

CELEBRATING

75

YEARS

STRAIGHT

LINES

FALL 2019

75 YEARS
Spicer
group

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Cameron Legg - Cameron was an intern with us in the summer and was recently hired as a full-time Survey Technician in the St. Johns office working with Cannon Strzalka and Dean Wendling.

Drew Steger - Drew was recently hired as a Design Engineer in the Saginaw Water Resources Department. He graduated from Milwaukee School of Engineering with his bachelor's degree in Civil Engineering.

Jonathan Witham - Jonathan was recently hired as a Design Engineer in the Dundee Water Resources Department. He has his master's degree in Environmental Engineering from Michigan Technological University.

LOON LAKE PARK ENHANCEMENT COMPLETE

New piece of the Iosco Exploration Trail and Iron Belle Trail constructed in Plainfield Township's Loon Lake Park



PLAINFIELD TOWNSHIP – Just over a year after the first shovel of dirt was turned, a nearly mile-long portion of non-motorized trail that travels between Loon Lake and Mud Lake in Plainfield Township's 121-acre Loon Lake Park is complete.

The trail, which connects to existing walking paths at the south end of the park and a trailhead to the north at Kokosing Road, is also part of the 38-mile-long Iosco Exploration Trail (IET) that connects Oscoda Charter Township, Au Sable Charter Township, and the city of Hale. It is also part of the more than 2,000-mile-long Iron Belle Trail that connects Belle Island in Detroit with the City of Ironwood in the Upper Peninsula.

Loon Lake Park, located along M-65 north of Hale, is rich in natural resources. It has access to both Mud Lake and Loon Lake, rolling hills, woodlands, and

wetlands, which all supply wildlife with a secluded and desired habitat. Spicer Group has been working with Plainfield Township on projects at the park for over a decade.

With the park's richness of natural resources, the Township wanted to provide passive recreational opportunities there while preserving the natural habitat. In 2006, Spicer Group began working with Plainfield Township to write a grant to develop the park with trails, an observation boardwalk through the wetlands leading out to Mud Lake, a boat launch, restroom, pavilion, parking lot, and other amenities. Once the \$332,000 grant was awarded, Spicer worked with the Township to develop design plans, apply for the wetland permits through the State of Michigan, administer the grant, and oversee construction of the project.

With the successful completion of phase one of improvements to Loon Lake Park, Spicer Group assisted Plainfield Township in 2008 with writing an acquisition grant to help the Township purchase approximately 100 acres of undeveloped land contiguous to the park.

After being awarded the \$428,800 grant from the Michigan Department of Natural Resources, the property, which was formerly part of a Lutheran camp, was added to the Township's existing Loon Lake Park. Spicer assisted the Township with the acquisition by providing boundary survey work, grant administration, and general acquisition assistance.

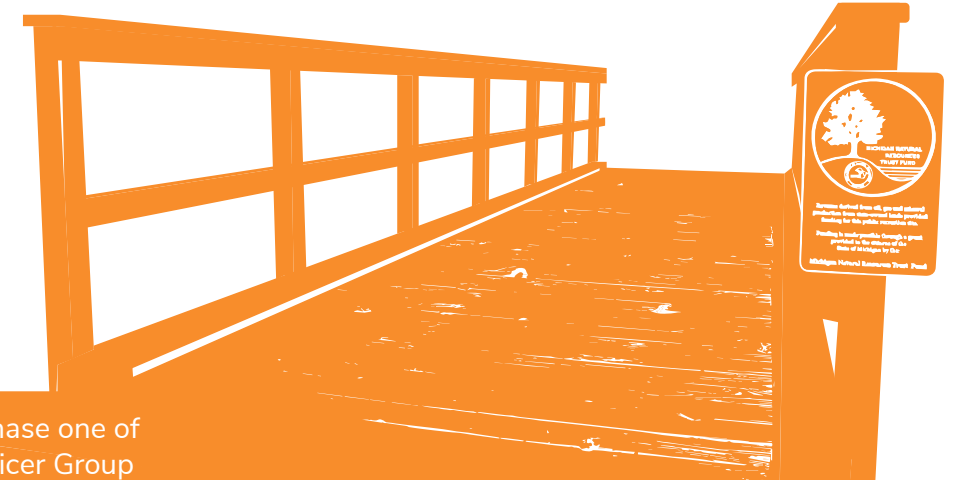
"We have one particular area in the Township near Long Lake, Little Long Lake, and Loon Lake that has a high concentration of homes, cabins, and cottages and in the summer, it's a heavily used area," Fred Lewis, the Supervisor for Plainfield Township, said. "We wanted to put some trails through there. It is one of the things we've been looking at for years in the community to tie our lake areas together and connect that area with downtown Hale."

Lewis said in talks with the surrounding communities, it was discovered that this goal also fit with the development of the IET and the Iron Belle Trail.

To make this goal a reality, the Township again worked with Spicer Group to apply for a Trust Fund development grant in 2016 from the Michigan Department of Natural Resources. The \$140,000 grant was awarded to the Township, who then hired Spicer to design and oversee the construction of the one-mile-long trail route through the park property. By then, the trail had been adopted as Phase 2 of the IET, and into the Iron Belle Trail route.

"Our goal is to make this trail have as low of an impact on the environment as possible, but have an extremely high social and economic impact," Lewis said.

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Past projects at the park included an elevated boardwalk across wetland areas

To save on overall costs of the pathway, Spicer Group engineers designed a six-foot-wide path made of crushed stone that when compacted, is as hard as concrete.

The trail winds through forest between Mud Lake and Loon Lake, traveling near Wild Cherry Lane, before turning north, crossing wetlands with the help of wooden boardwalks, and connecting to a new trailhead along Kokosing Road with a trailhead parking lot.

“There were a lot of creative solutions that went into this project because it was a challenge to find the right route for this trail,” Spicer Group Project Manager Tanya Moore said. “The terrain is very hilly, with major elevation changes in the area. There are also large wetlands we had to cross, and purely just being in undeveloped forest makes it difficult. We had to ensure that once the route was defined, it could also be constructed to make it ADA accessible.”

In the wetlands area, wooden boardwalks and ‘wetland burrito’ types of pathways were used to build the trail. The ‘wetland burritos’ saved on the cost of having to build extremely long boardwalk sections and allow for water to still safely penetrate and flow through the trail.

“This is a beautiful site with woodlands, wetlands and not just one, but two lakes,” Moore said. “There is a ton of wildlife in the area, including the common Loon. Local birding groups have always been attracted to this park for viewing the numerous species but are excited to have better access with the new trail.”

The project also features benches, rest areas, and interpretive signs, along with trash and recycling receptacles near the parking lot.

Construction began in late 2018 and was finished by October 2019. Spicer’s team was responsible for all grant administration, surveying, design, bidding assistance, construction administration, and construction inspection on the project.

“Many people are already using the trail,” Lewis said. “The trail is beautiful, people are gushing over it and they love it.”

The new path provides new access through the park and offers many recreational opportunities including bird watching, which is very popular at the park.



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SAFE ROUTES TO

SCHOOL

A new path around the Swan Valley School complex in Thomas Township provides students and residents safe access

THOMAS TOWNSHIP - Tucked back behind a line of oak, birch, and pine trees along O'Hern Road in Thomas Township is a freshly laid bright black asphalt path that connects to the Thomas Township pathway on one end, and recently paved sidewalks at the other along Van Wormer Road, giving pedestrians safe access to Swan Valley Schools.

To create this opportunity, Thomas Township and the Swan Valley School District teamed up to apply for a Safe Routes to Schools (SRTS) grant through the Saginaw County Road Commission. This federally-funded program allows communities to use grant dollars to make it safe, convenient, and fun for children, including those with disabilities, to bicycle and walk to school.

The SRTS initiatives are also aimed at helping to ease traffic jams and air pollution, unite neighborhoods, and contribute to students' readiness to learn in school.

"Prior to the Safe Routes to Schools program, perimeter access to the schools for pedestrians was only by walking along the gravel shoulder of the road or in the grass, which presented obvious safety concerns," Swan Valley Schools Superintendent Mat McRae said. "We felt that this would really enhance access to our main campus and improve safety for students and the community."

In 2017, the Township and school district received more than \$500,000 in grant funding through the SRTS program to construct the nearly mile-long route around the school's property.

"It was great to receive a grant to install much needed sidewalks," Thomas Township Director of Community Development and Planner Dan Sika said. "Thomas Township has received grants for trail improvements in the past, and we knew that this would also require a significant financial commitment from us as well."

Sika said the grant did not cover the cost of engineering or construction inspection for the project, which can be a significant amount of money.

Spicer Group was hired to design the path route, assist with permitting, and construction administration and inspection on the project.

The path consisted of a 10-foot-wide asphalt pathway from where it connected to the Thomas Township trail along the north side of O'Hern Road before turning into a five-foot-wide residential sidewalk along the east side of Van Wormer Road. Because of existing terrain, roadway, and other assets in the area such as county drains, powerline poles, and parking for the nearby baseball fields, Spicer's engineers researched and visited the site often to design different solutions for the path's route.



New sidewalk along Van Wormer Road.

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“One of the reasons there wasn’t a sidewalk there to begin with was because the area is very rural and very difficult to work in,” Spicer Group Project Manager John E. Olson, P.E., said. “We had to deal with different elevations, areas prone to flooding, and ditches alongside of the road. We had to get creative in the design so we could fit a 10-foot-wide path next to the road and still maintain its safety.”

Along Van Wormer Road, the path crossed several residential properties, drains, and new accessible crossings were installed.

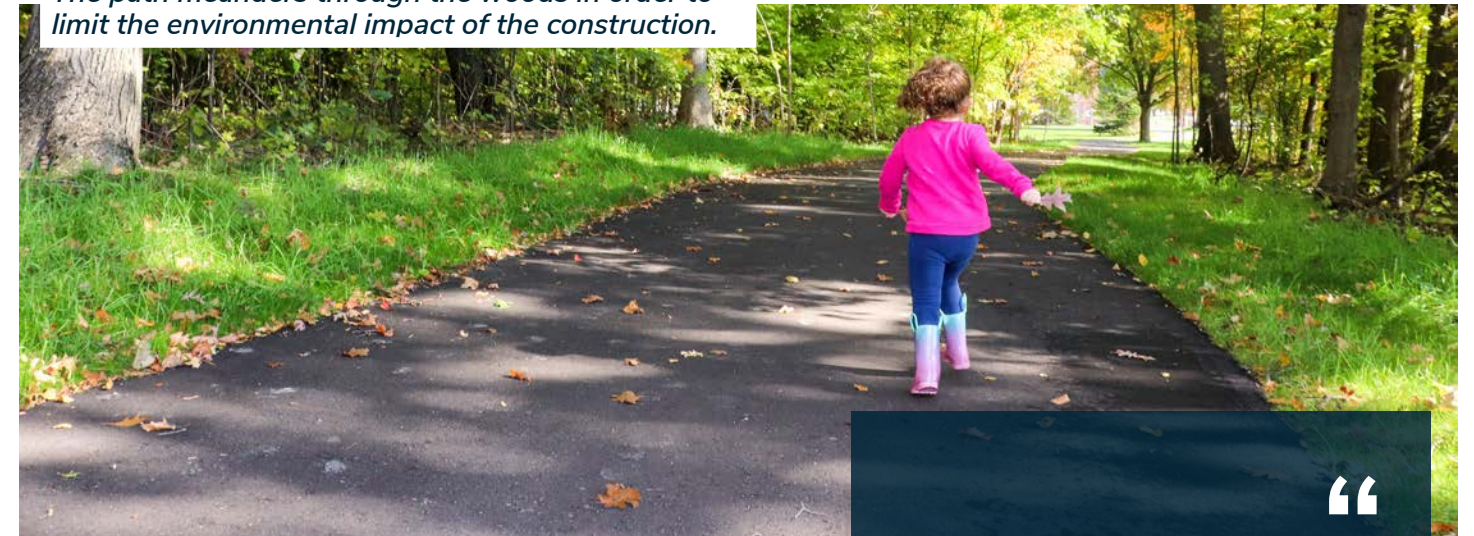
There were also many different stakeholders within the project to work and coordinate with, Olson said, because of the path’s location. It required coordination with land owners, the Saginaw

County Road Commission, the Swan Valley School District, Thomas Township, and the Saginaw County Public Works Commissioner when a portion of county drain needed to be extended to stretch beneath the pathway. Utility coordination and relocation was required with cooperation from the Saginaw County ISD, Fiber Link, Windstream, Charter Communications, Consumers Energy, and AT&T.

“This is a beautiful project with a lot of neat attributes,” Olson said.

Construction began after school was dismissed for the summer this year and was substantially complete by the time students were back in school this fall.

The path meanders through the woods in order to limit the environmental impact of the construction.



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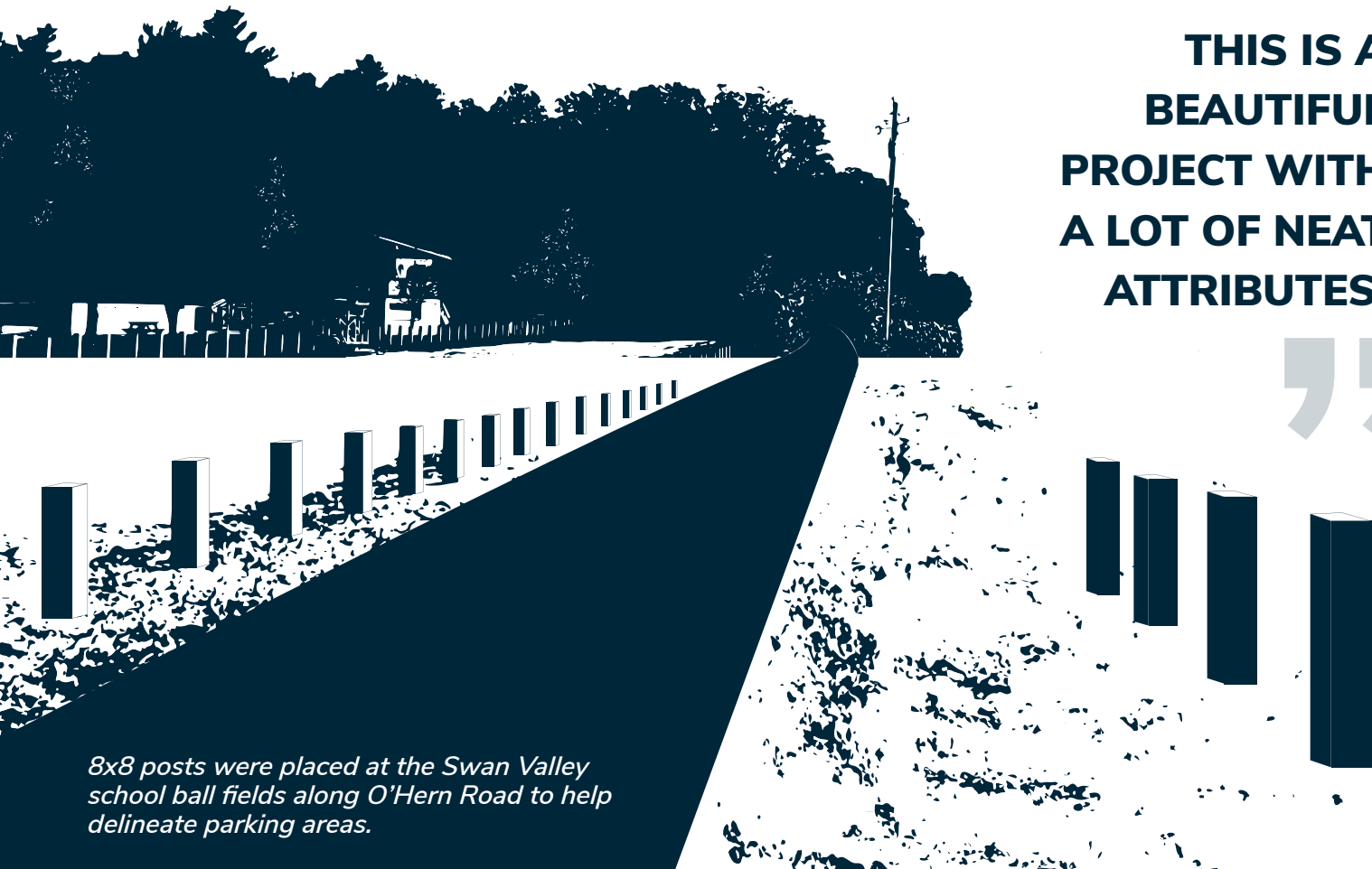
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“Aside from its practical usage, the trail through the woods and along the perimeter of our school property is aesthetically pleasing and offers all an opportunity for a safe leisurely walk which extends from the existing Thomas Township Trail,” McRae said. “Throughout the day, residents are seen using the trail, the Swan Valley Learning Center takes the preschoolers for walks and bike rides along the trail, and it is common to see a deer or two making its way down it.”

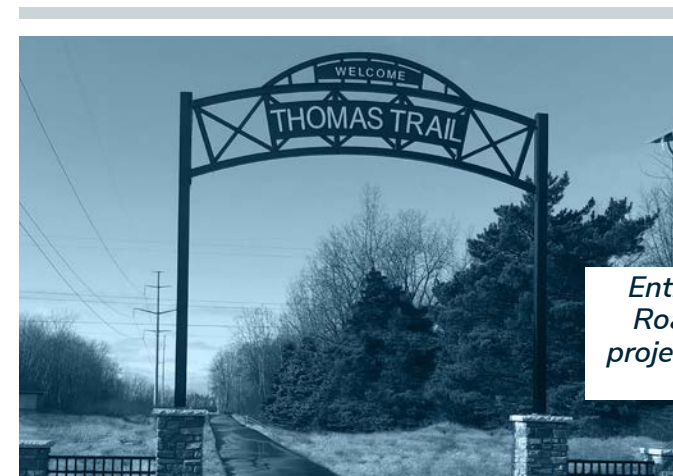
McRae said the Township and school district are “very appreciative” to everyone who played a part in making this path available to students and the community.

“It is just one more instance of how our community sets itself apart from others and makes us all proud to be Vikings!,” McRae said.

“ THIS IS A BEAUTIFUL PROJECT WITH A LOT OF NEAT ATTRIBUTES. ”



8x8 posts were placed at the Swan Valley school ball fields along O’Hern Road to help delineate parking areas.



Entrance to the Thomas Township Trail along Miller Road, approximately 1 1/2 miles north of the SRTS project. The school complex is now connected to this trail system.

MAPPING RAILROAD ASSETS

Spicer Group's mobile mapping capabilities continue to be a key component in providing infrastructure asset management solutions for clients



The Michigan Department of Transportation Office of Rail (MDOT) manages 665 centerline miles of state-owned railroad corridor in Michigan's Lower Peninsula. These include five lines that are operated on a contract basis by five freight railroad companies. There is an intercity passenger rail service provided by Amtrak that operates on a 135-mile-line between Kalamazoo and Dearborn—known as the Michigan Line.

Similar to a highway or public utility system, railroads have their unique set of assets that play a role in their safety, reliability and function. Everything from crossing arms to mile post signs, switch points and mechanisms to overpass clearances and even overhanging vegetation are key assets that make up a railway system, and each has their own unique attributes. To get a comprehensive understanding and accurate record of all assets along its railroad corridors, MDOT pursued an initiative to develop a comprehensive asset management program for its rail assets.

“Ultimately, with MDOT’s implementation of its overall Transportation Asset Management System (TAMS), the Office of Rail is focused on integrating its asset management plans and developing a program that ties its assets into the overall TAMS system,” Spicer Group Principal Eric Barden, P.S. said.

MDOT’s first task was to inventory its assets geospatially so each asset has an accurate spatial component. Once inventoried, the assets can be integrated into MDOT’s TAMS GIS environment, and a linear referencing system

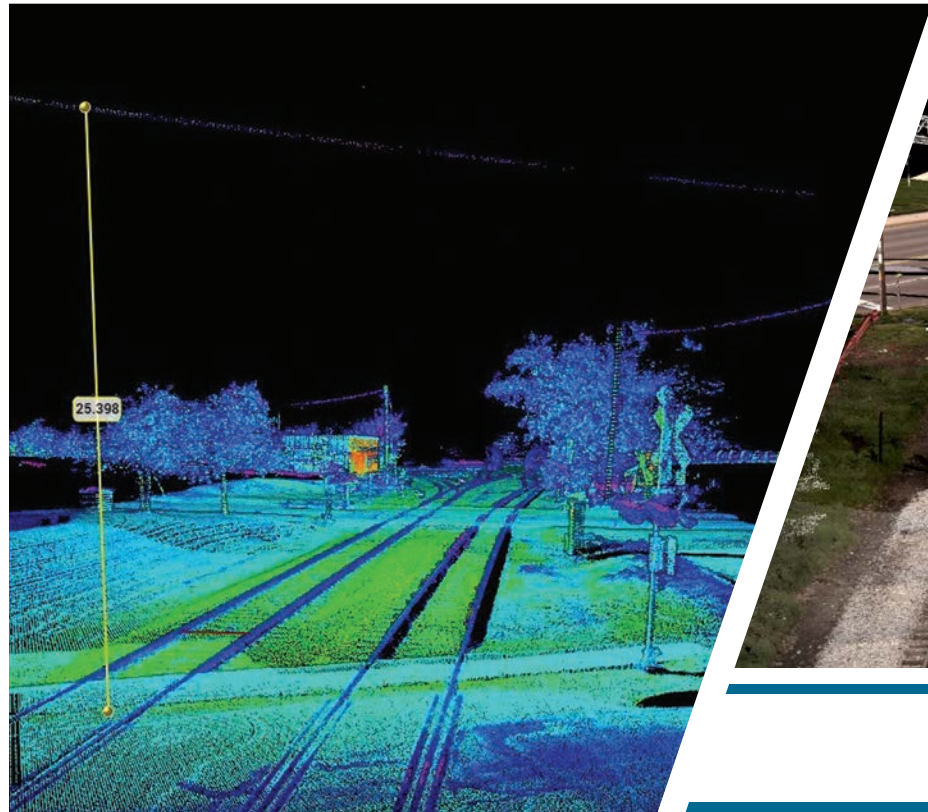


developed. However, accomplishing this across 665 miles of active railway was not a simple task and required alternative methods of data collection.

“MDOT’s Survey Support Unit selected us to perform the work, and our first task was to evaluate the best method to spatially inventory the required assets for the entire Lower Peninsula rail network,” Barden said. “We identified various data collection technologies for consideration, and a cost benefit analysis was prepared for each method, and in some cases, a combination of methods. Ultimately a hybrid approach, using Airborne LiDAR, hi-rail mounted mobile LiDAR, Unmanned Aerial Vehicles (UAV) and conventional survey techniques, was identified as the best approach to maximize value and ensure efficiency.”

“ THE OFFICE OF RAIL IS FOCUSED ON INTEGRATING ITS ASSET MANAGEMENT PLANS AND DEVELOPING A PROGRAM THAT TIES ITS ASSETS INTO THE OVERALL TAMS SYSTEM. ”

Mobile LiDAR data showing vertical clearance measured via interactive web-based viewer.



True color point cloud generated from Pegasus Mobile LiDAR sensor.

Airborne LiDAR was used to collect data while minimizing impact to Michigan's busiest rail corridor known as the Michigan Line—the Amtrak passenger service line from Kalamazoo to Dearborn. Hi-rail-truck-mounted mobile LiDAR was chosen to collect a large portion of the remainder of the rail network. Track access and obtaining permits was much easier for these rail sections, and once coordinated, Spicer staff were able to quickly drive the hi-rail truck equipped with Spicer's Pegasus Mobile LiDAR sensor to collect the data.

Some areas of tracks had not been used in several years and had experienced significant vegetation growth including encroaching tree canopies and growth through tracks, so these areas required the use of conventional surveying techniques. Spicer Group's Unmanned Aerial Vehicles came in handy when working around congested rail yards where significant train traffic was present. Staff used the UAVs equipped with high-resolution digital cameras to collect photogrammetric data and develop a 3D model of the yard and tracks.

"Our team combined all data into a single, seamless data source detailing MDOT's current assets of concern including track centerline, milepost signs, points of switch and points of frog, frog being the point at which the left and right rails cross in a switch," Barden said. "Data related to these assets has been organized and delivered to MDOT's Office of Rail through

a simple viewing service accessible by anyone, anywhere through a standard web browser, with immersive 3D viewing and measurement capabilities."

MDOT's Office of Rail staff can now view every inch of railway and all visible assets under their ownership at any time on a computer or smart phone. They can measure various object distances and sizes, see welds in tracks, and even view an asset's condition at the time of collection. This unique ability will help them plan for life cycle costs on key assets, identify potential areas of concern, and the opportunity to maintain a digital record of assets within the railroad rights of way—all contributing to the reliability and safety of the railway system.

"After reviewing the data Spicer Group collected, all I can say is WOW," Rob Lippert, MDOT's Railroad Infrastructure Section Manager said. "The work Spicer Group has done for MDOT is great. This will be the foundation of MDOT's railroad asset management. We will now be able to accurately locate, report on and map our assets. Better information will lead to better decisions."

“ THIS WILL BE THE FOUNDATION OF MDOT'S RAILROAD ASSET MANAGEMENT. WE WILL NOW BE ABLE TO ACCURATELY LOCATE, REPORT ON AND MAP OUR ASSETS. BETTER INFORMATION WILL LEAD TO BETTER DECISIONS. ”

Rail-view image from rear camera of Pegasus Mobile LiDAR sensor.



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