What is Denver doing to promote sustainability?

NPS Sustainable restoration
Go green to save green

EXCLUSIVE
My green roof is leaking. Who or what can I blame?
An Intro to green walls and green roofs: Living architecture at its best

Is your company’s 401K as green as it’s project?

My green roof is leaking. Who or what can I blame?

What is the city of Denver doing to promote Sustainability?

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Sustainable restoration at the national park service

Do you know where your mulch comes from?

What it means to be green as a developer

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What it means to be green as a developer

CSU LA DAYS
March 31 – April 3

LA Days at Colorado State University is from March 31st to April 3rd this year. The speakers are: (March 31) David Rubin, Partner at the Olin Partnership, a landscape architecture firm in Philadelphia. (April 1) Michael Blier, Founding Principal and Director of Design for LANDWORKS studio. (April 2) Jane Amidon, Associate Professor and Landscape Architecture Section Head for the Austin E. Knowlton School of Architecture at The Ohio State University. (April 3) Linda Jewell, Chair of the Department of Landscape Architecture & Environmental Planning for the College of Environmental Design at UC Berkeley.

For more information on this event please contact Anna Cawrse at: anna.cawrse@colostate.edu.

DOORS OPEN DENVER
April 18 – April 19

This year, Doors Open Denver is being held on Saturday, April 18th and Sunday, April 19th. As usual, the event headquarters are at Union Station, where event maps and bicycle tour maps are available. There are a number of parks in this year’s event, including: Berkeley Park, Cheesman Park, City Park, Civic Center Park, Commons Park, Confluence Park and Plaza, Lowry Parks, Northside Park, Stapleton Central Park & Open Space, TAO Stormwater Gardens, Washington Park.

For more information on this event please contact Scott Anderson at: scott.anderson@rnldesign.com.

ASLA MINI-CONFERENCE
Friday, May 15th

The ASLA Colorado Mini-Conference has been scheduled for Friday, May 15th from 10:30-6:30. The program includes lunch with a keynote speaker and happy hour afterward. Three educational sessions are currently being planned with a focus on how Landscape Architects are trying to survive these tough economic times.

For more information on this event please contact Pat Mundus at: pat@mundusbishop.com.
President
Kim Douglass, Studio NITE
(303) 454-7100

President-Elect
Ian Anderson, Design Studios West
(303) 623-3468

Past President
(303) 477-3244

Secretary
Kerry White, Landscape Concepts
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Treasurer
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Professional Education Coordinator
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(303) 948-0194

Student Education Coordinator
Jessica Hendry, National Park Service
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Wyoming Liaison
Kim Douglas, ASLA (303) 830-6616

Marketing
A green roof at the Tiers Crafted residence in Aspen, Colorado.
Photo courtesy of Bluegreen, a landscape architecture and planning studio located in Aspen, CO.

Our newsletter is always available online as well (www.ccsla.org). If you prefer to read your issue online, further reducing the number of printings, then please contact us and we will remove you from our mailing list.

Do you notice anything different? Hopefully you have taken note of the new look of our chapter publication. We felt a re-design of format was important to better serve the membership highlighting feature articles that are pertinent to the profession and our current economic times. ASLA Colorado will now produce four Exposures issues a year. Our Newsletter Editor will be gathering articles that fit the theme of each publication. The next issue you receive in June will focus on Design; Technology will be the focus in September; and Planning will wrap up 2009.

This first issue focuses on Sustainability—not only in the articles we feature but in the way we produce our publication. Printing just four issues this year (down from six in previous years) will reduce our consumption of paper products. The company that prints our publication, Colorado Printing Company, is a leading environmental steward and we are proud to partner with them. Some of the things they do to help make a difference:

• Over 125 tons of pre-consumer waste paper are recycled every month
• ALL cardboard packaging waste is recycled
• All broken and unusable wooden pallets are composted
• All film and film chemical printing processes have been eliminated
• All paper is purchased from vendors who practice sustainable 
• CPC has developed its own solvent distillation recovery program, reducing the amount of liquid chemical waste from 10,000 to 1,200 gallons per year
• Over 12,000 gallons of chemical waste are recycled each year

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On the cover
A green roof at the Tiers Crafted residence in Aspen, Colorado.
Photo courtesy of Bluegreen, a landscape architecture and planning studio located in Aspen, CO.

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Doors Open Denver Liaison
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Art Direction & Design
Marina Schleimer, Pixel Perspective Design
(303) 474-4023

Awards Coordinator
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Kimberly Douglas, ASLA
Colorado Chapter President
Walk the Walk

I too agree that we may talk the talk about sustainability, even offer it in our designs, but in general we offer little in our own lives. My question is how are we to change when we’ve centered our lives around this machine? We are accustomed to our extravagant lifestyles of dropping the kids off at school and arriving to work on our own schedules. Perhaps looking at the past offers us some insight on the problem. Personally, I will not be making the shift to public transportation because my 12 minute commute from my home to work would require a 1.5 hour bus ride. We need more flexibility in our transportation. I don’t doubt that our government is working on this issue, but in the meantime what should we be doing?

So Much, Right Now

We currently face a once in a lifetime opportunity to create meaningful change. Do we continue the bail outs and support business as usual? Or do we tap into our deep rooted ingenuity and create the ideas and the plans that will move our economy and our lifestyles into a more sustainable future? I choose the latter. Within a few short weeks, or even months, we will have a substantial amount of economic stimulus money flowing into many sectors of the economy. Whoever has the biggest and boldest ideas, the political will and the means to implement them will get the money. I challenge my fellow landscape architects to think in terms of “So Much, Right Now”, rather than “Too Little, Too Late”. We now have “so much” opportunity to create the changes we have dreamed of for a lifetime. The time to make those changes is “Right Now.” Together we can do it.

Giving People what They Wanted

It is amazing that what we want to see in the future is what we already had nearly 100 years ago. In many developing countries this is a huge complaint about design in the west: That we have lost our progressive spirit and are now looking backward —trending toward Traditional Neighborhood Design and antique light poles. It seems that the more freedom we are given the more we tend to want those things that give us the greatest comfort and convenience. While Beijing has a great transit system and bike lanes on nearly every street, they are putting 5,000 new cars on the road every day! Now, when it is time for another change, do we tell people what they need or give them what they want? Rather than “Too Little, Too Late”, we now have “so much” opportunity to create the changes we have dreamed of for a lifetime. The time to make those changes is “Right Now”.

What Were They Thinking?

I believe that every little bit of conservation and energy efficiency we can perform will eventually help. It is hard for me to walk to my closest grocery store and bring back with more than a couple of bags of groceries, so I, too, drive. We can walk to our elementary schools but to very little else and it takes more time than many of us have. However, if we had convenient mass transit to nearby stores, I would endeavor to use it. As it is, I try to combine all my trips together and efficiently use my vehicle. It is too late to go back and fix our mistakes. In Denver I think it would be nearly impossible to retrofit the city to use my vehicle. It is too late to go back and fix our mistakes. In Denver I think it would be nearly impossible to retrofit the city.

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Executive Committee

The executive committee is the governing body of ASLA Colorado and meets monthly, usually on the first Wednesday, to provide guidance and direction relating to the activities and finances of the association. Kim Douglas serves as chair. The meeting is typically attended by both voting and non-voting Board members. All ASLA Colorado members are welcome to attend or to participate by teleconference. The meetings typically occur at the offices of a Board member in the Denver metro area or along the Front Range and are friendly, casual, and somewhat informal. They typically begin at 5:30 pm and are over before 7:30 pm. Please contact Greg Williams, Association Manager, at 303-830-6616 or info@ccasla.org if you are interested in receiving the agenda packet (by email) for a future meeting.

As of press time the executive committee had met most recently on February 4, 2009 at EDAW. Committee chairs for 2009 and ASLA Colorado committee member assignments were made. There was discussion relating to the association logo, newsletter name, and the association name. The committee voted to change the day-to-day name of the association from the Colorado Chapter of the American Landscape Architecture Association (CCASLA) to ASLA Colorado pending review of the bylaws and coordination with national ASLA. This change will likely be reflected incrementally in various ASLA Colorado publications (such as the newsletter and eBulletin) before it takes effect more generally on the redesigned website and in other printed materials.

The executive committee approved the 2009 budget which reflected reductions in several program categories in anticipation of a “lean” year due to the overall economy. The only program category that was substantially increased was Public Relations (Courtnie McRickard) in order to improve the awareness of ASLA Colorado among the membership and the general public (and thereby increase revenue from new membership dues). Plans were made for an ASLA Booth and/or speakers to be present at several upcoming events being held by other organizations with which we share an interest. These include the annual ProGreen Expo by GreenCO, Colorado Preservation Inc’s annual Saving Places Conference, and the annual meeting of the Associated Landscape Contractors of Colorado (Kurt Munding). In other matters, the Landscape Architecture Review Exam classes were scheduled and a location for a future SketchUp class was being sought (Lesanne Weller). The Spring Mini-Conference, to be held on May 15, 2009, was discussed (Pat Mundus) and initial plans were made for this event as well as Doors Open Denver (Scott Anderson) and the Annual ASLA In-District Lobby Day (Dennis Brookie).

For more information on current ASLA Colorado events and somewhat informal. They typically begin at 5:30 pm and are over before 7:30 pm. Please contact Greg Williams, Association Manager, at 303-830-6616 or info@ccasla.org if you are interested in receiving the agenda packet (by email) for a future meeting.

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For more information on current ASLA Colorado events and forthcoming meetings, be sure to visit our website at www.ccasla.org and check out the “Events” tab and under the “Education” tab on the left of the main page. For contact information relating to executive committee members mentioned above click on the “About Us” tab.

Government Affairs

The Colorado Legislature convened the First Regular Session of the Sixty-seventh General Assembly on January 7, 2009 and elected Peter C. Groff President of the Senate and Terrance D. Carroll Speaker of the House of Representatives. The legislature will be in session for 180 days and will adjourn sine die on or before May 6, 2009.

The Colorado Council of Landscape Architects (CCLA) has retained Greg Williams of Redpoint Resources, LLC and Scott Meiklejohn of Meiklejohn Consulting, LLC jointly to monitor state legislative and state regulatory activity during 2009. Dennis Brookie is chair of the American Society of Landscape Architects – Colorado Government Affairs committee and is a member of CCLA. He will provide liaison between the two groups and report on government affairs issues to the ASLA Colorado Executive Committee during the regular monthly meetings. Don Godi is chair of CCLA. For more information on becoming involved in CCLA or in the ASLA Colorado Government Affairs committee contact Greg Williams, ASLA Colorado Association Manager, at 303-830-6616 or email him at info@ccasla.org.

As of early February 2009 there have been over 256 bills and resolutions introduced in the House and over 165 bills and resolutions introduced in the Senate. This number will nearly double by the time of the bill introduction deadline. CCLA is reviewing all the bills as they are introduced and monitoring the progress of key legislative measures. The organization is also communicating regularly with other organizations who share an interest in matters of concern to the Landscape Architecture profession including infrastructure financing measures, sustainability, environmental and other “green” bills, solar power measures, water measures, historical preservation legislation, and landscape excavation bills. For up-to-the-minute information on any legislative measure of interest please go to the Colorado General Assembly web site at www.leg.state.co.us. The Colorado State Board of Landscape Architects met on January 16, 2009. Greg Williams attended on behalf of CCLA and other members were present. The board, which is chaired by Ted Ciavonne, amended the rules relating to licensure. The key change was to reduce from three to two years the “practical experience” requirement for licensure by examination under provisions 4.1.1.9 of the rules. Other relatively minor changes were made. The new rules will go into effect in 180 days and next step is to publish the proposed rules in the Colorado Register. The board also reviewed licensure applications. For more information on the Colorado State Board of Landscape Architects go to their website at www.dora.state.co.us. The next meeting will be on April 17, 2009 at the Department of Regulatory Agencies offices, 1560 Broadway, Denver, CO.

Additionally, ASLA Colorado’s involvement in federal issues has been on two fronts. In January ASLA Colorado wrote a letter to US Department of Interior Secretary Ken Salazar congratulating him on his nomination and offering to work with him as Secretary of the Interior. February 18, 2009 was ASLA’s Annual In-District Advocacy Day where over 17 members of ASLA Colorado met with members of the Colorado congressional delegation to discuss critical issues and concerns relating to the professions such as the Historic American Landscapes Survey (HALS) and the importance of good transportation planning and design for all users including a “Complete Streets” policy in the upcoming reauthorization of the federal surface transportation act.

Meridian Hill Park in Washington, D.C., was built in 1914, and was designated a National Historic Landmark in 1984. The park was one of the test sites for the HALS program.

Salazar congratulating him on his nomination and offering to work with him as Secretary of the Interior. February 18, 2009 was ASLA’s Annual In-District Advocacy Day where over 17 members of ASLA Colorado met with members of the Colorado congressional delegation to discuss critical issues and concerns relating to the professions such as the Historic American Landscapes Survey (HALS) and the importance of good transportation planning and design for all users including a “Complete Streets” policy in the upcoming reauthorization of the federal surface transportation act.

A good example of a “complete street” in Boulder, Colorado.
There are many questions these days about the design, engineering and construction of green roofs in America and who is ultimately responsible if there are problems. Well, this is somewhat of a trick question because it truly depends on what is the cause of the problem. Was the structure installed correctly, was it damaged during construction, was it designed the right way, did they use the appropriate drainage and waterproofing system, who is maintaining the roof after completion, has it been maintained properly? These are all questions that come to mind when asked who is at fault or why is my roof leaking.

Green roofs in Europe are abundant and there is a much longer history of green roof projects. The liability question there is not often as big of a concern as it is in the United States. Because the European culture and court systems are very different when it comes to tort reform and lawsuits, it is more likely that when there is a problem, the Europeans determine who is the responsible party for the damage? And ask them to fix it without having to go through major court hearings, trials, etc.

In the United States because of our litigious society, everyone gets sued including the subcontractor who painted the parking lot lines! So in the United States, the big question is not who is liable but who is the most liable, who can pay the most money and who has the most resources to get the problem fixed?

This is why your design contracts for services are so important whether on a normal project or a Green Roof project. A well written contract will allocate the risk and determine exactly who is responsible for what. If you are going to get involved in a Green Roof design, make sure that you have your legal counsel review the contracts of all parties to make certain that there are no hidden clauses that could involve you in a dispute that you were not responsible for. Remember that the best way to eliminate your risk is to avoid it. If you are not comfortable with the risk and the parties in the contract cannot come to terms, walk away!
Other issues related to green roofs are that they are very complex systems including structural engineering, overall architectural design, weight loads, soil types, plant types, hard-scape, electrical, plumbing, irrigation and drainage. There are usually lots of contractors involved in most of these types of projects and often times there are numerous parties involved for the cause of the problems. This is often why it is necessary in the United States to have the courts and attorneys involved to help determine who ultimately is at fault.

Another very important feature of green roofs that is often not given enough attention is maintenance. Although these types of projects are usually meant to be sustainable and not require much attention over the long run, maintenance is still a very necessary piece to the overall success of the project. There have even been issues with older green roofs, regarding fire potential. It is very important that continual maintenance include the removal of dead plant material. As plants get older and regenerate, the older plants die off and leave the dried out material as underbrush. Green roofs are often located in hot environments that are very exposed to sunlight. Green roofs, as are any roof, are also collectors for blowing trash and debris which can also build up. With the extensive solar heat and additional dried out plant material, these roofs can be prone to potential fire hazards. Reducing this dead debris and trash material will significantly decrease this potentially dangerous condition.

The dead debris and trash can also cause the drainage systems to clog and back up. This is often also a cause to the leaky roof syndrome. So it is imperative that continual maintenance be considered. Backed up drainage systems will also cause extensive moisture build up. If your design includes the use of xeriscape or drought tolerant plants, then this can cause hardship or death to the plants.

The other important feature regarding design and maintenance is the appropriate selection of plant material. Regardless of the type of green roof, it is very important to consider what types of plant material will be used. Plants that have very shallow root depths are extremely important. Many leaky roofs have been caused by roots puncturing the waterproof membrane and root barriers. Appropriate plant selection will also minimize maintenance in terms of the amounts of dead plant material that may build up as the plants regenerate. Hardness zones and climates are very important to consider when picking plant material because the plants that you select must be able to survive in those conditions and be able to survive without dropping “leaves”. With appropriate plant selection, once established, irrigation then becomes minimal thus reducing the amount of water necessary, providing an overall reduction in the exposure to moisture and potential leaks.

With respect to the design of a green roof, it is very important to consider structural elements that are coming out of the roof top including HVAC systems, vertical walls, vertical pipes and any type of electrical outlets. These areas although may want to be hidden from view must be heavily considered in your design. Extra waterproofing elements and design consideration must be used because these are spots that penetrate the roof and are prone to developing leaks. It is very important to use an irrigation product that has been manufactured specifically for green roofs. These systems are designed specifically with integrity in mind and are often backed with a guarantee that if the system does leak, they will provide the resources to fix the problem. Many of these manufacturers may also provide the irrigation design if you choose to use their product. Using irrigation design by others will significantly reduce the liability exposure to the Landscape Architect.

This also applies to waterproof systems, soil systems and root barriers. Companies that specialize in these types of systems have tested their product and will usually provide a guarantee for a period of time against leaks. The longer the guarantee, the better! Companies like American Hydrotech (waterproofing systems) offer proven services and have products that are LEED certified. Although the initial cost may be higher, it will significantly reduce the potential for a leaky roof.

When selecting these products, it is very important that the designer, architect and/or engineer do extensive research on each product that may be selected. Ask for specifications and test results, sample projects, potential problems, have the manufacturer present their product to you, the engineer, the architect, the general contractor and the owner. It is then critical that the final information be presented to the project owner, allowing them to make the final decision on which product to use. Document this process and keep it in your project files. This will be extremely important if a problem occurs and you can show that the owner signed off on the final selection of the product.

Functional layers of a typical extensive Green Roof

So back to our question, who is at fault? It is usually a number of different parties depending on the problem. There really isn’t an easy answer because every leaky roof is a unique situation and there will be a different cause of the problem. Green roof claims can be very expensive because they usually always involve water. Water is what is called the invisible disaster because a leak can go undetected for quite some time and usually the longer it occurs the worse the problem is. Claims like this can cost as much as $1,000,000 or higher to repair, depending on the type of project, how it was designed and what type of structure that it is constructed on. This cost doesn’t even include the hidden cost for your time to deal with this type of a situation. Countless hours of time with attorneys, courts, clients, contractors and manufacturers are necessary and these hidden costs are generally not covered by your Professional Liability carrier.

With this in mind, it is critical that you include as part of your design process and contract what you intend to provide and what you intend not to provide as part of your design services. You should list in your contract scope of services that you will not be responsible for items such as load bearing, structural engineering, waterproof systems, drainage, plumbing, electrical systems, maintenance etc. Be as specific as you can! This will help protect you in the future if a situation occurs. If you are just doing the planting design and overall design concept, state that in your scope and provide details as to what those activities will include.

Green roofs are relatively new in the United States. They are proving to be an important design feature for new and existing buildings and other various structures and will certainly offer long term potential work for Landscape Architects. If this type of design is something that you want to pursue, don’t just dabble in it. You need to become extremely educated in the various systems and design aspects that are involved. If you have the opportunity to work on a green roof project and you are not very familiar with this type of work, partner with someone that has the experience. You can still be involved in the overall design and learn a great deal in the process. Many green roof system manufacturers offer classes that demonstrate their products. These are very helpful when you are considering your future projects and interviewing other landscape architects that have done this type of work.

Troy D. Sibulius, CIC, ASLA is the President of Keller-Lowry Insurance in Denver, CO and has been a licensed insurance broker for almost 14 years. Keller-Lowry provides General Liability, Professional Liability, Property, Auto and Workers Compensation Insurance to Landscape Architects throughout the United States. Troy has a Bachelor’s of Science Degree in Landscape Architecture from Colorado State University and has spoken at numerous ASLA Colorado, Texas ASLA, and ASLA Conventions over the last 10 years about risk management and insurance topics for Landscape Architects. Troy has earned his Certified Insurance Counselor (CIC) designation through the National Alliance. The CIC designation is earned by less than 10% of Independent Insurance Agents nationwide and involves a rigorous insurance education process. He has currently completed 3 of 5 classes towards becoming a Certified Risk Manager (CRM). Troy was a Landscape Architect in Colorado for five years before moving into the insurance industry. He has served on the Executive Committee of ASLA Colorado as both a President and Trustee. He currently is the Chairperson for the GreenCo Political Committee and the GreenCo Foundation. He is a founding Board Member and Vice Chair of the Associated Landscape Contractors of Colorado (ALCC) Education Foundation and has served for many years on the GreenCo Legislative Committee as the ASLA Colorado Liaison.
WHAT IS THE CITY OF DENVER DOING TO PROMOTE SUSTAINABILITY?

By Denise Stepto

In 2007, Mayor John Hickenlooper announced Denver’s first Climate Action Plan which included the goal to reduce per capita greenhouse gas emissions ten percent below 1990 levels by 2012. Working to help achieve that goal is the Mayor’s office of sustainability, Greenprint Denver. Located in the City & County Building, the Greenprint staff work to develop and implement a variety of programs that will not only help us reach this carbon reduction goal, but create a healthy environment for residents to live, work and play.

With the Democratic National Convention in town, 2008 provided a special stage for the Mayor’s office. From the early planning stages of this monumental event, one overriding question was: How can we make this the most sustainable convention in history? The motivated Greenprint staff and director of DNC greening, Parry Burnap, designed a strategic plan that encompassed waste management, green event planning, water conservation, healthy local menus, and alternative transportation options. Countless numbers of volunteers worked long hours, and the end result was a huge success. Tons of waste was diverted—both recycled and composted—from the Colorado Convention Center, nearby parks, and parade routes.

Denver Water deployed water wagons to provide visitors a way to refill water bottles, and the Freewheelin’ bike program was implemented, loaning bikes throughout the downtown area. In 2009, Greenprint will take successful components from the DNC event and launch them as legacy projects for Denver residents. One such effort is Denver B-cycle.

Given the success of the Freewheelin’ bike share during the DNC, where over 26,000 miles were ridden in just four days, Greenprint will launch a permanent program called Denver B-cycle. Beginning this summer, Denver will become one of the first cities nationwide to launch a comprehensive, citywide bike sharing program. 500 bikes will be available to the public at 30 stations throughout the city. The program is expected to double in size by Spring 2010.

“The positive feedback we received from the bike sharing program during the DNC was remarkable,” Mayor Hickenlooper said. “We are confident Denver B-cycle will prove equally popular while improving our fitness levels and our environment. Our 358 miles of bike routes and trails combined with our 300 days of sunshine make Denver the perfect city in which to launch a citywide bike sharing system.”

Access to Denver B-cycle will be made through annual memberships sold to residents and frequent users, while daily, weekly and short-term usage for visitors and tourists will be enabled through credit card transactions. While not finalized, the current model proposes that the system allow the first half hour of Denver B-cycle use to at no charge, with nominal charges thereafter.

The City of Denver is currently piloting Denver B-cycle with its City employees, using donated bikes, stations, and software from Humana, Inc. Bicycle Village will provide bicycle maintenance services at no charge during the City Employee Bike Loaner pilot. This is one of many projects that the citizens of Denver can expect to see from Greenprint Denver in the year ahead. For further information, please visit www.greenprintdenver.org.

Denise Stepto is a Marketing Specialist for Greenprint Denver which is a part of the Mayor’s Office of Sustainability. She is currently on loan from Denver International Airport. Denise has over 25 years of communications, marketing and public relations experience in both public and private sectors. She is currently working on citywide residential weatherization outreach programs.
By Josh Orth, RLA, CCIS

Sustainable design and construction practices are good for the environment, but did you know they can also be good for the bottom line? The idea of incorporating sustainable design into projects is continuing to grow in popularity as well as adoption, though there are some who have yet to jump on the bandwagon. Typically, when we think of incorporating sustainable design and materials into development projects, it is about being good stewards of the environment, minimizing ecological impacts and potentially earning a level of certification. Not everyone is convinced that these are reason enough to go green to save green.

Sustainability is about being good stewards of the environment, minimizing environmental impact associated with transport and it can help stimulate the local economy. Another result is a positive customer experience. Typically, vendors who are providing products from their own “backyard” take more pride and interest in quality and earning your repeat business. With plant material, there might be a more limited selection, but certain species will have been proven to establish better or simply look better. A landscape architect should consider adjustments to a project’s design when it is required that materials be shipped in from three states away instead of allowing a viable alternative that could come from three miles away. Also, local materials usually have attributes that help maintain a site’s character. When researching project materials it is also important to consider the management practices of the material source and the chemical properties of materials. Materials should always be sourced from vendors that employ environmentally-friendly methods.

You can have the best design and the right products, but the project will still need to be built correctly. The design team should always clearly outline the specifications for every project, but it’s the contractor’s job to understand the instructions and incorporate these ideals into the installation. Landscape contractors should be involved early in the design phase and share their experiences. What seems like a good approach on paper might work better with a little “tweaking” and being green in our practices requires flexibility. We are dealing with dynamic systems and sites have a tendency to change, so adaptations must be made. Landscape architects must rely on the landscape contractor to recognize when there is a need to deviate from the plans and then initiate a dialog with the design team.

Careful planning, thorough research, flexibility, communication and working towards a shared goal are the key ingredients to implementing green practices in landscape construction. The better a project is managed from design through implementation, the less waste is developed, productivity increases, lower costs can be submitted on bids helping to secure a project and ultimately, profit margins increase. It is this relationship between cost savings and best management practices that helps our industry continue to increase sustainable practices. And with the potential cost savings, this methodology is a more favorable approach to design, bidding and construction.

Josh Orth is a Principal at Norris Design. His primary focus is in construction administration as it relates to landscape architecture projects. He brings to the company a background in land- scape construction, excellent relationships within the industry and an understanding of the entire construction process. This experience contributes to finding value for owners in their projects and helping contractors realize their full potential during installation.

Sustainability issue
by robin gregory and jessica hendryx

when it comes to restoration and creating sustainable landscapes the national park service, denver service center—transportation division has proven to be exemplary. revegetation and restoration have long been part of the national park service tradition. early park service landscape architects required the use of native species when planning and constructing visitor facilities including roads, ranger stations, lodging and exhibits. restoration in the national park service is required in a wide variety of geographic and climatic conditions. examples range from the rain forest in olympic national park, to the high desert of carlsbad caverns national park, east to the great smokies national park and north to acadia national park. each offer their own unique ecosystem and restoration planning challenges and opportunities.

the national park service works assiduously to create a plant palette that is specific to the park’s ecosystem and utilizes plant material specifically propagated or collected from within a park’s boundaries. this site-specific native vegetation, in time, blends with the adjacent undisturbed plant communities, provides a healthy and vital landscape that is aesthetically pleasing, supports the genetic integrity of the park’s native plant populations, establishes erosion control, prevents and limits the spread of exotic and invasive plants, provides additional wildlife habitat and forage opportunities for a wide range of species, and is self-sustaining.

sustainable restoration at the national park service

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Here in the Denver metro area, almost every landscape architect specifies cedar or bark mulch products to be installed in their projects. When asked why, the typical response is that they are accustomed to using cedar and are not familiar with other good options. While cedar and bark mulches look nice when they are first installed, there are many alternatives that are less expensive, sustainable and, in fact, better for our environment. Part of the definition for sustainable products is to minimize the use of fossil fuels to get products to the market: Shop local. Most all cedar and bark mulches are shipped to Colorado from the Pacific Northwest.

What then, are the local options for mulch? Some local recycling companies do produce some mulch products. Many of these are made from discarded pallets, shingles and other construction debris. Some of the treatments and preservatives in these materials can be toxic to plants and animals, however. Sometimes there are shards of metal and nails found in this mulch. Another, more sustainable, option would be to use a mulch that is created from recycled tree debris. Local tree services provide such tree debris from their pruning efforts and removal of trees in the metro area.

The wood is aged to remove harmful pathogens, reground and screened to produce a high quality, sustainable landscaping mulch. Both natural and dyed products are typically available. Colorants can be made from naturally occurring minerals and are specially formulated to be non-toxic to plants and animals. Color bond technology allows the color to stay vibrant long after other mulches fade.

Not only is locally produced mulch as attractive as imported mulch, but it does a better job at staying in place. Shredded mulches tend to blow away, the mulch made from recycled tree debris produces a natural fungus (mycelia) that binds it together. One such locally available mulch is Mountain High Tree Supreme Organic mulch, produced in Lakewood, Colorado. Their mulch is made from 100% recycled tree debris.

Finally, unlike imported cedar and bark mulches, Mountain High Supreme Organic Mulch always has the same consistency year after year. This easily allows the consumer to top-dress with mulch that matches what is already in place.

So, we all know that mulch decreases evaporation rates by as much as 35% and provides an insulation layer, protecting roots from extreme high and low temperatures. That it suppresses weed growth. And that it will break down into nutritious organic matter, improving the soil and promoting future growth of the plant or tree. If all mulch performs much the same way, then the real question for the sustainable landscape becomes: Are we specifying mulch that is made locally?

Ralph Bronk has owned and operated Mountain High Tree, Lawn & Landscape Company since 1974. Mountain High started the Supreme Organic Mulch recycling division in 2002. They currently recycle 100% of their green waste and accept green waste from many other local tree care companies for recycling to develop the Organic Mulch product. Ralph has been on the board and various committees for the International Society of Arboriculture and the Associated Landscape Contractors of Colorado.
An Intro to Green Walls and Green Roofs: Living Architecture at its Best
(originally published on www.greenroofs.com)

By George Irwin

Green Walls Part I: Nomenclature
Since the days of Babylon, vegetation has been growing on, in or around both the horizontal and vertical planes of buildings, more specifically the roofs and walls. The most recent green trends have been including a variety of what the industry is calling “Green Walls, Living Walls, and Vegetated Façades,” and we have heard many more names, too. The green roof movement has naturally evolved to green walls - no pun intended, but the green roof has now climbed over the parapet and down, or up the walls.

Designers, architects and engineers now have the possibility of encasing a building in some type of live vegetation whether for aesthetics, function or notoriety. This article is the first in a multi part introduction to “Green Walls” that will define the nomenclature contributed by the leaders of green wall manufacturers, installers, designers and architects with support from Green Roofs for Healthy Cities (GRHC) and Green Walls 101© (GW 101).

Green roofs have multiple design and material components and so do green walls. Each project must be addressed with a variety of application possibilities, limitations, functionality and aesthetics. In order to understand the potential components relevant to specific applications we have to define the terminology of “Green Walls.”

The term “Green Wall” is a global term used to reference a variety of vegetated wall surfaces. Within the term “Green Wall” we have two specific categories: Green façades and Living Walls.

A ‘Green Façade’ or façade greening, features a training structure that supports vines or climbing plants growing upward from the ground away from the building (GW101, 2008). Green Facades can now be dissected into two additional categories of product applications:

• A multi-dimensional, welded wire trellising system.
• A variety of stainless steel cable and mesh systems.

Both systems support a variety of climbing plant material, can be customized and some are available in a variety of colors.

A ‘Green Wall’ is a portion of a building envelope system, comprising pre-vegetated or planted on-site panels containing plants, growing medium or liquid nutrient installed in or on a frame, secured to a structural wall or it can be free standing (GW101, 2008). Living Walls can also be migrated into two distinct categories:

• Hydroponics wall which uses recirculation water to deliver nutrients directly to the roots of the plant material.
• Soil or growing media based walls. These walls are made up of a variety of modules that retain growth media to support plant material.

Recognizing the correct terminology is the start to deciding on a green wall system. Be warned not all systems are the same there are pros and cons to each system. Not all are “Do it yourself” applications, some perform only with a specific plant type or have a variety of mounting procedures and structural requirements...and more. For more information contact the manufacturer.

Green Walls Part II: The New Green Roof
In case you don’t read the newspaper, watch the news, have internet access or any other media attention whatsoever, green roofs have proven themselves over and over again long term to be part of a Best Management Practice (BMP) in the fight of global warming. Long term data has proven that Green Roofs, when constructed correctly can:

• Retain and/or slow down a significant amount of storm-water runoff resulting in less erosion, reduced heavy metals in our water ways...etc.

• Double the life expectancy of a roof membrane
• Add acoustical value
• Regulate a building’s internal temp
• Clean the air
• Etcetera, etcetera, etcetera...

There is one problem with the green roof and all its beauty and function...unless it is yours and you have access to it, no one else can see the green roof (unless you are in an adjacent building).

Green Walls, on the other hand, can be a public display of beauty, art, expression and just as important as green roofs...functional. Green roofs have long term quantifiable data associated with them. Without boring you with statistical details, it can be theorized that a green wall will provide similar or associated benefits. Here is where the benefits may vary, depending upon the array of systems available; trellis systems, cable systems, growth media based systems, or a hydroponic system. With multiple systems come multiple benefits that may or may not carry from one to another.

A true correlation of green roof related benefits must be under a similar design. For example, the use of a 3” growing media based system should have a benefit correlation to a 3” depth green roof with similar vegetation properties. These same benefits cannot be expected with a trellis or cable system. However, the facades (trelils and cable system) can offer a multitude of other benefits not offered by a soil based system. This is part of the pros and cons mentioned in Part I. As a designer or architect it is up to you to decide on the system and its functionality. (Note: As a designer why not incorporate a multitude of systems in one project?)

The connection to the benefits will rely on the system, we can agree on that. Specifically speaking, what benefits do all the systems share? Cosmetics and aesthetics...fact is, when constructed correctly the green wall applications are very alluring and appealing. What do aesthetics do for me? As a non environmentalist we used the example of the 2,000 square foot Green Living™ Wall for Anthropologies, a high end retail store in Alabama, and it attracted additional pedestrian traffic immediately to the front - it can only be assumed that the increase in traffic equates to a rise in internal traffic / shoppers, increasing revenues for the retailer as a result of the extra attention, capturing those sales based on an interest in the green wall.

No matter what the system or plant material, there is a definite attraction to seeing a potpourri of plants cascading from the vertical heights of what would otherwise be an orthogonal built structure. Some of the manufacturers have the ability to custom manufacture specific dimensions, create curvatures, and are now incorporating green walls as art both indoors and out – green walls and green roofs as living architecture...

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George Irwin is President and CEO of Green Living Technologies, LLC (GLT) which manufactures and designs Green Living™ Walls and Green Living™ Roofs, in addition to other Green Living™ Accessories. He is also a trainer for Green Walls 101. Mr. Irwin lives in Rochester, New York, with his wife, son and daughter.

George Irwin

BHV Home Department Store, Paris, France.

Anthropologie Store, Huntsville, Alabama.


Mr. Irwin lives in Rochester, New York, with his wife, son and daughter.
By Rob Thomas

Minimal water use. Check! Wide views of the skies. Check!
Use of pest-resistant native plants that will encourage a range of wildlife visitors. Check!

401(k) retirement program with funds invested in environmentally responsible options. What?

Members of the landscape architecture community work hard to make sure the plans they develop for their clients are the best they can be. They know ingredients such as clean water, blue skies, biodiverse landscapes, and historical preservation are integral to a good plan. Some firms even tout their sustainable focus. The industry’s mission is “to lead, to educate, and to participate in the careful stewardship, wise planning, and artful design of our cultural and natural environments.”

But all too often, when it comes to retirement programs, some small design firms don’t offer a 401(k), or the ones offered by larger firms have plan assets that are invested in funds that include, and thus financially support, companies that operate contrary to the values and principles of the landscape architecture community. The company plan may offer one or two “socially responsibly invested” (SRI) funds, but employees wishing to spread their retirement investments over several funds are often left to invest in funds that include companies they do not support philosophically.

Why should you care? Numerous studies show that along with competitive base pay and medical insurance, retirement plans are one of the key benefits most important to attract and keep quality employees.

According to About.com human resources expert Susan Heathfield, employees should be encouraged to save for retirement as much as 68 percent of employees surveyed wished to invest their 401(k) dollars in funds that match their principles.1 Mutual fund companies are increasingly turning to the use of both positive and negative “screens” combining rigorous financial analysis with environmental, social, and governance (ESG) criteria. Positive means the companies in the fund may support alternative energy, or have a strong record on human rights and labor issues, among others, while negative screens may exclude companies involved with alcohol, cigarettes, guns, or nuclear power as well as those with egregious human or labor rights or environmental problems.

Screened funds are turning out to be some of the best funds. For example, global fund analysts Lipper, Inc. ranked The Appleseed Fund, a no-load mutual fund investing in sustainable, undervalued companies, as 2006’s top-returning U.S. midcap value fund and Morningstar, Inc. ranked it as the best-performing socially responsible mutual fund of 2008. The Pax World Balanced Fund was honored by MutualsAdvisor.com as one of their “Top Ten Mutual Funds for 2008,” and Winslow Green Growth was ranked by Lipper as the number one small cap growth mutual fund for the three-year period ending July 31, 2007.2

Given that screened funds are now in all major asset classes, it has become easy to create a well-balanced retirement portfolio. And, like with conventional funds, if invested properly they can provide hearty returns. In the past 18 years, since the inception of KLD’s Domini 400 Social Index on May 1, 1990, its annualized returns of 8.43 percent have beaten the S&P 500’s annualized returns of 7.78 percent (as of December 31, 2008). “Employers have a great opportunity to reflect their employees’ passion for the environment in their 401(k),” notes David Siebert, Account Vice President-Investments with UBS Financial Services, Inc. in Littleton, CO. “Not only can investors find competitive returns by incorporating their values into their retirement plans, but their investment dollars help support the very sectors your employees feel passionate about but may not be otherwise able to invest in.”

To enable companies to match their mission with their morals, Siebert works closely with Social(k), the nation’s most diverse socially responsible retirement platform for 401(k) and 403(b) plans, offering more than 150 screened socially responsible funds, including Calvert, Pax, Parmassus, Portfolio 21, and Winslow Green Growth Funds, as well as more than 2000 conventional funds to choose from. Nearly 400 financial advisors have registered with Social(k) so as to offer its unique retirement program to their clients as an alternative to the limited options normally offered through today’s traditional sponsored programs. Social(k) is a founding B Corporation, Organic Trade Association affiliate, and member of Coop America and One Percent for the Planet.

But if your organic company is looking to provide a key benefit that will attract and retain good employees — a 401(k) retirement plan — be sure it reflects their passions and matches your mission statement.

For more information regarding SRI funds, please visit these websites:
• www.socialinvest.org
• www.sowecocap.com
• www.socialinvest.org/resources/mfpc/
• www.greenmoneyjournal.com
• www.socialk.com

In addition, information about each fund can be viewed at the company’s Web site and includes in-depth information on a fund’s holdings.

Your company won’t be alone, either. Forty one percent of companies surveyed in a June, 2007, report for the Social Investment Forum said they would be providing SRI funds in their retirement plans in the next three years.

So if your organic company is looking to provide a key benefit that will attract and retain good employees — a 401(k) retirement plan — be sure it reflects their passions and matches your mission statement.

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1 ASLA website: www.asla.org/MissionStatement.aspx
2 About.com: http://humanresources.about.com/od/retirement401k/a/ screeningv2.htm
3 Calvert/ValueKmill, Attitudes Toward Socially Responsible Investing, January 2006.

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Ken’s is Denver’s Reprographic Leader.

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SUSTAINABILITY ISSUE

NEWS & DEPARTMENTS

North of the Border: What’s News in Wyoming

By Rick Staskiewicz

During one inch of rainfall over one acre of impermeable parking lots will generate more than 27,000 gallons of runoff. When stormwater runoff is discharged directly to local waterbodies, it negatively impacts water quality and can erode and undermine natural stream channels. When it is discharged to an urban combined sewer system, it consumes conveyance capacity resulting in backups of combined sewage and stormwater to local and regional waterbodies. This obviously creates potential public health risks and water quality impairment. By thoroughly investigating how runoff affects our park system, the City of Gillette is looking at the feasibility of holding this excess stormwater and using it for park irrigation. Irrigation system, the City of Gillette is looking at the feasibility of holding this excess stormwater and using it for park irrigation. Irrigation system, the City of Gillette is looking at the feasibility of holding this excess stormwater and using it for park irrigation.

Rick Staskiewicz is the Parks Superintendent for the City of Gillette Wyoming. Rick has over 30 years of experience in design build, 19 of which serving different municipalities.

New ALSA Colorado Members

Jenna Bockey, Associate ASLA
Andrew Fox, Affiliate ASLA
Anna Hjelmroos, Associate ASLA
Heath Kuszak, ASLA
J. Charles Meyer, ASLA
Robert Jason Snider, ASLA
Robert A. Weidmann, Associate ASLA
Steve P. White, Associate ASLA

STUDENT CHAPTERS

Sustainable Design in Landscape Architecture: A Deeper Shade of “Green”

By Elizabeth A. Neal

The modern “green movement” currently taking place in today’s society has already proven itself worthy and capable of having a profound influence on the many design professions. However, as its power of influence on design continues to expand along with its popularity, it has become apparent that the green movement may hold the potential to dramatically offset the balance that makes the landscape architecture profession in his attempt at defining landscape architecture. Lane Marshall states, “The professions’ philosophical and practical dedication to the land and to people has set it apart from most other professions and has been a principle cause of its unique expansion during the twentieth century.” He then states—when referring back to the two elements of land and people—that “as long as they prevail, the profession will continue to expand, for there must never be a lessening of concern for either.” Taking Marshall’s statement into consideration, the realization that our society is currently entering an unprecedented transitional period has subsequently posed a serious threat to our profession and its fundamental values. If new ecological demands increasingly outweigh cultural programmatic goals, the dedication equilibrium is neglected. This collapse of our foundations therefore changes our role as designers—slowly warping landscape architects into simply just “ecological planners.”

The most significant influence that the modern green movement is currently producing on the landscape architecture profession is quite possibly the pressure to create “sustainable design.” During this past semester, my increased exposure to the term sustainability inspired me to seek a deeper understanding of it and explore the concept further. I was soon impressed to find that—by my realization of the “deeper shade of green” achievable by those within the landscape architecture profession, but only when the ideals behind design are kept at balance, of course.

Exploring Sustainability

Sustainability is, in a sense, a very broad idea that could be applied to numerous specialty domains in our society. The term sustainability is derived from the verb sustain—which, when used in the context of this essay, can generally be defined as “to lengthen or extend in duration or space.” Although several other definitions of the word exist, this particular meaning relates best to the concepts of environmental sustainability—the type which closely correlates to the green movement. While other types of sustainability—such as economic and agricultural—are sometimes discussed, environmental sustainability, simply defined as “the ability to maintain the qualities that are valued in the physical environment,” shows great significance. Within his research of the topic, Philip Sutton, the strategic director of green innovations for Victoria, lists that, “most people want to sustain 1) human life, 2) the capabilities that the natural environment has to maintain the living conditions for people and other species (e.g. clean water and air, a suitable climate); 3) the aspects of the environment that produce renewable resources such as water, timber, fish, solar energy; 4) the functioning of ecosystems with respect to their diversity and resource depletion; and 5) the quality of life for all people, the livability and beauty of the environment.”

Initially, I thought of sustainable design as a relatively new concept associated with the green movement and somewhat forcefully implemented into landscape architecture, or even as a principle guiding the innovations of modern eco-friendly technologies and products. Although I have always recognized that sustainability in design is important and beneficial to the future, the only major influence it had on my planning process was the utilization of several LEED or Sustainable Sites Initiative standards when applied to projects.

My misconceptions regarding sustainability were emphasized in Saito’s article Significance of Everyday Aesthetics. While discussing the power of green aesthetics, she mentions Joan Nassauer’s idea that “if people find a landscape attractive and aesthetically appealing, they tend to cherish, maintain, care for, and protect it, rendering it culturally sustainable.” The phrase “culturally sustainable” immediately had an influence on my perception of sustainable design. Later Saito quotes Christopher Hawthorne on a similar topic of aesthetic significance in green architecture: “If a building is beloved, it will be maintained and preserved—and there is nothing more environmentally friendly than longevity.” I realized that sustainability is not just an environmental concept, and it wouldn’t take long for me to also recognize that the pressure to design environmentally sustainable landscapes could actually have a negative influence on their ability to succeed and be maintained. As landscape designers are forced to deal with new issues and standards at an increasing rate, is it possible that resulting designs may appeal too much to the environment and the “going green” trends and not enough to the people visiting the landscapes?

Maintaining the Balance: The Most Sustainable Solution

At a recent lecture by Gyles Thornely, Principal at Design Workshop in Aspen, he informed the audience that he disliked the term “sustainable”, especially when overused in the portfolios of applicants. He then suggested replacing the term with the word “responsible.” When first hearing his alternative terminology, I automatically assumed that responsible design referred only to environmentally sustainable design. We’re often searching for another word besides sustainable—a term that encompasses both the meanings of environmental and cultural sustainability. A responsible landscape design, if created with a balance between the fundamental philosophies of our profession, would indeed address both the needs of the land and of the people. Although producing “green” designs for public spaces is a noble attempt at promoting environmental sustainability, only the designs that attract consistent users and are appreciated by the masses have a chance at achieving success and being maintained, thereby attaining sustainability. By producing responsible landscapes such as these, landscape architects can indeed design in a deeper shade of green.

2. “Worship” in 3) the, © 2006 by Princeton University

Elizabeth Neal is currently a senior at Colorado State University majoring in Landscape Architecture.

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Lafayette Landscape Architecture Firm Promotes Shanen Weber to Principal

Shanen Weber joined Design Concepts in 1994. Shanen earned a Bachelor’s degree in Landscape Architecture from Colorado State University. As a registered Landscape Architect in the State of Colorado, Shanen has 14 years of experience encompassing master planning and design of parks and recreation sites, K-12, charter schools and church campuses, drainage/wetland habitats and trails. Notable projects include Jewell Wetlands in Aurora; Playground Renovations for Adams 12 Five Star Schools; and Master Plans for Rifle’s Centennial Park and Pueblo’s Honor Farm Park and Open Space.

Founded in 1981, Design Concepts is a community and landscape architecture firm of 16 professionals. The firm’s experience includes master planning and design for parks, communities, and K-12 school and university campuses throughout the Rocky Mountain Region. Design Concepts’ projects have been featured in the Denver Post, Boulder Daily Camera, Landscape Architecture Magazine, and many national publications. The firm celebrated its 25th anniversary in 2006. For more information, go to www.dcla.net.

Nuszer Kopatz Rolls Out Two New Skate Parks


Railbender Park – Parker, Colorado

Nuszer Kopatz teamed up with Site Design Group and Carroll-Lange for the design of Railbender Skate Park located in Parker, CO. Rail Bender is a 33,000 square-foot lighted skate plaza located within the larger 8.5 acre Twenty Mile Park adjacent to Cherry Creek. The park also features a central lawn, which will host outdoor events and festivals, six tennis courts, three picnic shelters, seasonal restrooms, Regional Trail access, a bouldering area, a natural-themed playground and public art components. The entire park was constructed in one phase during 2008.

Several unique, cost-effective and durable elements were added to Railbender Park to create a unique experience. Colored concrete and a nearly 100-foot long art wall with the profile of the Front Range along the most visible street edge create a strong skate park presence to the public. The skate park is situated to create plentiful seating opportunities, utilizing oversized sandstone seats for spectators watching from the shelter. The viewing areas provide Railbender Park the ability to host competition skate events.

Brian Aragon Park – Brighton, Colorado

The City of Brighton opened its newest skate park to the public on August 4th, 2008 and already it has become a popular hangout for the City’s youth. The 1-acre park houses the first permanent skate park for this growing community and also includes a picnic shelter and restroom facilities.

Designs for the skate park began in early 2007 when teens in the community approached the City about building a new skate park. A series of community meetings were held to gather input on the different features that skaters wanted to see incorporated. The final designs resulted in a flow bowl with an over-vert pocket, a half pipe area, a street plaza with ledges, handrails, and stairs and can be used by inline, skateboard and BMX riders.

The skate park distinctive layout and design maximizes the perimeter landscape to help soften the feel of the park’s concrete. User safety is addressed with the inclusion of railings and fencing, which also provide viewing and seating areas for spectators.
Design for the Ages? Or for the Egos?

By Brian Koenigberg, RLA, AICP

Do you ever wonder what Denver will look like in 50 years? 100 years? Surely it won’t be the same, history has taught us that much. But there are reminders of our past all around us. Walking the streets of downtown Denver one can easily get a sense of what this ‘cow-town’ looked like at the turn of the 20th century. Many of us live in old or historic neighborhoods in metro Denver. My house was built in 1916 in the Capitol Avenue Subdivision Third Filing. This subdivision was originally platted in 1888, and I have no doubt that it will still be standing in another century.

Now, the platting of new subdivisions has changed little over the past 125 years, and happens with regular frequency in all of the municipalities along the Front Range. The redevelopment of Stapleton Airport is a great example. Since planning started in 1990 there have been dozens and dozens of separate neighborhood plats filed with the City and County of Denver. While there is no doubt as to the success of Stapleton as a pedestrian-friendly set of neighborhoods—designed to harken back to the success of historic neighborhoods much like those found through out Denver—what will designers see on this spot in another 100 years? Just as I was confident in saying that my house, my neighborhood, will still be around in the year 2100, I am equally confident in saying that Stapleton will not! I cannot envision the craftsmanship that went in to building these thousands of homes lasting the test of time. While construction techniques have changed so much over the past century (mostly for the better), the longevity of the lightweight ‘skins’ found on much of our architecture today simply cannot withstand the most powerful force on the planet: Time. Why would we ever design something if we didn’t want it to be a relatively permanent part of the built environment? We are too self-absorbed as professionals, whereby the design is actually more important than the implementation. Shouldn’t we be demanding that the best construction techniques, those that will stand the test of time, be used instead of the cheapest? Is there anyone to blame? We should change the focus of our industry to pay more attention to long-term impacts. This is, after all, the real bottom line with this whole sustainability issue we are currently facing. I know we don’t sit down at our drafting tables and think that we are designing something that will be obsolete in a matter of decades. My concern is that we aren’t thinking of any long-term sustainability issues when we put pencil to paper.

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