



STRAIGHT LINES

FALL 2018

Spicer
group

FRONT COVER: THOMAS TOWNSHIP
INSIDE COVER: SURVEY CORNER MONUMENTS, MANISTEE

FALL 2018

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SPICER GROUP ANNOUNCES 2018 PROMOTIONS



PAT BENTLEY, P.S., NAMED AS A NEW ASSOCIATE

Spicer Group is proud to announce the recent promotion of Patrick G. Bentley, P.S., as a new Associate. Pat joined Spicer's Survey Group in our Manistee office in April of 2014 as a Staff Surveyor. He graduated in 1997 with a Bachelor of Science degree, specializing in Land Surveying and an Associate's Degree in Applied Science in Civil Engineering from Michigan Technological University. In 2001, he became a professional licensed surveyor in the state of Michigan. Pat is also a member of the Michigan Society of Professional Surveyors where he served as the president in 2012, the National Society of Professional Surveyors, and is the elected county surveyor for Manistee County.



BRENT DANKERT, P.E., NAMED AS A NEW SENIOR ASSOCIATE

Spicer Group is proud to announce the recent promotion of Brent J. Dankert, P.E., as a new Senior Associate. Brent joined Spicer Group in May of 2001 as an intern in our Planning Group. In 2004, he was hired as a full-time Construction Services Technician in our Construction Services Group in the Saginaw office. In 2014, he became a Construction Services Manager, and in 2015 he was promoted to Associate. Brent graduated from Michigan Technological University in 2004 with a Bachelor of Science degree, focusing on Civil Engineering. He became a licensed professional engineer in the state of Michigan in 2008.



NATHAN SHEPHERD, P.S., NAMED AS A NEW SENIOR ASSOCIATE

Spicer Group is proud to announce the recent promotion of Nathan G. Shepherd, P.S., as a new Senior Associate. Nathan joined Spicer's Survey Group in our Saginaw office in 2008 as an intern surveyor. In January of 2012, he was rehired as a full-time Survey Crew Chief and has since been a Staff Surveyor, Project Surveyor, and Survey Project Manager. Nate was promoted to Associate in 2015 and is now a part of our Cummings, Georgia office. He graduated from Ferris State University in 2011 with a Bachelor of Science degree, specializing in Land Surveying. He became a licensed professional surveyor in Michigan in 2015. Nate is also a licensed surveyor in the state of Georgia.



FINDING HISTORY



Survey Crew Chief Jared Johnson (left), stands in front of Spicer's Manistee office holding a survey corner monument (right) set by land surveyors in Manistee County in the 1830's. The original monument was replaced by Johnson with one similar to the corner monument shown on page 5.

MANISTEE - When his post-hole digger first brought up the nearly foot-long piece of hewn cedar wood, Spicer Group Survey Crew Chief Jared Johnson had no idea what he had just unearthed.

"I was digging a hole to put the county monument in and I just thought there was a stick or a tree root," Johnson said. "So when I first pulled the piece up, I set it aside. It was coated in mud, and I still had some work to do."

It took him a few more minutes of digging and thinking to realize that while setting a corner point for the yearly remonumentation project in Manistee County, he might have just pulled up an original wooden stake set by the first federal land surveyors in Michigan in the late 1830's.

"After I washed it in the creek to get a better look at it, then I could see the axe marks and everything," Johnson said. "It was in such good shape I just didn't believe that was what I

had really found."

In the late 1830s, the federal government hired surveyors to set monuments every half mile throughout the state of Michigan. This was to subdivide land acquired by the government to sell, develop section and township lines, and build an overall map of the state.

The location of these monuments were dimensioned to witnesses, or nearby permanent objects, like trees or rivers. The monument was usually made from whatever the surveyor had on hand at the time.

"Back then, their equipment was not as sophisticated, and it is amazing how accurate they were considering what they were using," Spicer Group Project Manager and Manistee County Surveyor Pat Bentley, P.S. said. "Wooden stakes were used primarily because it was what they had available. They weren't carrying metal around with them."

The perpetuation of these original government corners is called remonumentation and because many of the original wooden posts have long since deteriorated, surveyors throughout the years perpetuated the locations by replacing them with more durable and sustainable monuments such as stones, buggy axles, pottery, iron pipes, etc.

Michigan passed the Survey and Remonumentation Act in 1990 as an effort to identify and remark all the original locations. Maintaining these section corners is a benefit to all land owners, as property boundaries based on legal land descriptions are all tied to those original positions.

Bentley has been assisting Manistee County with their remonumentation project for the last decade. There are thousands of points throughout the county to research and determine the original location.

The point where Johnson found the original stake is located on the Manistee Indian Reservation land and according to survey records, a metal rod was placed there sometime after 1900. The location was near a creek, and the water in the ground was able to preserve the cedar wood stake. Johnson was in the process of placing a more permanent metal monument with an engraved cap when he found the historical marker.

Bentley, who has been a professional surveyor for 20 years, said only a handful of these original survey stakes are ever found.

"This was 180 years ago. These things are so rare that we're getting to a point where there is so little evidence from those original surveyors, that when you do find something, it is a reason to rejoice and keep that piece of history," he said.

WILLIAMS TOWNSHIP PLAYGROUND

WILLIAMS CHARTER TOWNSHIP—Where old, unattractive, and outdated playground equipment once sat disconnected from each other in shallow pits of sand, a new, universally-accessible playground with bright yellow and green slides, tunnels, and swings is now organized together in a tidy circle at Williams Charter Township Park.

Located along Midland Road, the new playground is part of a larger 21-acre site that shares space with the Township Hall, a pavilion, picnic area, volleyball court, basketball court, restrooms, ball fields, open green space, a perimeter path, multiple internal paths, exercise stations, and parking.

Township officials had been researching a funding option to replace the playground's outdated and unsafe equipment near the park's restrooms for years.

"We had talked about it for several years. We knew we didn't have equipment for younger kids to play on, and we wanted to have an area closer to our pavilion that would benefit multiple age groups," Williams Charter Township Supervisor Paul Wasek said.

Before the project, the existing play equipment consisted of a few old swingsets, a slide, a jumping platform, climbers, a sandbox, and a teeter totter.

"Most of it was old and had been there a long time," Spicer Group Landscape Architect and Project Manager Tanya Moore said. "The majority did not meet today's accessibility or safety standards."

Working with professionals at Spicer Group, the Township submitted a grant application for a Michigan Department of Natural Resources Land and Water Conservation Fund Grant for \$100,000 as a way of leveraging their general fund dollars to provide an even greater playground improvement for the park.

The grant was awarded in 2016 and the Township worked with Spicer Group to design the new playground and provide new ADA-accessible equipment and safety surfacing that meets current standards.

Moore said the playground was designed to fit within the space of the original play equipment and have a circular pattern that is bisected by a pathway, separating areas for children 2-5 years old and 5-12 years old.

"This new playground has a resilient rubber surface that connects to the walkway bisecting the areas," she said. "The rubber surface allows the playground to be fully accessible. There is also a transfer platform that allows people to transfer from their assistive device on to the play equipment."

The design team was able to salvage the spring riders and the sand box and incorporate them into the new play area.

"We have had multiple people comment on how nice it is and how nice it has turned out," Wasek said. "The feedback has just been tremendously positive."

While the playground was under construction, the Township was also at work to expand the park. The Township worked with Spicer Group on a Michigan DNR Trust Fund Land Acquisition grant for \$140,600, which was also awarded in 2016.

This grant assisted the Township with purchasing nearly four acres of land located adjacent to the existing Williams Charter Township Park.

"The last time we checked, no one is making more land. This parcel was in close proximity to our current park and backed directly up to our existing property. We saw this as an opportunity to obtain what we may never get a chance to again," Wasek said.

The newly acquired land provides improved access and visibility for Williams Charter Township Park, the Township's only public park and largest public open space.

Future plans for the additional property have not been developed yet, but may consist of a separate access into the park with some additional parking, while maintaining all of the site's existing trees and natural features.



HEMLOCK TILE DRAIN



RICHLAND TOWNSHIP—Drainage infrastructure improvements in the unincorporated community of Hemlock are currently approaching the 50-percent complete mark and are a welcomed benefit to residents who have endured routine flooding to their properties for many years.

Whenever heavy rain or substantial snow melt events were predicted, it was common for residents to start piling valuable belongings in their basements on top of tables, pool tables, chairs or anything that could get them off the ground for fear of water entering their houses through floor drains and waterlogging anything not elevated high enough.

“There was not much that some residents could do except watch and ready the utility pumps as a combination of storm and sanitary water backed up into their basement during times of heavy rains or runoff,” Spicer Group Project Manager Nick Czerwinski, P.E. said. “Then a long duration of rain dumped nearly five inches of rain onto already-saturated ground between April 8 and April 13 in 2013 which caused severe flooding and damage.”

THE FINAL PROJECT INVOLVED THE INSTALLATION OF OVER 40,000 FEET OF PIPE VARYING IN SIZE FROM 12-INCH TO 48-INCH WITH A FINAL PRICE TAG OF \$11.6 MILLION.

Czerwinski said later studies would point out that nearly 20 million gallons of water was pumped through the sanitary sewer system in April 2013 compared to less than five million gallons that is typical for that time of year.

It was those heavy rains and resulting damage that prompted Richland Township to petition the Saginaw County Public Works Commissioner in finding a solution.

“In December of 2013, we held a Board of Determination Meeting to decide if a project was necessary to investigate problems with the Hemlock No. 2 Drain and identify possible solutions,” Saginaw County Public Works Commissioner Brian Wendling said. “After hearing testimony from several residents and business owners regarding the true extent of flooding and damage, it was obvious we had to move forward with finding solutions.”

The original drainage district for the Hemlock No. 2 Drain was nearly 150 acres. The drain was established in 1914 and has branches on both the north and south sides of M-46 and serves as the primary drain for Hemlock. The study concluded that the original Hemlock No. 2 Drain was



CONSTRUCTION ON THIS PROJECT INVOLVED SIGNIFICANT COORDINATION WITH LOCAL AND STATE GOVERNMENT ENTITIES, PROPERTY OWNERS, AND RAILROAD COMPANIES AS ROAD REPLACEMENT PROJECTS TOOK PLACE CONCURRENTLY.

not the sole culprit, but that storm water infiltration into Hemlock's sanitary sewer system was possibly a major contributing factor, and the sanitary collection system should be investigated further.

At the request of Richland Township, Spicer Group conducted an evaluation of their entire sanitary collection system which consists of 10 miles of pipe, three pump stations, a lagoon-treatment system and 534 customers. Flow meters were placed in 7 different strategic locations, and smoke testing was conducted over a five-day period. These efforts highlighted several areas of heavy infiltration from cracks and root intrusion in sewers, damaged manhole covers and sewer cleanouts, sump pump connections, and damaged and cracked manholes. At the same time, Spicer Group conducted an inventory of the existing storm sewer system and noted several deficiencies. "Our final analysis concluded that storm water was entering the sanitary sewer in locations outside of the Hemlock No. 2 Drainage District and that community-wide storm drain improvements were needed to

reduce the storm water flows in sanitary sewers and reduce surface flooding throughout town," Czerwinski said.

Czerwinski said that his team identified many alternatives with cost estimates that would reduce the flooding and infiltration. The selected alternative included consolidating nine existing county drains into one drain, installing new storm drains on nearly all of the local streets, and constructing a storm water detention basin. The Township then petitioned the Saginaw County Public Works Commissioner to move forward with the project, and Spicer Group designed the final plan.

The final project involved the installation of over 40,000 feet of pipe varying in size from 12-inch to 48-inch with a final price tag of \$11.6 million. Construction involved significant coordination with several entities including MDOT, Saginaw County Road Commission, utility companies, property owners, Mid Michigan Railroad and USDA-Rural Development.



WITH CONSTRUCTION CREWS INSTALLING MORE THAN 40,000 FEET OF PIPE FOR THIS PROJECT, COMMUNICATION WITH THE TOWNSHIP AND RESIDENTS FOR REQUIRED WATER SHUTOFFS AND BOIL-WATER NOTICES WAS NECESSARY WHILE THE WORK WAS BEING DONE.



"The project got very complex due to many different utilities, construction detours, and having to work along M-46 while MDOT had a project on M-46 occurring concurrently," Czerwinski said.

He explained that several sections of water main had to be re-located in areas where the new storm sewer was placed. This also created the need to have communication with the Township and residents for required water shutoffs and boil-water notices.

"We also had to ensure that residents and businesses were well informed of the construction schedule and road detours," Czerwinski said.

At the time of publishing this article, a significant amount of work has been completed on the south side of M-46 including the installation of thousands of feet of new storm sewer and the construction of the new 1.5-acre storm water detention basin on County Road Commission-donated property. These efforts have resulted in a noticeable improvement in drainage as several heavy storms have hit the area this summer.

Work will continue throughout this year and into next spring with a planned completion at the end of next summer. Costs for the project are being funded through a low-interest, 30-year Rural Development Loan through the USDA.

INDIAN CREEK CROSSING REPLACEMENTS

DRAIN MAINTENANCE PROGRAM HELPS REPLACE 15 CROSSINGS IN
LAPEER COUNTY AND IMPROVE DRAINAGE EFFICIENCY

BURLINGTON TOWNSHIP—The 112-year-old Indian Creek Intercounty Drain collects water from a 19,692-acre watershed in Lapeer, Sanilac, and Tuscola counties consisting mostly of rural and agricultural lands. The drain passes under 25 crossings before outletting into the North Branch of the Flint River. Several areas along the drain were showing signs of heavy sedimentation and severe log jams, which resulted in flooded properties and closed roadways during heavy runoff events.

Expecting the conditions to worsen, the Indian Creek Intercounty Drain Board hired Spicer Group to develop a drain maintenance plan for the creek. As part of the plan, engineers conducted a condition survey of 11 miles of the drain.

“Our team noted areas of very heavy sedimentation, severe log jams and many roadway crossings that were in poor condition, undersized, and obstructed,” Spicer Group Project Manager Nick Czerwinski, P.E., said.

“Out of the 25 crossings that were examined, 15 were inadequate and had openings that were too small and/or set to high in relation to the drain’s flow line.”

The issues were presented to Burlington Township and engineers explained that completing basic maintenance tasks such as repairing areas of erosion, clearing log jams and excavating the channel would not provide a total solution to the flooding problems. They were encouraged to petition the Inter-County Drainage Board (ICDB) to include crossing improvements with the project in addition to maintenance tasks.

Understanding that many crossings would eventually need to be repaired or replaced eventually, the Township moved forward with petitioning the ICDB to complete maintenance tasks and develop a plan for replacing or fixing all impaired crossings.

The Indian Creek Intercounty Drainage Board moved forward with a design alternative developed by Spicer Group that included complete channel maintenance and improvements for 11.5 miles of open drain and removing/replacing drain crossings that were undersized, were constructed at the wrong elevation,

or were in poor condition. Spicer Group designed the improvements to meet 25-year storm design standards which is 2.7 inches of rainfall in six hours or 3.6 inches of rainfall in 24 hours.

The replacement of the four largest drain crossings, all of which needed to be replaced with box culverts, were bid out separately from the rest of the project. Construction was fully wrapped up earlier this spring on the four large box culvert crossings.

In total, four original crossings were replaced with concrete box culverts; five culverts were replaced with new corrugated metal pipe, and one crossing was removed permanently. In addition to removing all obstructions and debris from the drain, sediment was removed and construction crews reconstructed the drain bottom to its original width. The box culverts had spans ranging in widths from 20 feet to 24 feet and heights varying from 7 feet to 9 feet.

“These are some of the largest precast box culverts made in the industry,” Czerwinski said. “However, this design provides great hydraulics, has a long life expectancy, and has lower engineering costs than free-span bridges.”



HATHAWAY RD. BEFORE



HATHAWAY RD. AFTER

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SPICER GROUP NEW HIRES

THOMAS DENGLER: Thomas was hired into the Survey Group in our Saginaw office as a Survey Technician. He comes to Spicer with experience and education in construction and engineering.

CLINTON HEMINGWAY: Clinton was recently hired as a Survey Technician for our Survey Group in the Saginaw office. He earned his bachelor's degree from Araphic Community College in Denver, Colorado and has more than 25 years of experience as a cable technician.

HOLLY MALOTT: Holly was hired as a Project Assistant for the Survey Group in our Saginaw office. She holds an associate's degree from Delta College and has worked for Covenant Healthcare and Central Michigan University Healthcare.

GABE RAYMER: Gabe was hired as a Construction Services Technician in the Construction Services Group in our Saginaw office. He earned his bachelor's degree in construction management and associate's degree in survey engineering and civil engineering from Ferris State University.

COURTNEY STURGIS: Courtney was hired as a designer in the Planning Group in our St. Johns office. She earned her bachelor's degree in Architecture from Lawrence Technological University.

NOAH SZOTT: Noah was hired as a design engineer in the Water Resources Group in our Grand Rapids office. He earned his bachelor's degree in Civil Engineering from Calvin College and recently passed the P.E. and is an E.I.T.

JENNY TAYLOR: Jenny was recently promoted as the Human Resources Manager for Spicer Group. She began her career at Spicer in 2006 as a Project Assistant in the Survey Group and earned her bachelor's degree in Business Administration from Northwood University.