



STRAIGHT LINES

WINTER 2017

Spicer
group

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Spicer New Hires

Christy Gregorski: Christy recently joined our Manistee Office as an Administration Assistant. She has more than 15 years' experience and Management Training Certificate.

Jeff McIntosh: Jeff was recently hired as a Project Manager in the Planning Group at our Saginaw Office. He earned a bachelor's degree in Civil Engineering from the University of Tennessee and is a licensed engineer in Michigan, Arizona, and Colorado.

Veldra Raines: Veldra recently joined our St. Johns office as a Project Manager in the Water Resources Group. He has 13 years' experience working for the Montcalm County Drain Commission.

Emily Short: Emily was recently hired as a Water Quality Analyst for our Applied Technologies Group in our Lansing Office. She earned a bachelor's degree in Chemistry with an Environmental Emphasis from Saginaw Valley State University.

Front Photo: Fashion Square Boulevard Extension project, Kochville Township.

Inside Photo: Contractor installing an overhead truss for an MDOT sign project on US-127 north of Lansing taken by Jacob Chartier, Spicer Group Design Engineer.

Oscoda

Renovated lagoons provide wastewater treatment for the township



OSCODA CHARTER TOWNSHIP - While the last military plane was wheels-up from Wurtsmith Air Force Base more than 20 years ago, much of the infrastructure remains that once supported the needs of thousands of military men and women stationed there - including the base's wastewater treatment system.

In 1977, the U.S. Air Force finished construction on a lagoon wastewater treatment system for the base's occupants. The trickling filter system was in service until 1993 when the base was decommissioned and the system went silent.

Subsequent to the base closure, Oscoda Charter Township was looking for a solution to their aging mechanical wastewater treatment plant.

"The township's treatment plant was coming to the end of its useful life," Robert Stalker, the

Superintendent for Oscoda Charter Township, said.

In the early 2000's, the Township took ownership of the air force base's wastewater treatment system, replacing their mechanical treatment plant with the base's aerated lagoons for their customers.

Utilizing a lagoon system offered the Township lower operation expenses, a lower life-cycle cost, and an increased capacity, Stalker said.

Renovations were made to the lagoons to remove the trickling filter system, line the cells with a PVC liner and add aeration, but shortly thereafter, the aeration components in the cells were beginning to fail.

The Township started the process to replace the existing aeration system and investigate funding sources. An SRF project plan was prepared which outlined the desired project, and in 2014, the Township hired Spicer Group to provide design, bidding and construction services for that project.

To comply with MDEQ standards, improve the wastewater treatment quality, and lengthen the system's useful age, the project included sludge removal, installing a new fine bubble aeration system, replacing the existing blowers, performing rapid infiltration basin distribution piping modifications, and adding a chemical feed mixing structure and effluent metering.

The new aeration system enables the system to treat the wastewater to meet permit limits, Spicer Project Manager Jennifer Garza, P.E., said, and it

will reduce the rate of sludge accumulation on the bottom of the 14-foot-deep lagoon cells.

In early design, it was noted that the sandy banks of the lagoon cells were eroding, making the banks hard to maintain and exposing the PVC lining of the cells, causing it to crack. Therefore, the project scope was expanded to include the installation of a new geotextile lining and stabilizing the side slopes of all three cells with stone riprap.

The riprap will help the operators maintain the integrity of the lagoon's side slopes and control weed growth.

The project also increased the amount of wastewater the Township can treat. Because of the size of the lagoons, and the ability to add a third blower and additional aeration diffusers, the



Riprap installation around a drained lagoon cell

population of the Township could triple and the system would still have the capacity to handle the wastewater flow.

Construction started in October of 2015, and was finished in October of this year. The system had to stay in operation throughout the process so the Township's customers were never without service.

"This project keeps them in compliance with all local, state and federal regulations," Garza said. "And they are providing sustainable wastewater treatment capabilities that will last them a long time."



Contractor setting a diffuser in a lagoon cell



Riprap and blower pipe installation



Blower pipe installation around lagoon cell



Finished lagoon cell with baffle curtain

New Chance Given To Old Property

CITY OF MT. PLEASANT – On every worn, white service door to the old power house building at the former Mt. Pleasant Regional Center for Developmental Disabilities, bright red letters spelled out “No Trespassing,” “Keep Out,” or “Danger.”

Shattered glass windows decorated the facade, trash littered the floor, and broken pieces of equipment were strewn about a structure that once provided heat and electricity for decades to more than 20 buildings sprawled across the defunct center’s 300-acre property. In others, vandalism was rampant, roofs had collapsed, and mold had grown.

Several years ago, the City of Mt. Pleasant acquired the property from the State of Michigan and since then, officials have been working on a solution for use of the property whose history dates back to the late 1890’s.

Prior to the state owning the property, it was

set aside by treaty as a Boarding and Training School for Native Americans in the area. Portions of that school still exist on the property and are owned by the Saginaw Chippewa Indian Tribe and the City of Mt. Pleasant, and Spicer Group coordinated with the tribe throughout this project.

In 2009, when the regional center shut its doors after more than 70 years in the community, the buildings were simply locked up, as if employees and tenants had simply set down their belongings for the day and left.

“As time went on, it became more and more in disrepair,” William Mrdeza, the Director of Community Services, said. “To the point where the buildings were unhealthy, unattractive nuisances.”

While waiting not only on a decision of what to do with this large piece of property that was just outside of downtown Mt. Pleasant, but the funding to do it with, the City boarded up

windows, chained doors shut, and even hired a private security firm to try and keep people from trespassing.

With buildings from the center deemed unusable, the City moved towards making the property more developmental friendly by starting the demolition work and required environmental abatements with grant funding in 2014.

As more funding became available through local financing options, the City partnered with Spicer Group and AKT Peerless to assist with the planning, design, environmental and project management services related to removing the remaining 17 buildings from the site in 2015.

Darrick Huff, P.E., the project manager with Spicer Group, said it was the size of the property, and the different types of buildings on it, that presented the challenges for this project.

“With most demolition projects, it is a small site

and the building will take up a large portion of that,” Huff said. “With this project, there were hundreds of thousands of square feet of buildings that are all very spread out. There were tunnels that ran between them all with steam piping coming from the old power plant, and it all had to come out.”

Crews from Melching, Inc., a demolition company based in Nunica, had to deal with removing structures that ranged in size from a 400-square-foot incinerator building, to a 57,000-square-foot cottage housing.

The oldest building removed was built in 1927, and crews worked for months to pull out everything on the property including underground concrete tunnels, asbestos, lead pipe, underground fuel tanks, electrical transformers, and radioactive material from an old dental lab.

The power house building was one of the last



to be demolished. Two excavators brought the brick building tumbling down before picking the pieces apart for recycling and disposal.

"We just took away everything that would be an impediment to future development," Huff said. "It is really one of the last pieces of green space that is near downtown Mt. Pleasant, and a great location."

Spicer also provided a GIS map of everything else left on the site to the City, which can be incorporated into their GIS system.

Demolition wrapped up on the project in early December of this year. The City of Mt. Pleasant

now has a clean, developable site.

Mrdeza said when the opportunity arose to add additional land base to the city that was essentially non-taxable for more than 100 years, public input sessions let city officials know that residents desired more amenities, such as public open space, senior living opportunities, or areas of mixed-use development, including commercial and residential.

With the land now cleared of debris, developers have the ability to do just that without the prohibitive cost of demolition and abatement. "This has just been a phenomenal project with everyone involved," Mrdeza said.



Top: interiors of cottage building before demolition. Bottom left: portion of property after the demolition. Left and current page: demolition of the power house building. For a video of the demolition of the building, use the QR code to the left, or visit: <http://bit.ly/2iaHZxL>

Under the river

New water main drilled in Frankenmuth



Modified drill head for drilling under the river

FRANKENMUTH – In downtown Frankenmuth, *wasser* – or water – is life. The hotels, restaurants, and retail businesses that line the banks south of the Cass River all use water supplied through three key water mains that cross beneath the river to provide services to more than 2 million tourists who visit the town each year. Late in 2015, one of these water mains was compromised during a construction project.

Work was finishing up on the construction of a fish passage in the Cass River that was replacing a 165-year-old failing concrete dam, when some of the concrete rocks used to construct the passage broke the water main pipe that crosses the river near the M-83 bridge.

Ken O'Brien, the Water Superintendent for Frankenmuth, said the break was noticed right away on the city's water chart recorders. The broken main was isolated almost immediately, routing water to the two remaining river crossings, while the city decided how to proceed.

As an integral part to Frankenmuth's drinking water system, without this third main, residents and businesses in the area were at a higher risk of losing that service, the Frankenmuth Department of Public Works Superintendent Randy Braeutigam said. The city quickly contacted Spicer Group to investigate the problem and provide solutions.

"The 8-inch cast-iron water main was installed in 1939," Steve Rutkowski, P.E., the project manager for Spicer, said. "We believe that over time, the river bank eroded and the pipe was almost at the surface. So when all the rocks were dumped into the river, it broke immediately."

Spicer's team determined that replacing the water main entirely was more cost-effective and a better long-term solution than repairing the original 77-year-old pipe. However, one of the difficult parts of the project was pinpointing the best place to install the new water main. Taking into consideration significant difference in elevation in the area, the precautionary



Contractors and Frankenmuth Water Superintendent Ken O'Brien, center, taking GPS coordinates of the drill head beneath the Cass River in Frankenmuth

measures needed when drilling beneath a river, existing infrastructure, and U.S. Army Corps of Engineers regulations on setbacks when directionally drilling beneath a levee, Spicer's team presented seven solutions to the City of Frankenmuth, ranging in cost from \$450,000 to nearly \$1 million.

Stakeholders chose to horizontally directionally drill a new 10-inch high density polyethylene water main beneath the river slightly west of the broken water main and tie that pipe into two existing water mains – one near the waste-water treatment plant, and the other by Zehnder Park.

Because the new water main was critical to the City of Frankenmuth's infrastructure, the design was fast-tracked through Spicer's engineering team and put out to bid in the spring of 2016 and awarded to Super Construction, located in Bay City.

Work began late in the summer, with the drilling conditions bringing their own set of challenges to the project.

"There was a lot of shale and rock beneath the river," Rutkowski said. "The contractor had to use a thick rock head and specialized bore tip to get through it. Some of the rock was so hard they had to weld additional teeth onto the bore head. These were really complicated drilling conditions."

A new pressure reducing valve vault was designed and installed on the west side of Plant Street with this project to help regulate the pressure zone throughout the water system on the north and south sides of the river.

Construction on the project wrapped up in November of this year.

"This project was definitely an improvement to our infrastructure," Braeutigam said. "It was always on our bucket list to get the pipe repaired or replaced, but this just brought it to the top of the list. And it turned out fantastic."

This project was just one of several the City of Frankenmuth completed throughout this past year to help improve their water system infrastructure.

"The City of Frankenmuth was able to utilize a bad circumstance and turn it into an opportunity to invest in their infrastructure at a reduced rate," Rutkowski said. "Frankenmuth is a great client. It is a good feeling to know that when it's all said and done, you've helped them and the community as a whole."



Above and below:
PRV vault installation



HESS ROAD

New water main installed under I-75

BUENA VISTA CHARTER TOWNSHIP – In the 1950's, the portion of Interstate 75 that runs through the Township in Saginaw County was little more than a two-lane road.

The highway system in Michigan that connected the major cities and the Lower and Upper Peninsula was still relatively new and when constructed, utilities such as water mains and power lines were buried deep enough for safe operation beneath that size of roadway.

Now, in 2016, that same portion of I-75 was widened and repaved to include four lanes in each direction to accommodate the amount of traffic now using the highway. And while the roadway expanded outwards, utilities remained in place.

During the I-75 construction project last summer, a contractor's crew was working to build the wider road, when they broke the existing 10-inch asbestos cement water main pipe that had been installed in the early 1950's beneath I-75 at Old Hess Road.

As a result, the existing water main was shut off on both sides of the highway.

"When they expanded the road, what was previously plenty deep, was no longer deep enough," Charles Suchodolski, the Water Superintendent for Buena Vista Charter Township, said.

In order to reestablish the water main loop and to eliminate dead ends in the system, the Township worked with Spicer Group to design a new 12-inch high-density polyethylene water main under I-75 to reconnect both ends of the broken main.

Suchodolski said this water main provides another critical link of water supply to customers in the Township along the I-75 corridor. He explained that replacing it was a better option than simply repairing the breaks, because of the need to lower the pipe to meet new depth requirements underneath the expanded highway.

To install the new pipe underneath a recently-constructed and paved highway, Rohde Brothers

Excavating, Inc., the project contractor, used horizontal directional drilling – a trenchless technology that allowed the new pipe to be drilled through the ground beneath the highway and installed without open cutting the highway or obstructing traffic.

"The technology to directionally drill is becoming more common place," Brian Poultney, the

Project Manager for Spicer Group, said. "It isn't something we do with all projects, but the Michigan Department of Transportation would prefer that when we can, to directionally drill under their roads as opposed to other methods of installing utilities."

Spicer assisted the Township with the design to replace more than 500 feet of pipe beneath the highway and during the summer, it was installed.

While the original pipe was out of service, no customers were ever without water, Suchodolski said.

Construction on the project began in September and finished by November of this year. The pipe was tested and put into service shortly after.



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