location

Philadelphia, Pennsylvania, United States

Project Objectives

- Implement ProjectWise to extend document searchability.
- Integrate ProjectWise data with the existing Esri geodatabase.
- Integrate the geospatial database with the Capital Program Integrated Tracking database.

Products Used

Bentley Map, ProjectWise, MicroStation

Fast Facts

- A basemap was created using GIS-to-CAD translations from Bentley Map.
- CAD files without the proper coordinate system were geocoded using 1,700 geospatially correct ProjectWise folders.
- ProjectWise provided a toolbar for searching within Esri ArcMap.

ROI

- The USD 65,000 project will generate USD 30,000 in savings every time a design model is located and reused instead of being recreated.

ProjectWise's Geospatial Management Extends Searchability of Philadelphia Water Documents

City Saves USD 30,000 Whenever ProjectWise CAD File Is Located and Reused Rather Than Recreated

Geospatial Data Integration

The Philadelphia Water Department (PWD) is a municipal utility providing a population of nearly 1.7 million people in three eastern Pennsylvania counties with integrated water, wastewater, and stormwater services. The utility is responsible for planning, design, construction, operation, and maintenance of the necessary infrastructure. By integrating the rapidly growing ProjectWise data management system with the city's geospatial database and Capital Program Integrated Tracking (CAPIT) database, the department improved the ability to search for and locate CAD files and construction photos. The USD 65,000 project significantly reduced the expense of recreating lost CAD files, which cost roughly USD 30,000 to produce.

"We have always been able to find documents in ProjectWise. Now anyone can search for and find them geospatially."

— *Thomas Kaufmann, engineering plans drafting supervisor, Philadelphia Water Department*

Unmanageable Documents

Established in 1801, the City of Philadelphia's water system service aims to purvey high-quality drinking water; provide an adequate and reliable water supply for all household, commercial, and community needs; and sustain and enhance the region's watersheds and quality of life by managing wastewater and stormwater effectively. To that end, PWD programs the work necessary for new construction, rehabilitation, or replacement of infrastructure.

The department's growing volume of work is reflected in the rapid rate of expansion of the data managed in ProjectWise – more than 1,000 documents per week. To ensure documents can be found and used more efficiently, the design division

wanted to expand searchability, incorporate thousands of pre-construction and construction photographs, and integrate CAD files with the existing Esri geodatabase. In the process, thousands of CAD files that were drawn without the proper coordinate system presented a major challenge.

Geocoded Project Folders

PWD deployed ProjectWise Geospatial Management (now part of ProjectWise Design Integration) which includes a geospatial view giving geospatial context to the documents. Drawings, maps, models, images, vendor-specific GIS formats, and business documents in their originally intended form were all related spatially in ProjectWise. This provided a practical and rapidly deployable system of organization, where the common denominator was spatial location.

The first step was to create a basemap in ProjectWise. The basemap was created by using the GIS-to-CAD translations from Bentley Map. Individual areas were exported from Esri geodatabases to CAD files, and those CAD files were layered into the basemap in accordance with the Esri geodatabase coordinate system. Users could zoom to various levels in the basemap to view features and project information.

After the basemap was completed, PWD selected CAD files from ProjectWise to geospatially scan. The in-house CAD files that were created using MicroStation had correct coordinates, but older files that were drawn without a coordinate system were problematic. In addition, a large percentage of outsourced CAD files were not drawn in the required Pennsylvania state plane coordinate system. As a result, only about half of the CAD documents were geospatially correct.

To solve the problem of what to do with thousands of geospatially incorrect files, PWD created 1,700 geospatially correct project folders in ProjectWise. By geocoding the project folders, the department was able to set the spatial extents of the CAD files to the locations of the folders.

Search results then displayed folder properties on a map of projects. PWD also tied the ProjectWise data to the CAPIT

“The innovation here is taking our documents to a geospatial level. It’s the new level of ProjectWise. We have always been able to find documents in ProjectWise. Now anyone can search for and find them geospatially. That’s the savings.”

*– Thomas Kaufmann,
engineering plans drafting
supervisor, Philadelphia
Water Department*

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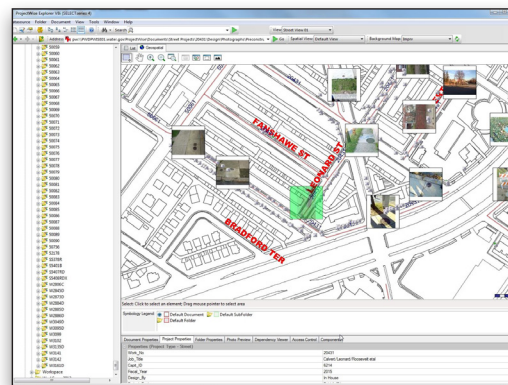
database, so project folder searches based on CAPIT data displayed results on a map with color-coded folder properties. The innovative solution for handling problem files delivered impressive results.

Streamlined Searches

Geospatial data simplified searches and produced more accurate results for various departments. Integrating ProjectWise with the Esri geospatial database, for example, allowed the City’s GIS staff to search for geospatially correct CAD files from a toolbar directly within ArcMap. This also streamlined the process of updating the geodatabase.

Photos taken before, during, and after construction are used to document existing conditions in case of disputes. Devices are now available that allow contractors to record geospatial data at the same time a photo is taken. ProjectWise allows the searchable metadata from these geocoded photos to be captured by ProjectWise and displayed on a basemap. The map can also be searched for photos that have been taken at a given location.

There are currently 40,858 street segments in the city of Philadelphia. Eventually, every segment will need utility work.



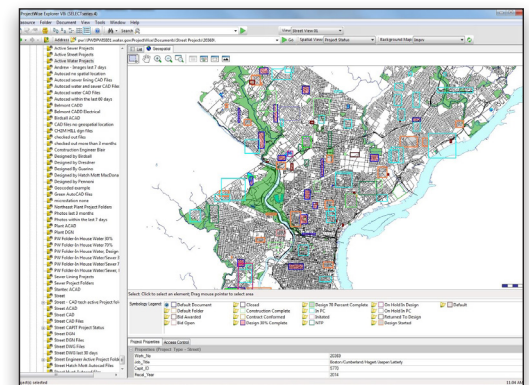
ProjectWise allows the searchable metadata from geocoded photos to be captured and displayed on a basemap.

Once a design model is created for a street segment, it can be reused. Implementing Bentley’s ProjectWise helped to ensure that existing CAD files can be found when needed. To date, PWD manages 9,800 geospatially correct CAD files of the streets of Philadelphia. Users can search the map for street names, and search to see if CAD drawings have been made at specific locations, thus saving the expense of producing new drawings if existing drawings can be located.

Potential Savings

There are numerous scenarios in which existing CAD files are needed for new projects. Drawings of street intersections may be reused for work on several segments. Current design models may be issued with requests for bids on repair work in the event of infrastructure failure. A pre-construction photo may demonstrate the condition of a segment where a property damage claim has been made. Locating the drawings, or finding the photos, can avert thousands of dollars in expenditures.

If an existing CAD file cannot be located, then a new design model must be created from scratch at a cost of up to USD 30,000. The City will incur significant savings by ensuring that projects start with all currently available CAD resources.



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