



SMALL TOWN SPORTS COMPLEX HAS MAJOR LEAGUE DRAINAGE SYSTEM

YOUNGSVILLE, Louisiana - Due to the expectation of today's sports enthusiasts and the advanced products available, the growing trend is for every sports complex to have a highly efficient storm water drainage system. According to the Plastics Pipe Institute, Inc. (PPI), it is now possible for even small towns such as Youngsville, Louisiana with a population of 8,100 to afford a high end sports complex using cost-effective drainage products such as corrugated high-density polyethylene (HDPE) pipe. PPI is the major trade association representing all segments of the plastic pipe industry.

The Youngsville Sports Complex is a 70-acre complex that opened in May 2014. Costing approximately \$16 million, it was funded with a dedicated one percent sales tax, approved by Youngsville voters. The complex has six soccer, four softball, and five baseball fields, ten tennis courts, a one-mile long walking path, fully stocked fishing pond, a playground, plus concession stands, shops and facilities for festivals and corporate events. First year attendance is projected at 500,000. In addition, the sports complex will be host in August of 2015 the 2015 PONY Baseball Mustang World Series with teams from across the US, Mexico, the Caribbean, and Asia/Pacific.

The use of corrugated HDPE pipe on the site reduced the cost for the drainage system portion of this public-funded project, which points to good stewardship of the additional tax levied to build the complex. Large diameter, corrugated HDPE pipe along with in excess of

500 catch basins were used to construct the drainage system for this small community's new multi-sport complex.



"We are certainly seeing expansion of the trend to provide underground drainage to community sports facilities," stated Tony Radoszewski, president of PPI. "Players, management, owners and fans have always wanted a way to get water off the field quickly. In the old days, the only way to prevent rain from getting on the field was to roll out the tarp, but that would often kill the grass. Or for local fields, the games were just cancelled, and many times the field was unplayable for several days. Underground drainage systems were developed that would collect and move the water. Sometimes these pipe systems even have a vacuum to speed up the process. Yankee Stadium, for example, is also equipped with a fan system that draws water into the system and can also be reversed to provide airflow for quicker drying and promote better root growth.

"Following the success at some of the most venerable pro-sports stadiums," he continued, "local fields such as Youngsville put in what is



basically the same underground drainage system. The nearby town of Broussard with a population of just 8,600 broke ground in October for its own sports park, similar to Youngsville's complex. These are the fields that everyone dreams about, and these communities are making them a reality. Technology and products such as HDPE pipe have made this possible because it is affordable, easy to install and will last for many, many years."



The pipe used at Youngsville also provided an environmental advantage. The MEGA GREEN® Series of Advanced Drainage Systems, Inc. (ADS) (Hilliard, Ohio) N-12® corrugated HDPE pipe is made with at least 40 percent recycled content. More than 23,800 linear feet of the pipe in diameters ranging from 10 to - 48 inches was used on the project. MEGA GREEN pipe provides both strength and optimum hydraulic capacity with a Manning's "n" rating of 0.012. It meets ASTM

F2648 standard specifications and will support H-25 live loads.

The drainage basins were ADS Nyloplast® Water Control Structures. ADS is a member company of PPI.

Other types of pipe considered for the project included PVC and concrete. Design engineering firm, C. H. Fenstermaker (Lafayette, LA), selected HDPE pipe due to its favorable price, shallow burial depths, ease of installation, long life, and the recycled content of this particular product.

"Most times the fundamental concept for a sports complex facility is that drainage be handled in a conservative fashion," explained Dax Douet, P.E., engineering director for Fenstermaker. "Too many times I have seen facilities that are at the minimum slope requirements or don't provide enough drainage so both players and spectators walk through mushy ground and mud. I was determined not to have that happen. We have a lot of slope everywhere on our fields. We designed the Youngsville drainage system for a 10 year storm event." His design and choice of products were put to the test and proven as the complex was preparing for its grand opening.

Douet, with 18 years of experience, served as the lead designer for this project. I was involved with all the planning, public involvement, design, production of construction plans, and the construction engineer.

"This was a large earthmoving type of operation where drainage was key from day one. In any sports facility, having standing water within playing fields is unacceptable if at all possible for normal storm events."

Corrugated HDPE pipe has been used since the mid-1960's in agricultural, building and road



projects and is now also being made with 'green' in mind.

"We truly feel that today, the goal is to use sustainable construction materials that also provide a top performance level," stated Daniel Currence, P. E. director of engineering, CPPA Division, PPI. "Sustainability certainly includes longevity, but also the environmental impact of material production and the use of recycled materials. HDPE pipe production is a very clean process, capable of reusing materials without sacrificing performance.



"Due to the design and a high strength-to-weight ratio, corrugated HDPE pipe produces a much smaller impact on the environment than traditional pipe materials like reinforced concrete or corrugated metal. Carbon footprint is the most widely accepted measure of the environmental impact of activity or production in terms of greenhouse gases produced, measured in units of carbon dioxide.

Reinforced concrete pipe, according to the Cardiff University (U.K.) study, has a greater carbon footprint than HDPE pipe. Also, HDPE

pipe made with recycled material helps projects to qualify for LEED® certification."

Playing Catch with the Water

Basins were another key to the rapid water drainage. Douet elected to use Nyloplast® structures which combine a ductile iron grate with a rugged, heavy-duty PVC structure.

"The Nyloplast catch basin has about a six-inch sump underneath the pipe connection," Douet explained. "I really liked that we used them. On a sports complex like this, they will apply a lot of fertilizer on these fields, and I thought it was a great idea that each of these catch basins had a sump, which basically allows sediment and runoff fertilizer to drop out the pipe, cross over the catch basin and into the sump. The use of these drainage structures helped improve our water quality outflow into our outfall drainage features."

A+ Grade

To get the grade and slopes as accurate as possible on all the playing fields, Douet had the construction crews use GPS equipment along with laser levels.

"To understand every nook and cranny of this park and how it drains, we actually created a three dimensional ground surface of this entire park. Based on that 3D surface model we created, we were able to know exactly where we would need to catch the water. And that's where the catch basins were put. That's how it all started.

"All the fields and all the common areas and parking lots," he continued, "could be graded only with GPS equipment that had a vertical tolerance of 1/100th of a foot," he continued. "The contractor used laser levels and GPS units following my 3D model. This way I would



get exactly the drainage I wanted. That's my biggest takeaway - - if I was going to do a facility like this again, I would do it in the same way. The only way to do it right is to utilize the technology that the construction world has today and that's with equipment that has a global positioning system. This means the computer drives the tractor so to speak, and grades that dirt exactly like we want it."

Douet made the call to put in native soil as backfill for all subsurface drainage not under the loading of vehicular traffic. The crew compacted the haunch, bottom and sides.

"As far as backfill, we originally bid the project using aggregate backfill, which is really what that pipe calls for, but when we bid the project we were over budget so I really needed to find areas where I could save money. One of the choices I made was to allow native soil to be put back in the trench, but only in areas that weren't subject to traffic. Where the pipe is underneath parking lots, however, that was backfilled with aggregate. For most of complex, there's no weight on top of it, just people walking on it and that's nothing. I think we saved about \$700,000 by allowing earthen backfill."

Raining on the Parade

The storm water management system was put to the test just before the grand opening event, but Douet wasn't worried.

"About three days before the grand opening we had close to a nine inch rain within twelve hours. That's a major rain event," he stated. "And about four hours later all the water was out and about. None of the fields had a drop of water on them.

"It was just the right call in my mind to use this type of pipe...very economical. We had a budget and pipe is not pretty, so I'd rather spend extra money on amenities and things that people touch and feel rather than having heavy concrete underneath the ground when plastic pipe can do just as good and last just as long in this particular application. I think it's a good product and a good pipe to use in this type of facility."

For additional information about HDPE pipe and storm water drainage, go to the Plastics Pipe Institute's website at: www.plasticpipe.org.

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About PPI:

The Plastics Pipe Institute Inc. (PPI) is the major trade association representing all segments of the plastic pipe industry and is dedicated to promoting plastics as the material of choice for pipe applications. PPI is the premier technical, engineering and industry knowledge resource publishing data for use in development and design of plastic pipe systems. Additionally, PPI collaborates with industry organizations that set standards for manufacturing practices and installation methods.

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