The Land Development Design Initiative (LDDI) 2011 Annual Report



LAND DEVELOPMENT DESIGN INITIATIVE

Program Coordinator's Message

The 2010-2011 academic year at Virginia Tech marked the five year anniversary of LDDI. As the old saying goes, "time flies when you're having fun." Those of us involved with LDDI are definitely having fun and getting a lot of enjoyment and satisfaction from witnessing the program's continued growth. From quite humble beginnings, LDDI is now a nationally recognized leader in undergraduate land development design education. This year, through the combined efforts of LDDI and the Via Department of Civil & Environmental Engineering, a total of seven land development course offerings were made available to Virginia Tech students. Each one of these courses included substantial input from industry professionals in developing course materials, presenting as guest speakers, mentoring student teams, or even acting as instructors. Outside of the classroom, LDDI continued its tradition of hosting frequent social events through which students and industry professionals interact and build professional relationships. With support from LDDI faculty and practitioners, the Sustainable Land Development Club (SLDC) continues to carve its niche among CEE students. This year the club completed a



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service project and went on two out-of-town field trips to visit interesting land development projects and active construction sites. Finally, LDDI administered a total of seven \$2,000 Bell Scholarships to students with a focused interest in land development design.

As you read this annual report, I hope you begin to sense the excitement that LDDI is generating among Virginia Tech CEE students. I also hope that you gain an appreciation for the value and necessity of our corporate sponsors and individual donors. You're probably aware of the continued cuts to state support of higher education and potential impact on undergraduate education. At the same time, these difficult economic times and the competitive nature of the land development industry increases the need for better educated and prepared graduates. It is with the utmost sincerity that I say thank you to those firms and individuals who have provided financial support to LDDI over the past year.

As always, I welcome your feedback on how we can continue to improve LDDI and ensure that Virginia Tech remains the leader in undergraduate land development design education.

Best regards,

Sandy Grand

Dr. Randy Dymond, PE

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Platinum Corporate Sponsors

In 2010-11, Platinum Corporate Sponsors contributed over \$45,000 to LDDI. The following section highlights each of these corporate sponsors and their involvement with LDDI.

AES Consulting Engineers

AES Consulting Engineers was founded in 1980, and has since grown to have four offices in central and eastern Virginia. They offer services in Civil Site Design, Landscape Architecture, Surveying, Land Planning, and Public Utilities Design.

AES Consulting Engineers has been a sponsor of LDDI since 2007. Mark Richardson, Office Manager of the Williamsburg office, is currently serving as the Practitioner Involvement Committee Chair on the LDDI Advisory Board.





Balzer and Associates, Inc.

Balzer and Associates, Inc. was founded in 1967, and currently has four offices in central and western Virginia. They offer multi-disciplinary services including engineering, architecture, land surveying, and landscape architecture.

Balzer and Associates has been a sponsor of LDDI since 2007. Tommy Balzer, Executive Vice President, and Cameron Palmore, Vice President, are currently serving on the LDDI Advisory Board. Both are located in the Richmond office.

Bohler Engineering

Bohler Engineering was founded in 1981 with a small office in New Jersey, and today, they have 13 offices in 7 states along the East coast. They offer services in Civil Engineering, Landscape Architecture, Land Surveying, Environmental Consulting, and LEED & LID Civil Design Consulting.



Bohler Engineering has been a sponsor of LDDI since 2007. Ginger Greunke, Recruiting Manager from the Sterling, VA office, is currently serving as the Outreach Committee Chair on the LDDI Advisory Board.



Bowman Consulting

Bowman Consulting was founded in 1995, and has been recognized as one of the fastest-growing consulting firms with 13 offices in 4 states in the Mid-Atlantic region and Arizona. They offer services in Civil Engineering, Planning, Landscape Architecture, Surveying, Environmental Consulting, Transportation, and more.

Bowman Consulting has been a sponsor of LDDI since 2007. Roy Waugh, Principal from the Chantilly, VA office, currently serves on the LDDI Advisory Board.

Dewberry

Dewberry was established in 1956 with an office in Arlington, and has grown over the past 55 years to have more than 40 locations in 18 states. They offer architecture, consulting, and a variety of engineering services.

Dewberry has been a sponsor of LDDI since 2007. Robert "Skip" Notte, Associate Vice President and Office Manager of the Charlotte, NC office is currently serving on the LDDI Advisory Board.



Draper Aden Associates

Draper Aden Associates was founded in 1972 with an office in Blacksburg, and now has 4 offices located across Virginia. They are a full service consulting engineering firm offering site planning and engineering, utilities engineering, structural engineering, geotechnical services, landscape architecture, surveying, and ecological and environmental services.



Draper Aden Associates has been a sponsor of LDDI since 2007. Firm president and CEO Jeff Lighthiser is currently serving as the Vice Chair of the LDDI Advisory Board.



Jansen Land Consulting, LLC

Jansen Land Consulting, LLC was founded in 2008 with an office located in Falls Church, Virginia. They provide development management services for land acquisition due diligence, land entitlement, land development, and bond release.

Jansen Land Consulting has been a sponsor of LDDI since 2010. Bob Jansen, President, is currently serving on the LDDI Advisory Board.

Kimley-Horn and Associates, Inc.

Kimley-Horn and Associates, Inc. was founded in 1967 in North Carolina, and over the past 45 years has grown to include over 65 offices in 17 states. They provide an array of engineering services including transportation, water resources, land planning and development, and many more.

Kimley-Horn and Associates has been a sponsor of LDDI since 2007. Derrick Cave, Principal and Senior Vice President from the Vero Beach, FL office is currently serving on the LDDI Advisory Board.





Land Design Consultants

Land Design Consultants was founded 25 years ago, and is currently located in Woodbridge, VA. They provide services in planning, surveying, and engineering.

Land Design Consultants is our newest platinum sponsor, joining LDDI in 2011.

2010-2011 Financial Summary

During the 2010-2011 fiscal year, LDDI collected revenue of approximately \$160,000 through its corporate sponsorship program and individual donor campaign. These funds were used to directly support LDDI activities inside and outside of the classroom. The following describes some of LDDI's major expense categories to which this revenue was directed.

Instructor Compensation: Of the seven LDDI courses offered each year at Virginia Tech, the University provides financial support for three. Private donations to LDDI provide instructor compensation for the remaining four.

Program Expenses: Program expenses include support for LDDI's student club, including field trips, travel to service project locations, and social gatherings. This expense category also includes event catering for LDDI general membership and outreach meetings, publication of the *LDDI Bridges* quarterly newsletter, and funding of the LDDI student internship program.

Operations Expenses: Operations expenses include general overhead costs such as postage, printing and copying, website development and maintenance, telecommunications, and University Foundation fees.

Travel and Meetings: LDDI has traditionally hosted two general membership meetings each year. This year, LDDI "brought the show to you" through four regional outreach meetings held across the state. Outreach efforts such as these comprise a critical part of LDDI's efforts to ensure continued practitioner participation in the program.

Student Support: To date, LDDI has administered a total of seven \$2,000 Bell Scholarships. Eligibility for these scholarships is restricted to students who have completed or are enrolled in certain LDDI courses. This expense category also provides for a total of 10 high performance "loaner" computers that are made available to student design teams in CEE 4274 – Land Development Design.

Curriculum and Course Enhancement

Based on University placement statistics, as many as one third of graduating civil engineering students are employed in the land development industry. As a result of LDDI's efforts over the past five years, land development design is a recognized as a focus area within the Via Department of Civil & Environmental Engineering at Virginia Tech. The visibility of having land development listed on the graduation checklist for all CEE students helps them understand the importance of this area of study.

Prior to creation of LDDI, students at the University had only one land development design course offering (CEE 4274, Land Development Design). Due to the efforts of LDDI, there are now six different course offerings. These courses are summarized as follows.

Introduction to Land Development (CEE 3274)

Introduction to Land Development (CEE 3274) was first offered as a threecredit course during the fall 2009 semester. Starting with the 2010-2011 academic year, CEE 3274 became a prerequisite for the senior level Land Development Design course (CEE 4274). CEE 3274 is offered both fall and spring semesters and is one of



Derrick Cave (Kimley-Horn and Associates, Inc.) delivers a guest lecture to the spring 2011 offering of CEE 3274

the eight junior-level Civil Engineering courses that students may choose to take.

Introduction to Land Development is intended to introduce CEE students to a wide range of topics in the field of land development design. This includes governmental roles and basic engineering principles underlying the land development process. Students get an overview of transportation, hydrology, utility design, and erosion and sediment control as it relates to a land development project. In conjunction with these topics, students are exposed to GIS and Civil 3D as tools to communicate and facilitate design. Additionally, the course covers a diversity of non-engineering topics including planning, landscapes, neighborhood dynamics, finance, and sustainability.

During the 2010-2011 academic year, 120 students took this course in each of the fall and spring semesters. Practitioners often visited class and participated in class exercises and activities. Several representatives from LDDI sponsoring firms attended to class to talk about their land development experience as well as their land development firm. In addition, they helped with hands-on activities such as creating topography maps from elevation points and creating conceptual designs.

Land Development Design (CEE 4274)

In many ways CEE 4274, Land Development Design, can be viewed as LDDI's "keystone" course. The senior-level course has for many years been recognized as an ABET accredited "design course," one of which must be taken by each student pursuing a B.S. in Civil & Environmental Engineering (CEE) at Virginia Tech. Beginning in the fall 2006 semester, and facilitated through LDDI, students taking the course have been paired with a professional engineer who serves as their mentor throughout the entirety of a semester-long design project. The course offering is tremendously popular among students, and the spring 2011 offering saw an enrollment of 39 students. Ever since the 2006-2007 academic year, the course has been offered during both the spring and fall semesters. It has long been a goal of LDDI to expand the content of CEE 4274 beyond just "traditional" engineering material to also include topics such as yield analysis, cost estimating, economic feasibility, and value engineering. In the spring 2011 semester, CEE 3274 became a prerequisite for students wishing to enroll in CEE 4274. With many of the more basic land development topics now covered in CEE 3274, it was possible to modify the structure of CEE 4274 to introduce some of this new material.

Maintaining one of LDDI's central themes, practitioners were heavily involved in the restructuring of CEE 4274. Below is a listing of new topics that were included in the spring 2011 offering of CEE 4274, along with the practitioner volunteers most active in developing the associated course material.

Pro forma and yield analysis:	Mark Huffman (Blackwood Development Company)
Quantity takeoff and cost estimating:	Cameron Palmore (Balzer and Associates)
Value engineering:	Ron Garrett (VDOT) and Ron Kirkpatrick (Fairfax County)
Erosion & Sediment Control:	Mary Ann Bonadeo Matthew James (Draper Aden Associates)

Sustainable Land Development (CEE 4264)

Sustainable Land Development was first offered in the spring 2008 semester as a one credit seminar and has since been expanded to a three credit course offered each fall semester. The course is taught by local engineer Meredith Jones whose firm specializes in sustainable development projects. In creating the Sustainable Land Development course, the LDDI's curriculum committee felt that, due to its specialized nature, the course should be restricted to only those students with senior standing, but open to students from any major. This is important as students are required to work alongside students from outside of their own major. This "cross pollination" introduces various perspectives to classroom discussion and better prepares students for their careers where they will inevitably cross paths with professionals from a myriad of academic backgrounds. The Sustainable Land Development course focuses on the developed site's long term sustainability and preservation of the pre-development quality of its environment.

Specific topics include site selection and linkage; development impacts on water, air, and soil; microclimate; industrial ecology and materials; energy; and incentive driven sustainability efforts. The course also introduces students to third party site evaluation methods including Leadership in Energy and Environmental Design for Neighborhood Development (LEED ND) and Earthcraft Communities. Students visit development projects employing innovative, sustainable design features. Approximately 30 students took the course during the fall 2010 semester. The 2011-2012 academic year will see the course being offered in both the spring and fall semesters.

Advanced Land Development Design (CEE 4284)

CEE 4284 was offered for the fourth time during the spring 2011 semester. The course is unique in the academic community in that is coordinated by University faculty, but taught exclusively by three teams of industry professionals. This arrangement ensures that course content and structure meets University requirements while simultaneously exposing students to front line issues facing the industry. This course, first offered in the spring 2007 semester, expands upon topics first introduced in the aforementioned Land Development Design course by providing indepth study of site grading, Americans With Disabilities Act (ADA) site design requirements, erosion and sedimentation control, and stormwater management including application of water quality best management practices (BMPs). The University requires that a three credit course provide students and instructors with 45 contact hours per semester. In order to meet this requirement while accommodating the work schedule and travel time of the course's practitioner instructors, each spring semester the Advanced Land Development course is offered on Friday evenings (7-9pm) and Saturday mornings (9am-12pm) approximately biweekly. Practitioner teams Balzer & Associates, Draper Aden Associates, and Kimley-Horn and Associates divide course content such that each team covers roughly one third of the course material. Despite the non-traditional meeting times, student interest in the course has been strong and the spring 2011 semester experienced an enrollment of 15 students. Solicited feedback from recent graduates who have taken the course has been very favorable, with students citing course value in terms of job attainment and easing the transition from an academic to a professional environment. The course is offered during alternating spring semesters, and will next be available to students during the spring 2013 semester.

Municipal Engineering (CEE 4254)

First offered in Spring 2010 with an enrollment of 30 students, the Municipal Engineering course provides students with an understanding of the field of municipal engineering and the important role municipal engineers play in planning and managing large public projects, operating and maintaining public infrastructure, supporting community disaster response, and regulating development through permitting programs. Throughout the course, the significance of the relationship between municipal engineers and land development engineers is underscored. The course also provides students with exposure to municipal engineering as a career option. Developed by the LDDI's curriculum committee, the course was co-taught by Jimmie Jenkins (Fairfax County – retired) and Adele Schirmer (Town of Blacksburg). Offered in alternating spring semesters, the course will next be available to students in the spring 2012 term.

Geotechnics for Land Development (CEE 4544)

First offered in 2008, the Geotechnics for Land Development course focuses exclusively on geotechnical issues as they pertain to land development projects. Topics include foundations, soil stability, geotextiles, and retaining walls. This course is taught once each academic year by Dr. Joe Dove.

Bell Scholarships

Beginning in the fall of 2010, LDDI has administered \$2,000 scholarships each semester to land development students. These scholarships are made possible through the generous financial support of Mr. Julian B. Bell, Jr. (VT '62). Mr. Bell hopes that these scholarships will help a few deserving students get a running start on a career in the land development field.

During the 2010-2011 academic year, seven scholarships were awarded, and another three scholarships have been awarded for Fall 2011. Scholarship recipients are listed below.

Fall 2010
Z. Nathan Bales
Nathan Huber
Lars Peterson

Spring 2011 Z. Nathan Bales Stephen Litsas Sydney Plackett Stephen Rodgers



Dr. Sam Easterling, Julian B. Bell, Jr., Carola Bell, Dr. Randy Dymond

Fall 2011 William Ayers David Blake Ryan Yauger

Practitioner Involvement

LDDI Arranges Student Field Trips

One of the biggest challenges facing young engineers is developing the ability to prepare plans and specifications that effectively and clearly communicate their design concepts to clients and contractors. This ability requires proficiency in those technical skills learned in the classroom, as well as an

understanding of construction methods

and construction phasing. Recognizing the



Jeff Gilliland, Randy Dymond, and SLDC members arrive at the Potomac Yard proiect in Alexandria

educational value in visiting active construction projects, for each of the past two spring semesters LDDI has arranged field trips for students to visit land development projects in

various stages of construction. For each field trip, LDDI has covered all of the students' travel lodging, and meals expenses.

During the spring 2010 semester, LDDI Assistant Coordinator Kevin Young took a group of students to Richmond where they visited a diverse mix of project types, including residential, institutional, mixed use, and commercial developments. The Richmond site visits were hosted by representatives from Burgess & Niple, Draper Aden Associates, and Balzer & Associates. Several of the projects were finished or nearing completion while others were still under construction. In March of the spring 2011 semester, LDDI Coordinator Randy Dymond led a group of students on a tour of land development projects in northern Virginia. The northern Virginia site visits were hosted by representatives from J2 Engineers, Inc. and Bowman Consulting and also encompassed a variety of project types, including Potomac Yard in Alexandria, Tysons Corner, a townhouse site in Ashburn, and a single family development in Arcola.

Career Nights

This year, LDDI and the Sustainable Land Development Club (SLDC) continued their tradition of hosting a "Land Development Career Night" on the eve of the Civil & Environmental Engineering career fair. These information sessions serve two important purposes. First, they provide a means of further communicating to students the various roles of the land development engineer and the career opportunities available in the land development design field. Second, they allow students to meet and mingle with prospective employers in a casual, relaxed setting immediately prior to the often stressful environment of the career fair. "The Land Development Info Night was a great chance to socialize with companies in a stress-free atmosphere," said SLDC president Stephen Litsas. "Meeting employers in an informal dinner setting as opposed to a career fair gives a much more informative company overview, allows employment relationships to form, and provides an opportunity to hear the stories behind real land development projects." The past five Career Nights have been held at Awful Arthur's restaurant in Blacksburg and are always well attended by students and industry practitioners.

Advisory Board Social

On April 1st, 2011 following its annual spring meeting, the LDDI Advisory Board hosted a student-practitioner mixer at Bull & Bones restaurant in Blacksburg. Similar in format to "Land Development Career Nights" that are now held on the eve of each semester's CEE Career Fair, this mixer was intended to provide an opportunity for students to network with practitioners in a relaxed environment. The event was very well attended, and several students found themselves departing the social with follow up interviews for internships and full time positions.



Students and practitioners mingle at the April 1st social.

Young Members Club

During the fall 2010 semester, LDDI established a "Young Members Club." Its membership comprised of recent graduates who have taken one or more of the LDDI courses, the club serves as a networking opportunity for these young engineers as they transition into the professional world. For LDDI, the club provides an opportunity to maintain contact with former students, and to keep them involved with the program as their careers develop. Maintaining this contact and involvement is critical to the long-term sustainability of the LDDI program. To date, the club has assembled for several social gatherings, including one held in Blacksburg and hosted by the LDDI Advisory Board. Billy Anderson (VT CEE '09, The Genuario Companies) heads up the club. If you are a recent graduate of the LDDI program and would like to become involved with the club, we encourage you to contact Billy at <u>billya@vt.edu</u>.

Student Club Service Project

The fall 2010 semester was an exciting time for the Sustainable Land Development Club (SLDC) as its members completed their first community service project. Working alongside engineers and landscape architects from Draper Aden Associates, the SLDC prepared a feasibility study and due diligence report for proposed site improvements at Mill Mountain Zoo in Roanoke. Following multiple site visits, club members compiled data collected in the field along with information derived from other, public domain sources. The report was reviewed by Draper Aden Associates before being provided to the client. The report was very well received, and club members were invited to give a presentation to the Zoo's Board of Directors.

The SLDC has a number of exciting service projects lined up for the fall 2011 semester, including working with Camp Alta Mons in Shawsville to provide design services for an RV campground.

How to Get Involved with LDDI

To continue the success and sustainability of the Land Development Design Initiative, both time and money is needed from the industry. You and your company can get involved by becoming a sponsor, becoming a general member, or donating your time by serving on a committee or helping with course offerings.

Corporate Sponsorship

LDDI currently has 22 corporate sponsors and an additional 12 individual sponsors. Corporate sponsorship benefits include firm listing on the LDDI website, contact with students, and more. There are three levels of annual corporate sponsorship with associated benefits, all of which are summarized on the LDDI website (http://www.lddi.cee.vt.edu/).

General Membership

Since its earliest beginnings LDDI has depended heavily on the volunteer efforts of its general membership to achieve program goals. The past five years have seen LDDI grow to become a nationally recognized leader in undergraduate land development design education. Despite the program's rapid growth, LDDI continues to embrace an organic, grass roots operational model. This model relies on the participation of industry professionals who sincerely believe in LDDI's

mission. There are currently 300+ general members of LDDI, many of whom attend semi-annual meetings, both on-campus and at locations across the state. During these meetings, these general members contribute ideas for practitioner involvement, courses, and other aspects of the program.

Committees

The LDDI Advisory Board is broken into three committees for the purpose of guiding the program in these main areas.

The **Course and Curriculum Committee** focuses on developing the land development design curriculum, individual coursework, and other student help materials. The committee's primary objective is to prepare students for a career in the land development design profession. Over the past five years, this committee has generated four new courses including Introduction to Land Development, Sustainable Land Development, Municipal Engineering, and Advanced Land Development.

The **Practitioner Involvement Committee** 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. This year, they organized events such as the Career Fair Socials, a spring Social, and a field trip.

The **Outreach Committee** focuses on promoting the field of land development to students and promoting the Land Development Design Initiative to the land development professionals and encourages their participation and support of the program. This includes maintaining the website, organizing out-of-town meetings, publications, and more.

Classroom Involvement

Practitioners are often invited to come to class to either speak about their experience or assist with in-class activities. These in-class activities have included topography map generation using point elevations, generating conceptual designs, and plan review exercises.

Recognition of Mr. Bell's Support for LDDI

Since his first gift to LDDI in 2009, the financial contributions of Mr. Julian B. Bell, Jr. have been instrumental in the continued success and expansion of the LDDI program. LDDI wishes to recognize the impact Mr. Bell's generous donations have had on the program, and extend a sincere thank you for his support of our efforts to make Virginia Tech the nation's leader in undergraduate land development design education.

Julian Bell received his B.S. degree in civil engineering from Virginia Tech in 1962. Following graduation, he began his career with DuPont Chemicals as a division In 1970, Mr. Bell moved to engineer. Chattanooga, TN where he became the director of public works. During his time with the city of Chattanooga, he recognized a need for quality housing in the region. In 1980, Mr. Bell founded his own development company and over the past thirty years the company has completed over 4,000 residential lots in 28 subdivisions. Of his career as a developer, Mr. Bell says that a former client's words have always stuck with him: "you're not designing roads; you're designing lots and locations for subdivisions and communities." Mr. Bell had been out of school for years by the time he heard that. His support of LDDI helps ensure that tomorrow's civil engineers won't have to wait that long to gain similar insight.



"I think the concept they have [for LDDI] is absolutely fantastic," says Julian Bell '62, who has made a sizeable financial donation to the program.

For more information on how to get involved with LDDI, please contact:

Dr. Randy Dymond, PE VT LDDI Coordinator (540) 231-9023 dymond@vt.edu Mark Huffman, PE LDDI Advisory Board Chair (804) 320-0422 x23 <u>mhuffman@blackwooddevelopment.com</u>

Kevin Young, PE VT LDDI Assistant Coordinator (540) 231-2474 <u>keyoung@vt.edu</u> Jeff Lighthiser, PE LDDI Advisory Board Vice Chair (804) 261-2900 jlighthiser@daa.com

Special Thanks

The sponsorships of our business partners and individual donors are an essential component to the success of LDDI. We thank the following 2011-2012 Sponsoring Firms and individuals for their generous support: (as of July 8, 2011)

Platinum

AES Consulting Engineers · Balzer and Associates, Inc. · Bohler Engineering Bowman Consulting · christopher consultants, Itd · Dewberry · Draper Aden Associates Jansen Land Consulting, LLC · Kimley-Horn and Associates, Inc. · Land Design Consultants

Gold

Accumark Subsurface Utility Services · Burgess & Niple, Inc. · Cowen Design Group, LLC Fairfax County · Gay and Neel, Inc. · J2 Engineers, Inc. · Patton Harris Rust & Associates Tri-Tek Engineering · Urban

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