

STRAIGHT LINES

Summer 2020



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NEW SPLASH PAD IN CARSON CITY

Carson City officially opened their new splash pad located at their West Park facility along M-57 in July. Spicer Group attended the ribbon cutting event held by Carson City to celebrate the finished project.

The City was awarded a \$150,000 Michigan Department of Natural Resources Land and Water Conservation Fund Grant to help make improvements to the park that included building a new splash pad, a new restroom and changing room building, sewer and water utility improvements, and sidewalk improvements. Spicer Group was responsible for grant administration, design services, bidding assistance, survey, and construction administration assistance on this project.



Ribbon cutting event in July.



Opening day of the splash pad.

Carson City Administrator Jean Southward cut the ribbon, officially opening the new splash pad, and the City provided a tour of the new bathroom building and the splash pad to the event attendees.

Spicer Group Announces

PROMOTIONS



Steven R. Rutkowski, P.E., named as a new Senior Associate

Spicer Group is proud to announce the recent promotion of Steven R. Rutkowski, P.E., as a new Senior Associate. Steven joined Spicer's Municipal Group in January of 2013 as a Design Engineer. He became a Project Engineer in 2016 and a Project Manager in 2017. He earned a Bachelor of Science degree from Michigan Technological University in Civil Engineering, with a minor in Municipal Engineering in 2012, and a Master of Science degree in Civil Engineering from Norwich University in 2014. Steven became a licensed Professional Engineer in Michigan in 2016 and was promoted to Associate at Spicer Group in 2017.



Nathan P. Pfenninger, P.E., named as a new Associate

Spicer Group is proud to announce the recent promotion of Nathan P. Pfenninger, P.E., as a new Associate. Nathan has been a member of Spicer's Construction Services Group as a Construction Engineer since May of 2011. He graduated from Michigan Technological University in 2010 with a Bachelor of Science degree in Civil Engineering. Nathan became a licensed Professional Engineer in 2017 in Michigan.



Luke D. O'Brien, P.E., named as a new Associate

Spicer Group is proud to announce the recent promotion of Luke D. O'Brien, P.E., as a new Associate. Luke joined Spicer's Water Resources Group in December of 2013 as a Design Engineer. He became a Project Engineer in 2016 and a Project Manager in 2018. Luke graduated from Michigan State University in 2009 with a Bachelor of Science degree in Civil Engineering. He became a licensed Professional Engineer in Michigan in 2015.



Kelsea R. Sutton, E.I.T., C.F.M., named as a new Associate

Spicer Group is proud to announce the recent promotion of Kelsea R. Sutton, E.I.T., C.F.M., as a new Associate. Kelsea joined Spicer's Water Resources Group in May of 2013 as an intern. She was hired on full-time as a Design Engineer in January of 2014, became a Project Engineer in May of 2017, and a Project Manager in January of 2019. Kelsea graduated from Michigan Technological University in 2013 with a Bachelor of Science degree in Civil Engineering.

Newest Spicer Group HIRES

Mark Green: Mark was recently hired as a Construction Services Technician in the Construction Services Group at our Saginaw office. He comes to us with many years of experience in the construction industry.

Vincent Guadagni: Vincent was recently hired as a Project Manager in the Structural Group at our St. Johns office. He has 34 years of experience working in structural and bridge engineering and received his bachelor's degree in Civil Engineering from Vanderbilt University.

David Hedlund: David was recently hired as a Technician in the Survey Group at our Saginaw office. He earned his bachelor's degree in Geography from Western Michigan University and has previous experience as an AutoCAD Operator.

Elsie Jorgensen: Elsie was recently hired as a Design Engineer in the Municipal Group at our Dundee office. She earned her bachelor's degree in Environmental Engineering from Michigan Technological University and has previous experience as an Environmental Engineer intern at Villa Environmental Consultants in Benton Harbor.

Joel Spriegel: Joel was recently hired as a Design Engineer in the Water Resources Group at our Byron Center office. He joined us full-time after interning with us over the summer of 2019. He recently graduated with his bachelor's degree in Engineering with a concentration in Civil and Environmental Engineering from Calvin University.

Christopher Wells: Christopher was recently hired as a Technician in the Water Resources Group at our St. Johns office. He has experience as a Research Assistant before interning with us in the summer of 2019. He recently graduated with his bachelor's degree in Biosystems Engineering from Michigan State University.



PLOTTING THE COURSE FOR A NEW ROAD TO PROTECT IT FROM RISING WATERS



Spicer Group survey total station near the Cut River Bridge.

In Michigan's Upper Peninsula, US-2 is a scenic highway that travels from Ironwood, down along the coast of Lake Michigan to St. Ignace.

The Cut River Bridge is located along US-2, east of Epoufette, in Mackinac County. In recent years, the rising waters of Lake Michigan have threatened the land beneath the roadway that leads up to the western approach of the bridge. Sinkholes related to the area's geography had begun appearing and the US-2 roadway is settling along that area, making it hazardous.

Rather than repair the road, the Michigan Department of Transportation (MDOT) decided to relocate 1.4 miles of US-2 west of the Cut River Bridge to improve the long-term safety and mobility of the corridor.

Spicer Group was hired by MDOT to complete a design survey of the area where the road would be relocated to. A design survey is performed by land surveyors in our Survey Services Group to gather existing site conditions and information, such as three-dimensional terrain information (topography), area features, and the location and documentation of any existing improvements on the project's proposed site.

Typically, this would include buildings, visible infrastructure, and roadways. On this project, however, the terrain was untouched forest land. Surveyor field crews from Spicer Group set their primary control points and benchmarks for reference purposes, obtained existing elevations, surveyed historic property corners and government corners to develop the legal right of way, and surveyed the terrain through the relocation area.

Spicer Group Survey Crew Chief Ed Szczepanski said MDOT had a general location of where they wanted the roadway to go. The agency gave a centerline determination and required the design survey to include everything within a certain amount of feet on each side of that centerline.

"For this project, instead of focusing on the mapping of an existing road, to measure for the relocation of the road, we had to clear lines through the woods at 50-foot intervals for about a mile and a half," Spicer Group Survey Crew Chief Lance Koko said. "Some of these lines were 400 to 500 feet from the existing road edge."

Szczepanski and Koko spent a month surveying the property. At some points, they had to use chainsaws to cut their way back in to reach specific destinations.

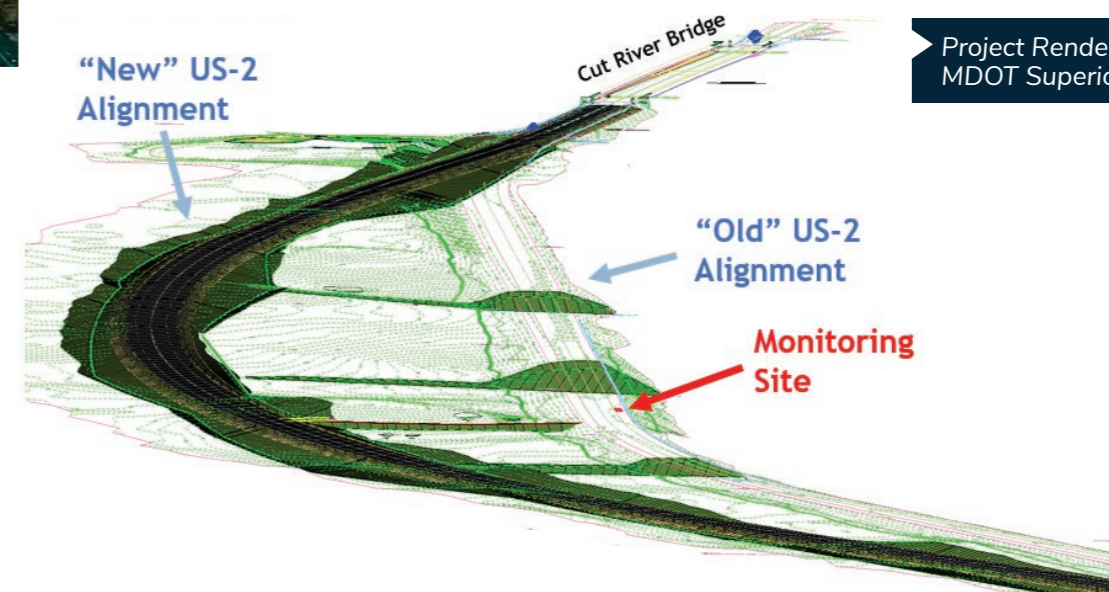
Also, on a typical road project, surveyors deal with the challenges of traffic and working within a roadway. For this project, there was no traffic due to US-2 being closed for the inspection of the Cut River Bridge.

"There also isn't normally such awesome scenery," Koko said. "It was all untouched woods."

While recovering section corners to help determine information on the historical legal alignment for the property, the surveyors had to hike down nearly-vertical coastline along Lake Michigan to reach the government section corners.

Once it was complete, the design survey was then used by engineers to determine all the controlling elements to be used as the basis for the project design of the new path and alignment for the relocated roadway.

The 1.4-mile portion of the US-2 highway will be moved about 350 feet north of its current location. The project began at the end of April this year and is estimated to cost \$3.2 million.



Project Rendering. Photo Credit: MDOT Superior Region Design Team.



STRONGER, SAFER ROADS: KOCHVILLE TOWNSHIP'S DAVIS ROAD RECEIVES UPGRADES

KOCHVILLE TOWNSHIP – After years of work, new roadway, drainage, and water main infrastructure upgrades on the east end of the Township are nearing completion this summer.

For decades, the 2.2-mile-long stretch of Davis Road offered motorists another route to access businesses along Tittabawassee Road and the Saginaw Valley State University campus. The 20-foot-wide road, which begins at Tittabawassee Road and extends northward to Freeland Road, runs mostly parallel to M-84. It is home to mainly farmland and residential neighborhoods. Portions of it were built directly next to the Kochville Drain.

“It is an old farm road that was never really truly paved,” Michael Niederquell, P.E., Spicer Group’s Director of Transportation Engineering, said. “The road was pretty narrow and there were no shoulders.”



/ New 142-inch-wide by 91-inch-tall CMP arch culvert being installed.



/ Aerial view of Davis Road under construction.

Because of this, motorists tended to avoid the route and only 1,900 vehicles per day traveled it on average.

Soil borings done on the road revealed it consisted of a thin layer of sand beneath a layer of asphalt varying between one and two inches thick. A standard suburban road structure consists of a subbase layer of sand, a base of aggregate stone, and then at least three inches of asphalt.

Also buried beneath Davis Road between Pierce Road and Tittabawassee Road were both a 36-inch transmission water main and 48-inch raw water main installed by the City of Saginaw more than 50 years ago. These supplied raw water to the City's water treatment plant and transmitted finished water to customers.

In 2015, the City of Saginaw had determined they needed to upgrade the water mains to increase the redundancy and operational flexibility of this critical water infrastructure. Because the existing, aging 36-inch water main was also built less than four feet directly beneath Davis Road, the decision was made to re-route the water mains to a safer, more manageable area. The shallow depth of the pipe had the potential to cause catastrophic problems.

In 2016, Spicer Group provided the City with professional engineering services for the design of a water system improvement project. Spicer was also hired by the Saginaw County Road Commission to design the improvements to this section of Davis Road independently from that project.

The water main infrastructure project included the installation of 10,000 feet of new pipe to carry raw water into the system and more than 10,000 feet of pipe to carry finished water out to customers. The new pipe was installed away from Davis Road in an easement between Pierce and Trautner Road in Kochville Township.

This allowed portions of the existing 36-inch and 48-inch water mains to either be removed or abandoned in place during the road reconstruction project.



/ Davis Road during construction.

"We did an analysis and based on their locations, one of the water mains is being completely removed, and one will be filled and remain in place," Niederquell, who is the Project Manager for the Davis Road improvement project said. "Those maintenance headaches will then be out of the way for the Saginaw County Road Commission and the City of Saginaw."

Construction on the water system improvement project began in 2018. Once enough of the below-ground infrastructure was substantially completed, construction could begin on the roadway improvement project.

To bring Davis Road up to county and state standards and make it safer for motorists, Spicer Group's team designed a 38-foot-wide roadway. This includes 11 feet for each lane, four feet of paved shoulder on each side, and four feet of gravel on each shoulder.

"This design will build a road that has 12 inches of sand subbase, eight inches of aggregate base, and then the asphalt will be three-and-a-half inches on top of that," Niederquell said. "The project will use more than 8,300 tons of asphalt."

To make room for the wider road width, portions of the Branch Number One of the South Branch of the Kochville Drain were relocated for this project.

"The drain was relocated westerly about 30 feet to get it away from the road," Niederquell said. "This gave us the ability to move the road back onto the section line, which is the center of the road right-of-way, and we're able to provide that drain a safe slope away from the road."



/ New box culverts being installed along Davis Road.

Spicer Group assisted in obtaining easements to relocate portions of the drain and obtaining EGLE permits.

This project also replaced aging and undersized culverts along the drain and road.

A 168-inch-wide by 84-inch-tall concrete box culvert was replaced and relocated away from the intersection of Davis Road and Kochville Road to improve intersection safety. A large culvert along the Kochville Drain was also replaced with a 142-inch-wide by 91-inch-tall CMP arch culvert.

Niederquell said four large arch culverts were also replaced on field access driveways as part of this project.

Spicer coordinated with local utility companies, such as Consumers Energy, AT&T, and Charter to relocate their infrastructure that was along the roadway. This included relocating a Consumer's Energy high-pressure gas main that was buried beneath Davis Road.

Construction on Davis Road began in April of this year and is scheduled to finish in October. It is estimated that over the next 10 years, with the newly reconstructed road, the number of vehicles along the road will double.

Along with the professional engineering services, Spicer Group provided design of the new permanent pavement markings, design of the new signage along the road, traffic detour management, assisted with the bidding process, survey services, construction administration services, and construction inspection on this project.

IMPROVEMENTS ALONG THE JOHN EARL DRAIN REDUCE FLOODING IN EATON COUNTY

Spicer Group Project Manager, Chris Mattson, P.E., oversees a new culvert being installed as part of improvements on the John Earl Drain.



GRAND LEDGE – In 1882, the beginnings of the John Earl Drain were established within Eaton County.

This 5.6-mile-long county drain runs through the City of Grand Ledge and Oneida Charter Township, servicing 7,400 acres of land. It includes open and enclosed drains that traverse through farm fields, between residential neighborhoods, and beneath major roadways to provide a primary outlet for stormwater towards its eventual natural outlet - the Grand River.

Not all of the stormwater, however, was getting where it needed to go on the John Earl Drain.

“The original issue that was brought to our attention was flooding along Mount Hope Highway,” Eaton County Deputy Drain Commissioner Eric Deibel said. “This area was right next to the drain, but the water wasn’t getting into the John Earl Drain fast enough and would flood.”

In 2016, residents brought a petition forward to the Eaton County Drain Commissioner Richard Wagner for an improvement project on the John Earl Drain. This petition was one of eight petitions that Wagner received that year. After the petition was submitted, Spicer Group was hired to inspect all 29,450 feet of the drain.

“We inspected the drain over three days from top to bottom,” Chris Mattson, P.E., the Project Manager for Spicer Group, said. “We walked the entire drain and learned a lot more about other issues within the drainage district.”

The John Earl Drain is an outlet for 25 other county and municipal drainage systems in the area including the Patterson and Dubois, Holmes, and Brunger and Glenn Drains servicing over 4,000 acres of farm land; the Fieldstone Farms, Sweetwater Pines and Woodview Estates Drains servicing over 300 homes in Oneida Township; and the Reed Drain servicing a major portion of M-43, local businesses, and apartments. Spicer Group’s drain inspection highlighted minor to moderate obstructions throughout the entire length of the drain. These obstructions impacted all of these drains and those properties serviced by them.

“

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Deibel said this slow-moving water created a “domino” effect throughout the drainage system, making other drains within the watershed function less effectively.

While much of the lower end of the drain needed major maintenance to remove deadfall and debris, Spicer Group’s team discovered other issues at points along the drain that were causing significant flow backup, Mattson said. This included undersized and aging culvert crossings, collapsed clay pipe, sediment-laden open-channel drain sections, undersized drainage swales, and major erosion issues.

A Board of Determination hearing was held on December 14, 2016. At that hearing, Spicer Group reported on the condition of the drain. Based on the stated condition and input from residents, the Board determined that an improvement project on the John Earl Drain was necessary. The Eaton County Drain Commissioner then directed Spicer Group to begin engineering solutions for the drain.

“For this project, we utilized a number of different solutions for the drain,” Mattson said. “We improved the existing open channel, replaced storm sewer, repaired major erosion, constructed new open and enclosed drains, and replaced a variety of cross culverts along the drain. We picked the approach that would be the best for each section of this drain.”



Crews installed larger culverts to accommodate the flow in the John Earl Drain.

One of the major improvements made was a triple-barrel crossing at the Sandstone Creek Apartments, located off Jenne Street in Grand Ledge. Sandstone Creek Drive serviced the apartment complex and the drain traveled through a roadway crossing that consisted of three undersized 72-inch diameter pipes side-by-side. During rain and high-water events, debris that could not flow through the pipes would build up, blocking the waterway. The City of Grand Ledge would maintain the crossing by removing the debris periodically.

“By reducing the capacity here, there were capacity issues all the way up the drain,” Mattson said.

A large 19-foot by 7-foot concrete box culvert was installed at that crossing, and major erosion issues near this portion of the drain were corrected using stone riprap along the banks where the drain meandered through the more densely developed City properties.

At another portion of the drain, in the Fieldstone Farms neighborhood off East Saginaw Highway in Oneida Charter Township, development of the area had enclosed and relocated portions of a natural tributary channel of the John Earl Drain. The channel was located near homes, it was undersized, and was eroding—all factors that contributed to the risk of homes being flooded in the area. Spicer Group designed a solution to acquire the channel as a new branch of the John Earl Drain. This involved easement acquisitions to move the drain further away from the homes and sizing the drain properly to accommodate the additional amount of water flowing through it.

Major culverts were also replaced along the improved drain channel at Mt. Hope Highway and Strange Highway.

Construction began on this project in June of 2019 and is scheduled to finish by November of this year. Work has been completed by two area contractors; E.T. Mackenzie Company was awarded a contract to complete all drain crossing improvements, and Precision Grade Excavating was awarded the contract to complete all the drain channel and storm sewer improvements.

“We covered everything that needed to be worked on. The debris that was in the drain is now clear and when construction is complete, our residents will have a well-maintained, well-constructed county drain,” Deibel said. “This project set up a very large drainage system for a lot cheaper maintenance going forward,



The project removed log jams, excess sediment, and other obstructions through agricultural areas.

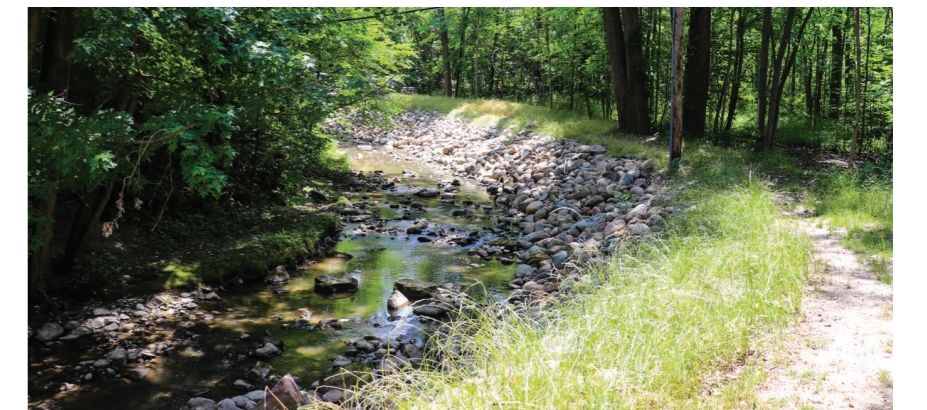
which is a real benefit. It will be a well-functioning drain that will benefit the whole drainage system.”

Deibel said Spicer Group’s depth of team and professionalism contributed to the success of this project.

“A big benefit with Spicer is their great open line of communication. They keep me updated on a regular basis and when information is needed, I’ve never had an issue getting in contact with Spicer and getting my questions answered,” he said.

Over the past five years, Wagner said his office has been receiving six to eight petitions each year requesting major drain improvements across the County. He said he is pleased to see the John Earl Drain, which is one of the larger projects under petition, reach completion.

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Completed stone riprap placement along the John Earl Drain for bank erosion protection.

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