



LDDI Bridges

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LDDI Bridges

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Virginia Tech

The Via Department of Civil and Environmental Engineering



Greetings from Virginia Tech, where the spring 2020 semester has just concluded and virtual graduation is right around the corner! As you likely know, following spring break, all classes at Virginia Tech migrated to an online format. Over the past two months, faculty have stayed busy rapidly adapting the content of their courses to a remote delivery mode. It would be disingenuous for me to pretend as though there weren't challenges faced along the way, but we were ultimately able to successfully deliver the quality course content for which LDDI is known in a virtual form. This success was perhaps no more evident than this past Saturday when CEE 4274 students delivered their final design project presentations remotely via Zoom. Although the experience may not have been quite the same as the "in person" presentations we all enjoy, the students came through, and the mentors and LDDI Advisory Board members who attended left very impressed. In many ways engineering is about problem solving, and I couldn't be more impressed with the way my faculty colleagues, our graduate teaching assistants, and our students have enthusiastically embraced and overcome the unprecedented challenges thrust upon us.

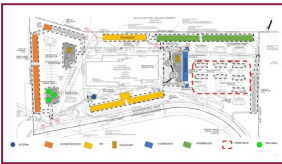
The pandemic wasn't the only aspect of this semester that was unique. After 22 years at Virginia Tech, this spring marked my last in the classroom, and I will soon be entering retirement. While I'm looking forward to a life with less email and more time spent with grandkids, fishing, and guitar playing, the moment is also bittersweet. I will miss working with our talented students in LDDI courses. I will miss recruiting and advising M.S. and Ph.D. graduate students. I will miss working daily with my friend and assistant, Kevin Young. I will miss the camaraderie felt among the faculty in our department. And, of course, I will miss the interaction with all of you. But, as John F. Kennedy stated, "Change is the law of life, and those who look only to the past and present are certain to miss the future." It's now time for me to focus on a future that will look quite different from a past that I will reflect upon fondly and frequently.

Kevin Young will now assume the role of LDDI Coordinator. Kevin has worked alongside me for the past 13 years, and he has been invaluable to the growth and excellence of the LDDI program. Kevin's appointment to this position comes with my full support, as well as that of our new CEE Department Head, Dr. Mark Widdowson and the LDDI Advisory Board. Joining Kevin as Assistant LDDI Coordinator will be Claire White. Claire brings a unique perspective to this role, having been through the LDDI program as a student, and then serving as a graduate teaching assistant in various LDDI courses while pursuing her M.S. degree with me. Prior to joining Virginia Tech in 2016, Claire worked for more than five years in private consulting practice. I have complete confidence in the individual abilities of Kevin and Claire, and for years I have enjoyed watching how effectively they work together as a team. I can assure you that LDDI is in good hands moving forward.

On Friday, June 19th, LDDI will host its first virtual General Meeting. The meeting theme is "The Impact of the COVID-19 Pandemic on the Land Development Industry," and we have a panel of guest speakers from municipalities in NOVA, Hampton Roads, Richmond, and Charlotte, NC, as well as speakers from engineering firms of varying size, operating in different geographic regions. The meeting will also feature student presentations, an LDDI program update, and discussion about the future of LDDI including our brand new Sustainable Land Development M.S. graduate program. We hope to "see" you there!

I owe thanks to many people, including former CEE Department Heads Bill Knocke and Sam Easterling, current Department Head Mark Widdowson, my colleagues Kevin Young and Claire White, the LDDI Advisory Board, and all of you for the belief in the program that you've shown over the past 14+ years. As much as any professional endeavor of which I've been a part, LDDI embodies a grass roots, organic organizational model. The "LDDI constituency" is broad: students, professional consultants, municipal engineers, product vendors, developers, contractors, and beyond. The one common thread that binds us all together is a commitment to improving land development design education at Virginia Tech, and for that commitment I sincerely thank you!

Dr. Randy Dymond, PE, VT LDDI Coordinator



ASCE is renovating its parking lot using low-impact development (LID) practices and to serve as a green stormwater infrastructure demonstration project.

Pennoni Assists ASCE with “Walk the Talk” Project

The American Society of Civil Engineers (ASCE) and its Foundation recognize the importance of sustainable and resilient design and construction for all infrastructure. To demonstrate its leadership and put words into action – Walk the Talk - ASCE is renovating its headquarters parking lot in Reston, VA using low-impact development (LID) practices that support high performance through sustainable methods. The goal is to create a demonstration project to showcase new and emerging sustainable engineering technologies, as well as provide an outdoor classroom to learn about civil engineering’s positive contributions to the environment, infrastructure, and sustainability. Because of the firm’s long-standing support of ASCE and its programs, Pennoni was asked to assist in the project development and to work with Fairfax County to obtain the necessary approvals.

When it became necessary to make some significant improvements to its parking lot, the leadership at ASCE thought it was time to Walk the Talk and showcase the various products available that can promote sustainable infrastructure. Due to the association ASCE has with the Envision

rating system, there was a desire to plan, design, and construct the parking lot renovations to meet the goals of Envision – a consistent, consensus-based framework for assessing sustainability and resilience in infrastructure.

ASCE called on the many vendors and suppliers of low impact development products and materials and received a long list of quality options to showcase on the site. Pennoni has worked extensively with the consultant team to determine the best location and options for the various products, some of which include Contech’s Filtera Bioretention and Bioscape vault; ACF FocalPoint biofilter system, PowerLock pavers, and Ecoraster pavers; and National Ready-Mixed Concrete Association.

Pennoni continues to work with the consultant team and ASCE staff to finalize the location of each product, prepare the construction documents and specifications, coordinate with the more than a dozen product suppliers, provide on-site observation services during construction, and ensure the criteria of the Envision program are met during the various phases of development.



Located on the site of the old C.S. Monroe Building, The North Star School is expected to open in fall 2021.

Renderings by Stantec Architecture

J2 Brings Another Successful School Development to Loudoun County

J2 is the lead site/civil design engineer for the one-story, 81,500-SF C.S. Monroe Technology Center demolition and its 94,000-SF two-story rebuild, The North Star School in Leesburg, VA. The team concluded that building a new, two-story building is more desirable for the combined educational facility than providing renovations to the existing building. Demolition concluded in Spring 2020. The North Star School will replace C.S. Monroe and host the Loudoun County Public Schools (LCPS) Alternative Education Program. The program offers middle and high school students a personalized environment based on smaller class sizes, an alternative schedule, and varied instructional approaches. The North Star School will also continue to house the prior C.S. Monroe LCPS Adult Education Program.

The North Star School presents several unique challenges, including location, residential traffic conflicts, parking lot expansion, and innovative stormwater management and BMP solutions. The J2-managed zoning application for the 10-acre site locks in the special exception for site use in the single-family residential zone district.

Additionally, residential location concerns include landscape buffers and street parking. J2 site plans increase the buffer obligation from 25 feet to 50 to protect two residential neighborhoods and a park and ample parking, though most students commute via bus. These measures ensure compatibility with the existing uses and negate conflict between the neighborhoods and the new pedestrian and vehicular traffic.

Project highlights include site design and preparation of construction documents, transportation design and traffic analysis, utility coordination, project management, and innovative stormwater management and BMP solutions. Additionally, low-impact development (LID) features in the parking lot include bio-filters, bio-retention basins, and ENERGY STAR® compliant LED lighting.

J2 currently holds the on-call civil contract for LCPS and the on-call site/civil contract for Loudoun County Department of Transportation and Capital Infrastructure (DTCI). The school, slated to open for the 2021/2022 academic year, will hold 525 students.

LDDI Graduates in the Industry: Amanda Fedorchak

Timmons Group Project Engineer III

Amanda Fedorchak finished her undergraduate degree in 2014 and her master's in 2016, both in civil and environmental engineering at Virginia Tech. Hailing from Flemington, NJ, she settled 400 miles away at Timmons Group, currently serving as Project Engineer III in the firm's Virginia Beach, VA office.

While a student, Amanda took advantage of the LDDI curriculum, namely the Introduction to Land Development and Land Development Design courses. "The design course provided great preparation for the professional world," explains Amanda. "It changed my way of thinking because there was no 'correct' answer; there were multiple ways to design a site and it was up to the group to decide on the best solution." The LDDI courses allowed Fedorchak to get a glimpse of the industry. "The classes are created to set you up to be the most prepared for the working world. LDDI graduates have an easier time jumping straight into the job with much less hesitation."

Transitioning from student to practicing engineer has required Amanda to be versatile and to adapt to an ever-evolving industry. The challenges of working in a

coastal region have taught her to be creative and to collaborate with coworkers to find workable solutions. During her time at Timmons, Amanda has worked on a variety of projects, from industrial warehouses to the Norfolk Botanical Gardens NATO Tower to stormwater flooding remediation projects. "The first project I ever worked on with Timmons was a large residential subdivision in Toano, VA," recalls Fedorchak. "The property had crazy terrain (over 100 feet of change!) which made balancing pipe conflicts and depths a challenge for a new grad. The project also had, at any point in time, four people working on it so I had to learn how to work in groups in a professional setting."

While Amanda typically enjoys puzzling and playing games with family and friends, she and her husband have been preoccupied lately with the recent birth of their daughter, the couple's first child! Not the typical LDDI graduate, Amanda is the first to be featured who has taken the Land Development Design course, served as the class Teaching Assistant, and returned as a mentor for the class. "It's such a great course for students and I am so glad to have gotten to see all sides."



"I would encourage LDDI students to be creative! This field is definitely about problem solving, and being able to come up with innovative solutions is something that will get you far." - Amanda Fedorchak, Timmons Group Project Engineer III

Bohler Helps Transform Old Parking Lot into New Fields at RFK Stadium

The former parking lot of RFK Stadium has traded tailgaters for playing fields. With the first phase of Events DC's 190-acre redevelopment now complete, The Fields at RFK Campus is bringing long-awaited community facilities to the area, while accomplishing something no one thought was possible – successfully bringing the project from conceptual layout to completion in a mere 12 months.

With both design and construction taking place simultaneously, Bohler began by helping Events DC and the project team establish an effective permitting strategy that ensured permits were obtained as needed for construction. The team maintained open lines of communication with all project team members and provided a quick turnaround on civil engineering design documents. In remaining flexible with field changes, Bohler's team positioned Events DC to maintain forward momentum and fast-track the schedule.

Bohler's work also included creative grading that ultimately reduced project costs. The design maintained the existing grades within the parking lot and added fill to construct the turf fields on top of the existing asphalt. An underdrain system was added to help mitigate drainage concerns. The team's design also incorporated seven bioretention facilities that connect to a subgrade system, preventing runoff from entering the nearby Anacostia River.

The Fields is the first phase of this high-profile redevelopment, which includes three lighted, artificial turf soccer fields, totaling 217,000 SF of public recreational space on a 27-acre site of the campus. The project also incorporates bleacher seating, a picnic area, playground, and a 6,000-SF pavilion with various community amenities.

Additional phases are anticipated for the remainder of the campus redevelopment, which will further revitalize the area and return it to its former glory.



Officially available for community use since June 2019, The Fields at RFK Campus marks the first completed phase of the campus redevelopment project and will provide residents and visitors with new and vibrant recreation options within D.C.

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Townes Site Engineering Provides Services for Cambridge Square Apartments

Located just off Mechanicsville Turnpike in Hanover County, VA, the new Cambridge Square Apartment development consists of five buildings, varying from four to five stories, and 207 apartments. Townes Site Engineering, including Virginia Tech LDDI Alumnus Zack Wilkins (class of 2008) as Project Manager, provided site engineering, surveying, environmental, and geotechnical services.



Residents of Hanover's new Cambridge Square Apartments enjoy upgraded on-site amenities and close proximity to the Mechanicsville Turnpike and Lee Davis Road.

Cambridge Square Apartments compelled the largest ever multi-family rezoning in Hanover County at the time of Board approval in October 2017. Leasing began in October 2019, with residents moving in by mid-December.

The 22-acre site's steep topography provided challenges; retaining walls were utilized and approximately nine acres were designated as a Resource Protection Area (RPA). Water quality treatment was provided by utilizing level spreaders promoting sheet flow into the RPA.

The development included 1,500 LF of connector road design on Brandy Run Drive, and three underground stormwater management detention systems were used to detain onsite and offsite flows. The team was also required to perform a downstream flood analysis to determine the 100-year storm impacts. The complex's Central Lawn Area was a significant focus containing trails, fire pits, grilling stations, a pool, and a playground.

SLDC President Named 2020 CEE Outstanding Senior

Since its inception in 2008, the Sustainable Land Development Club (SLDC) has grown and benefited from the leadership of some truly remarkable students, and the past two years have been no exception with senior Lucy Travers serving as the club's president. Over this time, Lucy has been an invaluable resource to SLDC Faculty Advisor Kevin Young, assisting him with the organization and promotion of club activities and philanthropy, and even coordinating directly with industry professionals to visit campus for club events. Recently, Lucy was named as the Class of 2020 CEE Outstanding Senior, qualifying her for consideration as the Class of 2020 College of Engineering Outstanding Senior.

Of her involvement with LDDI, Lucy states, "I first became involved with the SLDC during my sophomore year at Virginia Tech. I was unsure which area in the CEE program would best suit my broad interests and curiosity. I started adding land development classes to my course schedule and I discovered how many unique opportunities are housed within this program. I think that the professional networking opportunities provided through the SLDC are unlike those for any other organization in VT CEE or Virginia Tech at large."

While being named 2020 CEE Outstanding Senior may be her most prestigious academic honor to date, Lucy is no stranger to being recognized for her efforts inside and outside of the classroom and she is a two-time recipient of LDDI's "Hokie Stone" award, given annually to the LDDI student described as "A team player whose leadership, enthusiasm, and personality elevates the performance of all those around him or her." Please join us in congratulating Lucy for these well-deserved accolades, and thanking her for her contributions to the SLDC over the past two years!



Travers (center) with CEE 4274 teammates Lauren Epps and Nick Gulas following their presentation at the 2020 LDDI winter meeting in NOVA