

PAVING A PATH FORWARD WITH AERIAL INTELLIGENCE

DES PLAINES, IL U.S.



Founded in 1986, Christopher B. Burke Engineering, Ltd. (“CBBEL”) is a full-service consulting, engineering, and surveying firm that specializes in civil, transportation, municipal, traffic, construction observation, water resources, environmental, structural, and mechanical engineering.

MEET CBBEL

CBBEL has successfully completed the design, permitting, and construction of numerous major transportation projects, flood control reservoirs, pump stations, embankments, water mains and water systems, storm sewers, and large open channels.

CBBEL is committed to delivering consistently accurate, timely, and cost-effective solutions to a wide range of engineering and environmental challenges.

PAVING A PATH

CBBEL undertook the task of connecting urban areas with a large, multi-use path project that intersected with a forest preserve.

The path crossed environments that had different grade levels and habitats that needed to be preserved or rebuilt. Also, the project required a multi-year contract to complete.

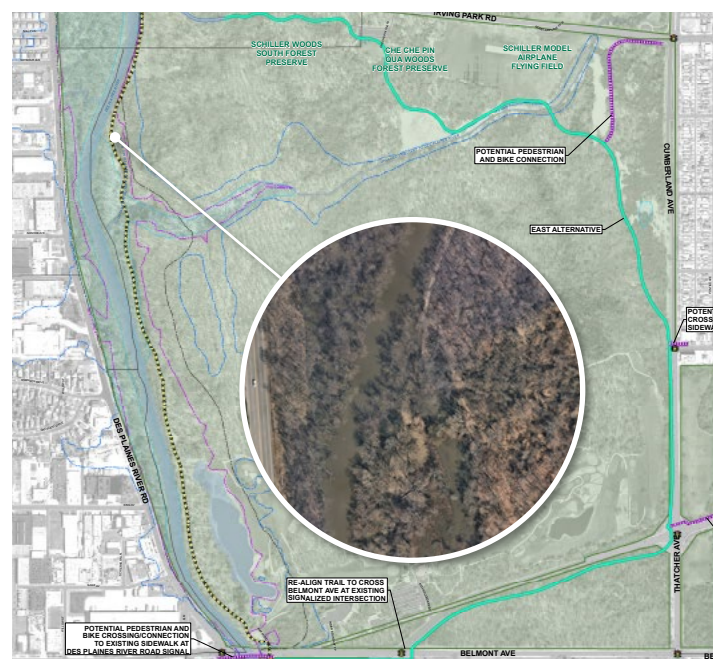
As the GIS manager at CBBEL, Dave Walters assisted the engineers with mitigating the risk of working with floodplains or wetlands. Seventy percent of the original path was a floodplain, which meant that the path was constantly under the threat of closure as water levels rose and made stretches of it unusable.

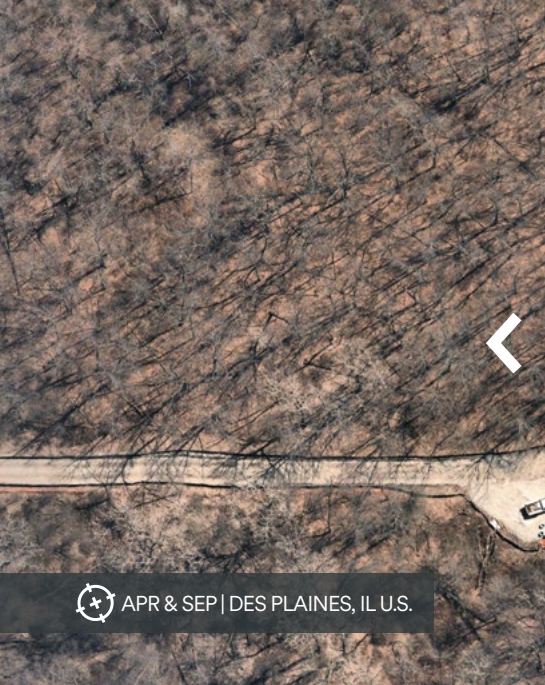
Avoiding this floodplain required shifting the path to the east. However, there were certain stretches of the path where floodplains were unavoidable. These areas required elevated trails or boardwalks.

When drafting the RFP for this path project, CBBEL took the environmental and regulatory responsibilities into

consideration before creating a variety of design alternatives. “I think there were five or six different variations of where the path should go,” said Dave, “and we gave numbers of what kind of impacts each path would have and how much it would cost.”

This gave project stakeholders a handful of options. Finding the right balance meant the ideal mix of cost and risk avoidance.





“One of the challenges we had early on was the tree coverage... That’s where Nearmap is nice... with so many flights per year, we can pick an April or May flight path for our aerals and you can actually see the path through the trees. We can cross reference GPS points with the trail and get a little more accurate view that way versus other companies that will just do leaf-on aerial photography where you can’t see a thing.”

Dave Walters, GIS manager, CBBEL

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CAPTURING THE VISION

CBBEL always tries to include imagery when submitting a proposal. This involves using base aerial imagery to exhibit existing conditions, the impact to wetlands, and Environmental Survey requests. However, adequately capturing the pathway proved difficult.

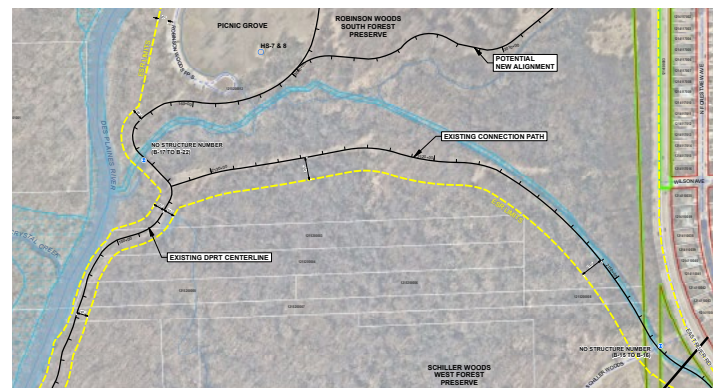
CBBEL compiled its aerial information into a base map at 1" = 20' scale and tied it to existing LiDAR mapping. This created an accurate representation of existing conditions for use in developing the detailed plan, profile and cross sections for the preferred alternative, and for completion of the Phase I Study.

MULTI-PHASE APPROACH

The project was broken up into four stages with a timeline that stretched across multiple years. Once completed, the multi-use trail will consist of a 10' wide path with 2' wide turf shoulders on both sides. There will also be unique design elements, including traffic signal modifications at existing signalized intersections to accommodate pedestrians and new pedestrian overpasses.

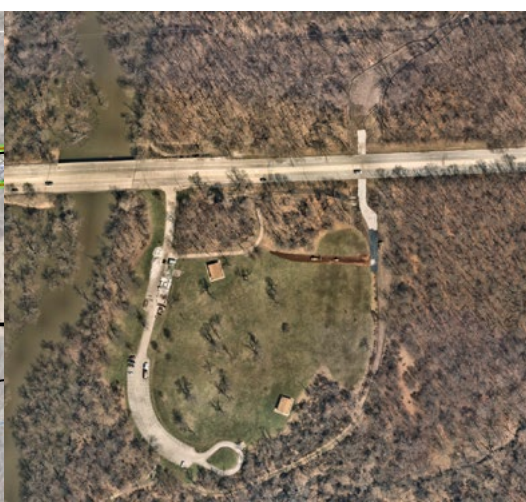
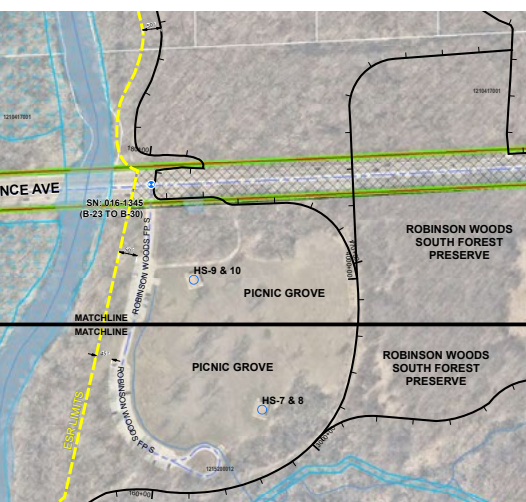
These plans include the repair and upgrading of unpaved trail surface, including adding approximately 1,000 feet of boardwalk in a section near the river that frequently floods to raise the path profile above the 100-year river flood elevation.

More than improving the trail, this project was designed to connect communities that previously didn't have access to the area. Roadways also intersect with the trail, so the project must improve public safety by enhancing the intersections, crosswalks, and traffic signals.



As part of the Phase I Study, CBBEL developed alternatives to improve safety and access along with reliability of the path. Alternatives were evaluated on how well they addressed these issues while simultaneously minimizing impacts to the forest preserve. In addition, the trail user experience and aesthetics of the trail were scored to assist with the determination of the best alignment(s).

Across each year, CBBEL was able to provide the customer with progress updates and adjusted design plans based on the changing conditions of the trail over the project time period.





“Sometimes, Nearmap removes the need to visit a site entirely. If we do walk a site, we can collaborate on the same project as a team and publish updates.”

Dave Walters, GIS manager, CBBEL

SEE THE WAY FORWARD

Aerial imagery was a primary tool for the path since there wasn't a functioning roadway to work with. As Dave put it, “You're just in the middle of a forest, so to help you kind of position where you're at in relation to everything else, it was required to have good aerial photography to help us with that.” In addition to being able to map out the path, CBBEL leveraged oblique aerial imagery to be able to identify bridges, overpasses, underpasses, and culverts along the trail.

Being able to do onsite work without going onsite helped to improve CBBEL's efficiency by enabling their Field Collection and remote teams to simultaneously update the project area. With the ability to streamline workflows, CBBEL is able to keep timeline and budget constraints without compromising on the quality that their firm is known for.

CBBEL AND NEARMAP

CBBEL's need for aerial imagery dates back to early 2000, when the transition from physical to digital maps was taking place. Leadership started seeking an improved source for aerial imagery when their initial solution repeatedly fell short on project needs.

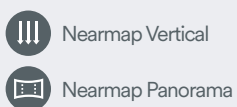
Nearmap flies more frequently and delivers higher quality images than other providers. Now, CBBEL can combine up-to-date imagery with historical captures and refine their designs to be more accurate and detailed. Further, access to Nearmap imagery helps their team identify hazards, habitats, and environmental impacts throughout the design process.

With the ability to identify obstacles remotely, the time saved is put into other renderings of the solution. David Walters leads the Phase 1 planning for CBBEL and uses aerial imagery to produce renderings of projects that allow the company to win business against larger firms.



“Nearmap was intended to be used as needed but it's turned into the only source we use now.”

Dave Walters, GIS manager, CBBEL



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