



LDDI Bridges

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January 2021

Volume 15, Issue 1

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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



New Year's greetings from LDDI and Virginia Tech. I hope this message finds you and your loved ones enjoying a wonderful start to the new year. It goes without saying that 2020 challenged us in ways that none of us could have envisioned a year ago. While there are still daunting challenges ahead, there is much reason for optimism in 2021 and we are excitedly looking forward to the start of the spring semester in just a couple of weeks. In many ways, the fall semester was a trial by fire. Professors across Virginia Tech and the country were forced to adapt their instructional materials to an online delivery modality. But, for LDDI, the need to adapt and thrive in an online environment didn't end at the door of the virtual classroom. Events such as our Career Night Mixer and after-hours student club functions also became virtual. It was a learning experience to be sure, but one that we feel ultimately resulted in a successful semester across all facets of the LDDI program. Further, the lessons learned last fall will undoubtedly benefit our efforts as we navigate a largely virtual spring semester; one that we hope serves as the bridge to our return to in-person instruction. LDDI courses remain incredibly popular, and this spring semester we are proud to offer two sections of our junior-level Introduction to Land Development Design course, as well as three, 4000-level courses: Land Development Design, Municipal Engineering, and Advanced Land Development Design. These courses represent a combined enrollment of more than 220 Virginia Tech CEE students.

I hope you share in our excitement about the coming spring semester, and that this and future newsletters help to keep you engaged with LDDI happenings. Best wishes to you and your organization for a prosperous 2021!

Kevin D. Young, PE, M. ASCE, VT LDDI Coordinator

Spring Semester Events

With the holiday season now behind us, and the start of the spring semester looming just around the corner, we would like to bring to your attention some events already on the upcoming LDDI calendar.

- Tuesday, January 19: The spring semester at Virginia Tech begins, with the first LDDI course meeting of 2021 being a 9:30 am section our junior-level course.
- Tuesday, February 23: LDDI's Career Fair Mixer, like in the fall semester, will be held online via the platform *Remo*. Information will be forthcoming, and representatives from all LDDI sponsoring organizations are invited to attend.
- Wednesday, February 24: Virginia Tech CEE Career Fair
- Friday, February 12th and Friday, March 19th: LDDI will host lunchtime information sessions similar to those held last fall. These sessions will feature program updates and guest speakers, as well as an opportunity for attendees to ask questions.
- April: At a date yet to be determined in April, LDDI will host its annual spring meeting. Typically held in Charlotte, this spring's meeting is currently being planned as a virtual event. Keep a lookout for a formal meeting invitation in March.

If you are interested in attending and/or participating in any of these events, questions may be directed to Kevin Young (keyoung@vt.edu) or Claire White (cmwhite@vt.edu).

LDDI Lunchtime Session

We invite you to join us, via Zoom, for lunch on Friday, December 4th from 12:30-1:30pm

- Final fall semester program update
- Look ahead to spring 2021 semester
- Guest presentation: Dr. Kevin Boyle, Willis Blackwood Director of Virginia Tech's Program in Real Estate
- Open Q&A

No RSVP or pre-registration is required!
Join by simply clicking [HERE](#).
Meeting password: Dec20LDDI!

The spring 2021 semester will feature lunchtime update sessions similar to those held last fall.



Under contract through a Public Private Partnership (P3) agreement, Dewberry has provided and continues to lend its utility engineering services to numerous projects across the Appalachian State University campus.

Dewberry Provides Services for Appalachian State University Steam Projects

Dewberry has provided utility engineering services at Appalachian State University (ASU) under three project phases.

Phase 1 installed an 8" direct-buried high-pressure steam and 4" direct-buried condensate system between Gardner/Coltrane Halls and a manhole near the north entrance to Kidd Brewer Stadium. The new steam system provided continuous steam service to the Dwight W. Quinn Recreation Center during the demolition of Gardner Hall and Coltrane Hall; it also allows eventual reverse-flow across the Stadium Lot, while providing service to the new Building 100 and Building 200.

The new steam system was 960 linear feet in length, utilized three new precast concrete manhole structures, and extended along Jack Branch Drive. The project was unique in that it required extensive design coordination with two residence halls, Building 100 and Building 200, being designed and provided using the Public Private Partnership (P3) funding mechanism, the first use of this method at Appalachian State University. Dewberry provided advanced planning, mechanical, electrical, civil and structural professional design, and

construction services; construction was completed between May 2019 and November 2019.

Phase 2 was performed under contract through the P3 agreement. Dewberry provided utility engineering services for the installation of 1025 linear feet of new campus loop high-pressure steam and pumped condensate between the north entrance to Kidd Brewer Stadium and Newland Hall. The new steam system utilized direct-buried 8" high-pressure steam and 4" pumped condensate and replaced aged 6" steam and 4" condensate. Phase 2 was constructed between April 2020 and December 2020.

Dewberry is currently providing utility engineering services in Phase 3 for the demolition of 400 linear feet of campus loop steam service and installation of 170 linear feet of new branch line steam service to Building 400 at ASU. The new steam system utilizes direct-buried 4" high-pressure steam and 2" pumped condensate. One new cast-in-place manhole will intercept the existing arched-top box conduit system and will contain valves for future campus loop expansion. Construction started December 2020 and extends through April 2021.



Located in downtown Raleigh, Smoky Hollow is revitalizing an existing vibrant neighborhood into a distinctive urban destination.

WithersRavenel Brings Revitalization Efforts to Downtown Raleigh

Smoky Hollow is an urban infill mixed-use project currently under construction in Raleigh, NC's Downtown District. It features a twelve-story building with a 50,000 SF retail grocery, ancillary retail use, and 445 apartment dwellings.

WithersRavenel provided comprehensive land development services for the project, including environmental assessment/remediation, survey, land planning, landscape architecture, and civil engineering. The project team led the site plan approval and permitting processes with the City of Raleigh. Phase I involved the construction of 417 apartment homes above downtown Raleigh's first Publix grocery store and approximately 5,000 SF of retail space. Phase II involves the construction of office space, structured parking, more apartments, and a pedestrian promenade surrounded by 40,000 SF of street-level restaurants and retail. Phase I of the project is complete, while Phase II is

nearing completion. Phase III will feature additional multi-use development.

The scope of the project included the re-alignment of the City's street grid, which created new land blocks, in response to an adjacent bridge replacement project by the North Carolina Department of Transportation. The grid restoration marks a reversal of the 1960s "urban renewal" effort for this part of Raleigh. Smoky Hollow is the first major project within the City of Raleigh Peace Street Master Plan. The project also involved the installation of a 4" domestic meter and the construction of an underground vault for Duke Energy electrical transformers and switch gear.

WithersRavenel and project team members have been honored with a 2020 State of Downtown Imprint Award from the Downtown Raleigh Alliance for Phase I of Smoky Hollow.

LDDI Graduates in the Industry: Matthew Koop

Bohler Engineering Design Engineer

Hailing from New Jersey, former Hokie Matthew Koop landed in Washington, D.C. after graduating from Virginia Tech in May 2019. He began his career at Bohler Engineering shortly following graduation and currently serves as one of the firm's design engineers.

During his time at Virginia Tech, Matthew took advantage of LDDI's course offerings, namely Intro to Land Development, Sustainable Land Development, and Land Development Design. "These courses sparked my interest in the land development industry and helped me develop a strong base of technical skills," he notes. "I have interviewed sophomores through seniors at other universities; very few truly understand the scope of work performed in this industry compared to the students that are fortunate enough to pass through the LDDI program."

Koop's navigation from student to practitioner was not without challenges. "Real world problems combine many more variables than do 'textbook problems,' and what may seem like the best engineering

solution may not be best solution from the financial perspective of the client or the construction means and methods perspective of the contractor," explains Koop. "Solving problems in practice always involves a collaborative, team-oriented approach." Redeveloping parking lots, abandoned buildings, and outdated industrial complexes into mixed-use developments, office spaces, and luxury apartment projects in the nation's capital has been extremely rewarding for Matthew. "A successful engineer brings both strong technical abilities and 'soft' skills to each project," notes Koop. "It is essential to be a strong communicator in an industry that involves so many internal and external team members."

While he misses the campus community and Virginia Tech football games, Matthew is still very much part of the Hokie family, as he has served as an industry mentor for LDDI's senior design course. He enjoys cycling and golfing in his free time and is currently training for a triathlon!



"Land Development is a very competitive yet rewarding industry. The projects and professional relationships keep every day interesting and different from the day before."

- Matthew Koop, Bohler Engineering Design Engineer

christopher Leads Data Center to Record-Breaking Site Plan Approval

christopher is proud to have provided services for one of Quality Technology Services (QTS) Data Centers' latest developments in Northern Virginia, which reached the Topping Out milestone in the fall of 2020. The project reached Topping Out in a record-breaking five months, a milestone that was celebrated at a Topping Out party held by HITT Contracting, the general contractor, in October. Led by christopher Senior Associate Greg Drew, P.E., the project team also obtained site plan approvals faster than any other project in Loudoun County, VA history.

Other notable facts about the project include:

- More than 6,400 lines of conduit pipe installed
- 122,400 tons of stone imported, a record for Luck Stone Quarry in Chantilly
- 450 tons of rebar installed
- Over 3,300 pounds of steel erected
- Approximately 38,000 temperatures taken to ensure safety on the job site
- As of the Topping Out, 110,000 man hours put into the project

This marks christopher's eighth project with QTS Data Centers. The site is approximately 27.6 acres and will be developed into a multi-building data center campus, with proposed development including two 2-story 42-megawatt buildings each with an approximate 160,000 SF building footprint and exterior generator yard. The survey team performed ALTA surveys, boundary surveying and construction stakeout, while the Suburban Land Division provided a feasibility assessment, plan and permit preparation and processing, site layouts, and stormwater management. Additionally, the Planning and Landscape Architecture Division was engaged to provide landscape architecture services.

christopher has a proven track record of working closely with various data center/mission critical facility developers in Loudoun County, Prince William County, and throughout the Northern Virginia region. christopher understands the unique needs of our clients and works to provide a project that is both innovative and constructible.



christopher consultants led a project team that achieved site plan approval in record-breaking time, as well as Topping Out in a mere five months, on one of QTS Data Centers' latest developments in Northern Virginia.

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An Update About the New Master of Science in Sustainable Land Development

by Dr. Tripp Shealy, Assistant Professor, VT CEE

To extend the number of students ready for careers in land development, and in collaboration with LDDI, the Charles E. Via, Jr. Department of Civil and Environmental Engineering approved a new Master of Science program in Sustainable Land Development in Spring 2020. The program is excited to welcome its first cohort of graduate students in Fall 2021!

The goal in establishing this new graduate program is to become recognized nationally for our students advancing sustainable land development. We see great opportunity for growth through this graduate program. No similar programs exist at the graduate level in civil engineering across the country. Similar to our undergraduate courses, LDDI industry partners will play a critical support role in the graduate program. Through core courses, LDDI industry members will help us introduce professional and industry norms and standards, while providing students with valuable mentorship.

We recognize sustainable land development involves knowledge and skills that span multiple disciplines within and outside of civil and environmental engineering, and have designed the Master's degree to foster this type of interdisciplinary thinking. The program is unique within the Department, and nationally, because it opens up opportunities for students to explore how sustainability, planning, and engineering design work together. Students will graduate ready to contribute to conceptual design, comprehensive planning, grading, erosion and sediment control, and stormwater management processes. They will also be able to articulate to clients the effects of particular types of development on transportation systems, utility systems, social-economic systems, and environmental systems. Through this advanced degree, students will be exposed to unique projects and case studies, which will help them foresee the potential barriers to sustainable land development and equip them with tools to help overcome these barriers.

We intend for the number of graduate courses related to sustainable land development and the flexibility of these course offerings at Virginia Tech to grow. The first initiative of this growth is through an online graduate certificate in Sustainable Land Development. We are presently in the initial phases of creating an online certificate related to sustainable land development. This online certificate is intended for professionals wanting to learn more about the evolving practice of sustainability applied to land development and how the practice of land development can become even more responsive to the ever-changing demands of society.

The certificate will include four online courses through Virginia Tech. The courses will be professionally produced with support from the College of Engineering. We are outlining the course offerings, course objectives, case studies, and projects for this certificate now. Courses will likely include modified versions of our current successful graduate courses, *Advanced Sustainable Land Development* and *Advanced Municipal Engineering*. We are also developing a new course called *Infrastructure Development Innovation*. Case studies for this course will include development around Charlotte's light rail, a road diet and urban trail in Indianapolis, green infrastructure for stormwater management in Cincinnati, and Raleigh's nearly two-decade Hillsborough Street Renewal project.

LDDI's industry partners are a big reason why the College is willing to support the professional production of an online certificate program in Sustainable Land Development. The Department and College have asked us to collect feedback from *you* about this certificate. We will soon be distributing an online survey soliciting your input about the certificate. We want to know, for example, how your organization might use this certificate program to support professional development for current employees and how you might view someone with this certificate on their resume. The certificate will require participants to produce real-world products that can be displayed in a portfolio.

Details about the sustainable land development certificate are still evolving, and now is the time to have your voice heard. We would love to talk with you about the creation of this certificate and how you envision this certificate helping your company and employees grow. If you are interested in providing your thoughts about the certificate program, please contact me at tshealy@vt.edu.