VirginiaTech | LDDI Bridges

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LDDI Bridges
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New Year's greetings from Blacksburg! I hope this message finds you and your organization happy and healthy and looking forward to a prosperous 2015. As you read this newsletter, we are only days away from the start of the spring 2015 semester. This semester will find LDDI offering three courses with a combined enrollment of more than 140 students, including our senior design course which is at its full capacity of 40 students!

On January 9th, LDDI will host its annual winter meeting. As we have done for a number of years, the winter meeting is being held in northern Virginia, with Arlington serving as this year's "host city." While these meetings serve to bring our industry partners up to speed on the current state of affairs within the LDDI program and goals for the coming year, they also feature guest speakers discussing current topics in the land development industry. This year's meeting topic will be urban redevelopment in Northern Virginia, and will feature speakers from Arlington County, The Shooshan Company, and Clark Construction. Attendees will be awarded two PDH continuing education credits.

I hope you enjoy reading this newsletter and that it serves to keep you informed about the LDDI program. As LDDI enters its ninth year of existence, I wish to thank all of those who have contributed to our success. Best wishes for a fantastic 2015!

Dr. Randy Dymond, PE, VT LDDI Coordinator

Get Involved in 2015!

by Kevin Young

Since its inception, LDDI has embraced an organic growth model whose success relies on your belief and participation in the program. While the financial support of our individual donors and corporate sponsors are critical to the program's long-term sustainability, we also need your contributions in the classroom, at practitioner involvement events, as student mentors, and in the professional world expanding awareness of LDDI among your industry colleagues. As a new year begins, we ask you to please consider giving of your talents by getting involved with one of LDDI's four standing committees.

LDDI's Course and Curriculum Enhancement Committee (CCEC) focuses on continually improving, expanding, and maintaining our undergraduate curriculum. The committee's primary objective is to prepare students for a career in the land development design profession. To become involved with the CCEC, please contact Cameron Palmore (cpalmore@balzer.cc).

LDDI's Practitioner Involvement Committee (PIC) focuses on developing a strong and sustainable relationship between all sectors of the land development profession and students at Virginia Tech. This involvement includes student mentoring, providing networking opportunities, and support for the Sustainable Land Development Club. To become involved with the PIC, please contact Arch Marston (arch.marston@aesva.com).

The major objectives of LDDI's Outreach Committee (OC) are: 1) to promote the field of land development engineering to students; and 2) to promote the Land Development Design Initiative to land development professionals and encourage their participation and support of the program. The OC also plays a critical role in LDDI's annual fundraising campaign and its two annual meetings. To get involved with the OC, please contact Ginger Greunke (ggreunke@bohlereng.com) or Charlie Yowell (cyowell@bohlereng.com).

The Research and Development Committee's (RDC) primary objective is to oversee efforts to conduct and administer independent research efforts 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. To become involved with the RDC, please contact Clay Hodges (ch72@vt.edu) or James Patteson (james.patteson@fairfaxcounty.gov).

Jansen Land Consulting is providing services to transform the area surrounding Shady Grove Metro Station into a vibrant, mixed-use, transit oriented community.

Jansen Land Consulting Helps Transform Industrial Park into Vibrant Mixed-Use Development

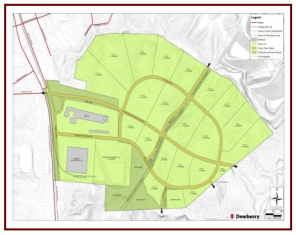
edited by Kelly Shayne Young

Located in Rockville, MD, at the terminus of the Washington Metropolitan Area Transit Authority's (WMATA) Metro Red Line, Shady Grove Station will be the centerpiece of Montgomery County, MD's Smart Growth Initiative. In a joint public/private partnership, EYA (contract purchaser) has teamed with Montgomery County to transform the County's 90-acre industrial Service Park (CSP) into a vibrant, mixed-use, transit oriented development. Jansen Land Consulting (JLC) is assisting EYA with entitlement and development services for this community, which will consist of more than 1,400 multifamily units, 750 townhomes, 40,000 square feet of retail, a public library, and 130,000 square feet of office space.

A number of improvements are required to convert the existing park into the vibrant community envisioned, including the reconstruction of Crabbs Branch Way from a four lane collector road into an urban boulevard complete with center median and street parking. Utility upgrades include the relocation of a fiber hub facility, construction of a natural gas pressure regulator, relocation of an existing primary electric main, relocation of a 16" watermain, and the installation of a new 15" outfall sewer. There will also be a number of pedestrian upgrades which will allow for better connectivity to WMATA's Shady Grove Metro Station.

Multijurisdictional coordination between WMATA, Montgomery County, Washington Suburban Sanitary Commission and CSX has been critical in keeping the project moving forward. In addition, only half of the existing park uses (Westside) have been relocated, meaning access to the Eastside will need to be maintained during the reconstruction of Crabbs Branch Way. Such access will also include providing uninterrupted water and sewer service as well as electric and gas service to numerous County facilities. With this in mind, an elaborate traffic control plan was devised enabling the Eastside to operate with minimal interruption while roadway and utility upgrades are made.

While construction isn't slated to start until the spring of 2015, as Development Manager, JLC has spent the last year overseeing the final entitlement of the CSP and final engineering design of both the Westside and public infrastructure components of the project. JLC will transition to the field once construction begins.



Commerce Station Park, located in Mecklenburg County, NC, promotes economic growth and development through regional cooperation.

Dewberry Provides Services for Regional Industrial Park Development

edited by Kelly Shayne Young

In 2009, Forbes Magazine named the Town of Huntersville, NC, the second most popular destination to move to in the United States. Immediately north of Charlotte, the Town's location is ideal for those who wish to reside close to their places of business.

Four years earlier, in 2005, the Towns of Huntersville, Cornelius, and Davidson entered into a unique joint venture and aimed to develop an industrial business park within Mecklenburg County; the goal was to maximize local employment opportunities and allow sharing of the tax base between all three communities. Commerce Station Park is the result of that joint venture.

Dewberry is assisting the Town of Huntersville and the Lake Norman Regional Economic Development Corporation (LNREDC) with the development of the proposed 330-acre Commerce Station Park. Dewberry has previously provided a conceptual master plan layout for the industrial park, along with preliminary engineering designs and surveying services for the proposed roads within the industrial park. Dewberry coordinated the conceptual master plan with the Town of Huntersville, with the LNREDC, and with the local and state departments of transportation.

Dewberry is currently providing final design for the Phase I road extension (approximately 2,300 linear feet) and the Phase I waterline extension (approximately 3,200 linear feet). The final design includes surveying and engineering services (such as road design, utilities design, stormdrain and stormwater management design, E&SC design and permitting, tree surveys, construction staking, etc.) for the industrial park.

Dewberry will continue to assist the Town of Huntersville and the LNREDC as needed by producing exhibits and concept plans for companies who express interest in setting up operations in Commerce Station Park. Construction is anticipated to begin in the spring of 2015.

Maser Consulting Provides Services for Record-Breaking Ride at Six Flags

edited by Kelly Shayne Young

From the days of the vaudevillian side shows to the iconic Coney Island parachute jump, man has pushed the limits of height and speed for thrill seekers. But behind the scenes of every thrill is serious engineering. In 2005, Six Flags Great Adventure theme park in Jackson, NJ, introduced the Kingda Ka roller coaster, which remains the tallest roller coaster (456') in the world and the fastest (128mph) in North America.

In 2014, Six Flags opened Zumanjaro: Drop of Doom—the tallest drop ride in the world. At 415' tall, the Zumanjaro drop track was designed to fit on the face of the existing steel tower that supports the vertical loop of the Kingda Ka tower. Riders ascend to the top of the tower in three gondolas in less than 30 seconds, then the gondolas descend simultaneously, dropping independently at up to 90 mph.

Maser Consulting P.A. has provided engineering consultation for all of Six Flags' large coasters over the past 20 years and was called upon to provide services for this project, including design of the foundation supports for the new tower elements, ride elements, and various other ride-related issues.

Originally consisting of three main columns with more than 50 horizontal and diagonal steel pipes forming a triangular truss structure, the Kingda Ka tower supports forces induced by the roller coaster cars, as well as environmental loads, including wind, snow, ice and earthquake. Three, massive 55' x 55' x 8' thick concrete footings were sized to safely distribute the bearing pressure onto the existing soil and contain enough deadweight to resist the overtopping loads. The new drop track required 36' x 36' x 5' thick concrete footings to support six new diagonal columns added around the tower's base. In total, the Zumanjaro track structure resulted in the addition of 226,226 lbs. of structural steel reinforcements to the original tower.

Maser Consulting P.A. has provided consultation for numerous rides at Six Flags Great Adventure theme park in Jackson, NJ, including the new record-breaking Zumanjaro: Drop of Doom, the tallest drop ride in the world.

LDDI Graduates in the Industry: Dustin Dorph

Brookfield Residential Development Coordinator

by Kelly Shayne Young

Hailing from Oak Ridge, NJ, former Hokie Dustin Dorph landed in Fairfax, VA, after graduating from Virginia Tech in May 2013. He first accepted an internship with Brookfield Residential and now serves as a development coordinator in the company's Northern Virginia office.

While a student, Dustin took advantage of LDDI's course offerings, namely Land Development Design and Advanced Land Development Design. "These courses introduced me to structures and design concepts I would later see in the field," he explains. "LDDI's curriculum is designed to directly prepare students for what they will encounter in their land development careers." In addition to the courses offered, Dorph believes that LDDI's strength lies in its consultant involvement; this aspect of the program provides students with tremendous opportunities to make connections within the industry, which can lead to internships and job offers.

Although he has successfully transitioned from college student to practitioner, Dustin has realized that he is continuously learning. After completing work on numerous subdivisions in Virginia and Delaware, he began working on the Goose Creek Preserve in Ashburn. This 163.4-acre, 492-unit subdivision is a mix of SFD and townhomes on the edge of the natural preservation area bordering Goose Creek. "Brookfield became the managing member of the project partnership midway through the development of the site," says Dorph. "I was directly involved in the management transfer and have also been involved in all aspects of entitlements, design coordination, site construction management, dry utility coordination, HOA representation, and coordination of proffered offsite improvements."

Dustin may not be quite as busy now as he was as a student (SGA President, Class of 2013 Vice President, Orientation Leader, Hokie Camp Counselor, etc.), and he makes the most of his newfound free time by attending NASCAR races, listening to music, and exercising.

"LDDI is the best way for Virginia Tech students to pursue a career in land development. The program opens doors in areas outside of engineering, as well, which allows students to consider taking an unconventional path." - Dustin Dorph, Brookfield Residential Development Coordinator

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LDDI Bridges January 2015

LDDI Ramps up Research Efforts

by Kevin Young

A graduate student inspects a flow sensor in a Blacksburg stormwater pipe.

Over its almost nine-year history, LDDI's primary focus has been the continual improvement of undergraduate land development design education at Virginia Tech. The unrelenting commitment to this goal has resulted in the most comprehensive land development design curriculum in the country, one that now boasts a total of six individual course offerings.

While undergraduate education will always remain the priority as LDDI moves forward, over the past year and a half, LDDI as an organization has become increasingly involved in research activities. LDDI's research efforts help to provide exposure to the program as a whole, provide funding for master's and Ph.D. students, and help to advance our undergraduate education mission by keeping the organization's finger on the pulse of a dynamic industry. LDDI Advisory Board Members James Patteson (Fairfax County) and Clay Hodges (Altizer, Hodges, Varney, Inc.) provide steering for the Research and Development Committee, and drafted its mission statement during the summer of 2013. Patteson explains that "the Committee and its efforts will direct much needed scientifically based research to better ensure the performance and long-term sustainability of evolving land development policies and design strategies."

The Baker Environmental Hydraulics Laboratory is a premier research facility at Virginia Tech and serves as a tremendous resource for hydraulic research activities.

Thus far, a majority of LDDI's research activities have been in the realm of urban stormwater. With Virginia adopting new stormwater management regulations in July 2014 – regulations that greatly influence the land development industry - this research focus compliments LDDI's overriding goal of improving land development education. Recently, LDDI researchers, working with VT CEE faculty at The Occoquan Watershed Monitoring Laboratory in Manassas, completed a performance evaluation of various types of stormwater Best Management Practices (BMPs) installed on three different sites in Fairfax County. This study involved evaluating the pollutant removal and runoff volume reduction performance of the practices, as well as constructing calibrated hydraulic models of the BMP systems. Currently, LDDI, through the Via Department of Civil & Environmental Engineering, holds funded research contracts with the Town of Blacksburg, the City of Roanoke, and the Virginia Department of Transportation (VDOT). Ongoing work with the Town of Blacksburg and the City of Roanoke involves developing innovative technologies and strategies to assist the localities in better managing their assets, complying with Municipal Separate Storm Sewer System (MS4) and other legislative requirements, and developing watershed master plans. Previous and ongoing efforts with VDOT will yield a BMP Manual of Practice tailored specifically to linear projects, accompanied by web-based BMP selection software.

Another emerging research area within LDDI is that of laboratory evaluation of remote flow sensing devices deployed in field applications. Well-informed infrastructure management decisions are largely dependent on the quality of hydrologic and hydraulic measurements, and while numerous technologies for flow quantification are available, information on their general applicability for stormwater measurements is frequently lacking. We are also working on unfunded projects dealing with stormwater impacts of McMansionization in Fairfax County and a national study of stormwater utilities in conjunction with Western Kentucky University.

If you or others in your organization have issues that you feel impact our industry and are in need of university-level research to improve the body of knowledge related to those issues, we invite you to contact James (james.patteson@fairfaxcounty.gov) or Clay (ch72@vt.edu).