



LDDI Bridges

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LDDI Bridges is a publication of Virginia Tech's *Land Development Design Initiative*

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Virginia Tech
The Via Department of
Civil and
Environmental
Engineering



Greetings from Virginia Tech! I hope this message finds you well and enjoying a fun filled, sun soaked summer! Our beautiful campus has a quiet, laid back feel that we all enjoy so much during the summer months (along with the ample parking!). But, just below the surface, you can feel the excitement and momentum building toward the start of a new academic year. We're just over a month away from thousands of new and returning Hokies descending on Blacksburg, and while vacation season is a wonderful time of year, those of us involved with LDDI are looking forward to the beginning of the fall '18 semester. This fall, LDDI will be offering four class sections across the following three courses: CEE 3274 – Introduction to Land Development Design (two sections), CEE 4264 – Sustainable Land Development, and CEE 4274 – Land Development Design. Outside of the classroom, LDDI has a number of exciting activities planned for this fall including student club service projects, a professional networking mixer, a football viewing party, numerous guest speakers, and other fun and educational activities.

I hope you will enjoy reading this edition of our newsletter and learning more about the people, companies, courses, and events that enable LDDI and Virginia Tech to boast of the most expansive undergraduate land development curriculum in the country. We're now in our 12th year and, as always, I welcome your feedback on how we can continue to build and grow LDDI!

Dr. Randy Dymond, PE, VT LDDI Coordinator

LDDI's Research Efforts Continue to Expand and Grow

by Kevin Young

The primary objective of LDDI's Research and Development Committee is to oversee efforts to conduct and administer independent research aimed at providing scientifically-based evidence concerning the practicality and suitability of existing and emerging techniques, technologies, and policies to address engineering issues related to land development design. The Committee is further charged with identifying research goals, seeking funding, and providing overall, strategic direction on research efforts.

To date, LDDI's research activities have largely focused on urban stormwater issues. With Virginia adopting new stormwater management regulations just a few short years ago – regulations that greatly impacted and continue to impact the land development industry - this research focus remains both timely and demonstrative of LDDI's commitment to remaining at the forefront of issues that most directly impact the land development industry. Over the past year alone, LDDI, through the Via Department of Civil & Environmental Engineering, completed funded research contracts with the Town of Blacksburg, the City of Roanoke, and Fairfax County.

Earlier this summer, LDDI's research activities received major national exposure when Program Coordinator Dr. Randy Dymond and Assistant Coordinator Kevin Young each presented research at ASCE's Environmental & Water Resources Institute (EWRI) Congress in Minneapolis, MN. Exposure of this type is invaluable in spreading awareness of LDDI and research efforts at Virginia Tech. If you are interested in learning more about LDDI's Research and Development Committee, you are invited to contact James Patteson (james.patteson@fairfaxcounty.gov) or Clay Hodges (ch72@vt.edu), who serve as the Committee's Co-Chairs.



LDDI Coordinator, Dr. Randy Dymond, presents at the ASCE EWRI Congress in Minneapolis, MN.



Bohler Project Manager Michael O'Shaughnessy with NHL Stanley Cup Finals Champion and MVP Alexander Ovechkin at The St. James groundbreaking ceremony, September 2017.

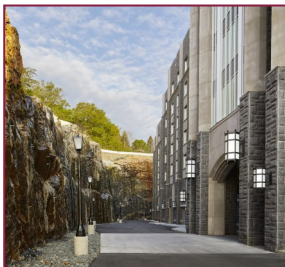
Bohler Helps Bring State-of-the-Art Sports Complex to Greater Washington, DC

edited by Kelly Shayne Young

One of the most innovative sports complexes in the nation, and the largest of its kind in Greater Washington, DC, will open its doors this September in Fairfax County, VA. Built on a 20-acre site formerly owned by Washington Gas & Light Co. in Springfield, VA, the St. James Sport and Wellness Center, officially dubbed The St. James, will provide sports facilities and amenities for members of any age or ability. The 450,000 SF complex includes two hockey rinks, a pool, a turf field, and four basketball courts that can be converted to nine volleyball courts, all regulation-sized, in addition to six batting cages, eight squash courts, a golf center, and a gymnastics center. The site, which will be open 24-hours a day, seven days a week, also features a 50,000 SF health club, a sports medicine and rehabilitation center, a 20,000 SF

entertainment center with zip lines and climbing walls, and a 6,000 SF indoor water park, along with various retail stores and restaurants.

Bohler Engineering, led by Virginia Tech graduate Michael O'Shaughnessy, provided site civil and consulting engineering, surveying, landscape architecture, and permitting services for the project. The Bohler team's longstanding relationships with Fairfax County Department of Public Works staff was critical in acquiring plan approvals 10 months ahead of schedule, saving the collaborative project team significant time and money. These trusting relationships created an opportunity for the firm to receive two Rough Grading Plans, which expedited County approvals and allowed the contractor to move forward with construction much earlier than anticipated.



Critical solutions to logistical challenges led to the successful development of the new Davis Barracks at West Point. Photo: Ty Cole Photography

Clark Nexsen Aids in the Development of West Point's Davis Barracks

edited by Kelly Shayne Young

Adjacent to a national landmark on the side of a mountain, the project site for West Point's new Davis Barracks posed several logistical challenges. Nearly 60 feet of rock was blasted and removed from the top of a mountain to prepare the foundation of the barracks facility, and 285,000 tons of additional rock were removed, relocated, and recycled at off-site locations. The project was led by the New York District of the U.S. Army Corps of Engineers along with Walsh Construction, and design partner Clark Nexsen, who provided architecture services and engineering, including civil and site engineering.

Due to 132-feet of elevation change across the site, utility design required sensitivity to construction sequence and creative solutions to accomplish the extreme change in grade while maintaining the design concept. All project work, including the placement of more than 25,000 cubic yards of concrete, was completed from a restricted project site surrounded by historic structures

occupied by more than 4000 Cadets.

Davis Barracks is designed in a military gothic-style in keeping with the Central Post's designation as a National Historic Landmark. The facility is a modern, state-of-the-art building still in keeping with the cadet lifestyle. The barracks' immense facade consists of 167,901 pieces of granite stone. Each stone was individually cut, labeled, shipped, staged, and hand-set into a specific location.

Environmental sustainability was factored throughout the design and the selection of building systems. The barracks includes high efficiency systems that meet West Point Net Zero goals, radiant heating and cooling, dedicated outdoor air systems, heat recovery systems, solar thermal and aggressive building infiltration measures. Davis Barracks is tracking LEED Silver certification from the U.S. Green Building Council and has received engineering excellence awards on both the national and state levels from the American Council of Engineering Companies.

Who We Are: Rob Reddick– Director, McAdams Charlotte Region

Each issue of *LDDI Bridges* focuses on Advisory Board members who make LDDI happen.

Rob serves as the Director of McAdams' Charlotte Region and is an advisory board member for the LDDI program.

What is your specialty within the land development industry?

My focus has been on private residential developments in Washington, DC, and Charlotte, NC, where I spend most days designing subdivisions, apartments and age-qualified neighborhoods.

What attracts you to land development?

Without a doubt it is how civil engineering can drastically affect how people experience an environment. Civil engineering / land planning is much more than just pavement sections, pipes, and grading; it's about taking ownership of simplifying complexities, while optimizing your resources.

Please mention the highlights of your career?

My proudest professional highlight is being part of the great team here at McAdams and all the success we have had locally. Just last year our Charlotte office came in second place for the Charlotte Business Journal's Best Places to Work medium-sized firms category.

What motivated you to become involved with LDDI?

I'm a Virginia Tech alum (Go Hokies!!), and the opportunity to influence the next generation of Hokies is personally satisfying. I've also come to realize that finding highly qualified new employees is becoming harder and harder with each passing year, and there's no better way to rectify that situation than by getting more involved.

What do you think are the strengths of this program?

There is incredible interaction between student and practitioner. Having a little bit of Civil 3D baked into all the classes and the impressively high number of students with internship experience are just two of the fantastic ways this program helps to produce talented young engineers.

Could you please share something unique about you?

I am a military brat and consequently lived seven years in Germany during my elementary and middle school years. It wasn't until I was an adult that I truly realized how lucky I was to have been able to travel around Europe at such an early age.



"From my involvement with LDDI, I've witnessed the program's unique ability to bring firsthand experience to its students and to substantially prepare them for employment immediately following graduation." - Rob Reddick, McAdams Charlotte Region Director

LDDI Graduates in the Industry: Pilar Moore

Bohler Engineering Design Engineer

by Kelly Shayne Young

Hailing from the west end of Richmond, VA, former Hokie Pilar Moore landed in Charlotte, NC, after graduating from Virginia Tech in May 2017. She began working at Bohler Engineering shortly following graduation and currently serves as one of the firm's design engineers.

While a student, Pilar took advantage of LDDI's course offerings, namely Sustainable Land Development and Land Development Design. "Sustainable Land Development taught me how to think of more creative solutions to engineering problems," she notes. "Through the Land Development Design course I gained a lot of exposure to the actual profession of land development, became more proficient in CAD, and got exposure to a lot of the design practices of industry. Both of these classes made me feel more confident going into my career."

Although she has successfully made the transition from student to practitioner, Pilar

is still learning. Whether she's working on a 50+-acre industrial site or a multi-family subdivision, she has learned to expedite the design process without sacrificing quality. "In school, I was able to take my time and try different approaches to every assignment in order to learn as much as I could; I had to learn to be more efficient after graduating," explains Moore. "Versatility is also necessary to be successful. Land development engineers are unique because they need to have the technical skills for the design/engineering side of the career but also be very personable for the business and management side."

While Pilar misses the community of Virginia Tech, the civil engineering department, and the LDDI program, she finds support in her very large family. She also enjoys traveling and hiking.



"LDDI students gain invaluable exposure to the land development profession by learning from industry mentors and seeing how real-world projects take shape. This gives them an advantage over graduates from other programs." - Pilar Moore, Bohler Engineering Design Engineer

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ATCS Lends Services to Mixed-Use Development in Newport News, VA

edited by Kelly Shayne Young

ATCS has been providing professional site/civil engineering services for the development of a three-story, 58,000 square foot mixed-use office building in Newport News, VA. The facility, located on the outskirts of the Port Warwick mixed-use development, will provide expansion of the orthopedic practice that currently sits on the adjacent parcel. ATCS has been working closely with James River Architects to



New mixed-use office building comes to Port Warwick development in Newport News, VA - rendering courtesy of James River Architects.

achieve the owner's overall vision and transform the currently undeveloped lot into a state-of-the-art mixed-use facility to serve multiple needs. Upon completion of the development, the first and second floors will provide the owner leasable space for retail and office use. The third floor will house four surgical suites to expand the capabilities of the existing orthopedic practice.

Under contract to the owner, ATCS provided concept design planning, site surveying, and preparation of site plans. The site design services included overall layout, site grading, water and sanitary sewer design, storm drainage design, traffic signal design, landscaping, and erosion and

sediment control design. An underground detention system was designed beneath the parking lot to maximize parking on the site and satisfy storm water management requirements dictated by the Virginia Runoff Reduction Method for new developments. The project also included the extension of an existing City right-of-way and roadway to provide vehicular access to the parcel, including roadway drainage and street lighting. Additionally, a new traffic signal, fully integrated with the City's fiber optic system, was designed to tie in at City Center Boulevard.

Tri-Tek Designs EPL North America Headquarters

edited by Kelly Shayne Young

Tri-Tek Engineering has been working with EPL Archives to plan and design its new North America Corporate Headquarters, which is located on two lots spanning 24.9 acres in the Airport Commerce Park, next to the Leesburg Airport, within the Town of Leesburg, VA. The first phase of the project focused on construction of a new 155,000 SF building that will contain office space for corporate operations and industrial/warehouse storage space for EPL's highly specialized biorepository services. The warehouse portion of the building houses state-of-the-art biostorage facilities that serve its client's clinical research requirements.



New EPL Archives North America Headquarters in Leesburg, VA.

A unique project challenge involved the site's proffered condition to present an "office park" aesthetic perspective along Tolbert Lane that faces adjoining residential properties, while at the same time providing industrial-warehouse styled access and loading facilities at the rear of building. This was accomplished by careful coordination of the building architecture with site and streetscape design features.

Tri-Tek's site plan entailed a comprehensive and detailed design of site improvements including the office/warehouse, customer and employee parking facilities, pedestrian trails and sidewalks, landscaping, dry and wet utilities, and perimeter site security features, as well as streetscape improvements and expansion of an onsite pond.

The Tri-Tek team worked closely with EPL staff, Town staff, Powers Brown Architecture, and Utica Construction to accommodate an accelerated project schedule. EPL Archives began moving into its new facility this summer, and planning is already underway for the next phases of site development, namely the construction of a second building that mirrors the initial building and a third building that will be located on an adjoining parcel to support EPL's continued growth.