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LANDSCAPE ARCHITECTURE MAGAZINE

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SOCIETY OF LANDSCAPE ARCHITECTS



BEAUTY BY NUMBERS

Design Workshop tries to make it happen

VINE LINES

In Chile, Teresa Moller's *agricolas*

CATTLE CALLS

It's hoof to hoof at the big competitions

CORNELL'S FALLEN STAR

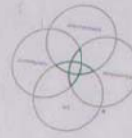
The obscure end of Edward G. Lawson



THE MEASURED RESPONSE

DESIGN WORKSHOP, KNOWN FOR ITS SITE-SPECIFIC PLANS AND DESIGNS, IS SETTING MEASURABLE GOALS PROJECT BY PROJECT.

BY DANIEL JOST, ASLA / PHOTOGRAPHY BY D. A. HORCHNER/DESIGN WORKSHOP



Environment

SUSTAINABLE PLANNING

- Site Selection
- Ecosystem Protection
- Brownfields
- Regional Water-Management Systems
- Development Density
- Regional Resource Impacts
- Open Space and Conservation Lands
- Other

SITE DESIGN

- Program Placement
- Planting Design
- Heat Island Effect
- Noise Pollution Reduction
- Light Pollution Reduction
- Other

TRANSPORTATION

- Framework and Infrastructure
- Motorized Alternatives
- Non-Motorized Alternatives
- Incentives and Programs
- Other

WATER MANAGEMENT

- Stormwater Management Technologies - Quality
- Stormwater Management Technologies - Quantity
- Erosion and Sedimentation Control
- Water Use Reduction
- Innovative Wastewater Technologies
- Other

ENERGY AND ATMOSPHERE

- Energy Budget
- Renewable Energy
- Air Quality
- Carbon Budget
- Other

MATERIAL RESOURCES

- Green Building
- Resource Preservation and Reuse
- Landscape Materials
- Waste Management
- Other

OPERATIONS

- User Education
- Site Maintenance
- Other

HERE
Allyson Mendenhall, ASLA,
and Jim MacRae, ASLA,
of Design Workshop use
the firm's metrics sheets
to set measureable goals.

PA?
A PROMOTIONAL MKTING STORY

ESTHETICS INTERNATIONAL STANDARDS II
de neuron towers + skyline on site
COSI DENSITY 20%
DENSITY-HIGHRISE II

NATURAL FEATURES
BUILT FEATURES

Balance?

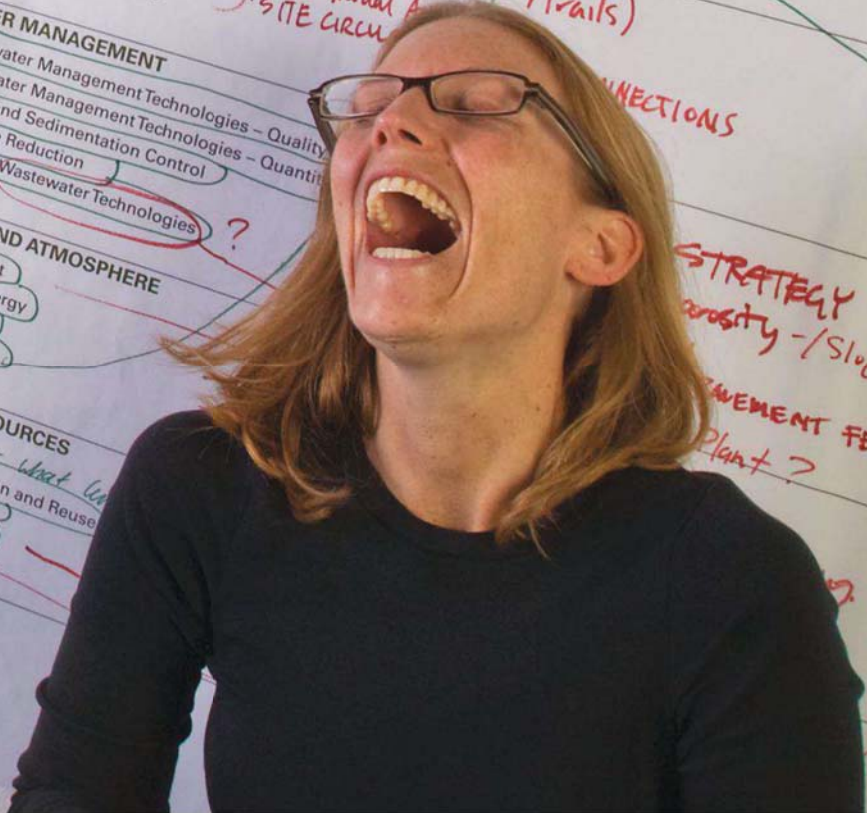
SUSTAINABLE SYSTEM -
Set Carbon Footprint

(Gondola, Funicular, Trails)
Multi-Modal A
SITE CIRCU

CONNECTIONS

STRATEGY
density - / slope

PAVEMENT FEASIBILITY
Plant?



THE FIRST THING I SEE AS I WALK INTO DESIGN WORKSHOP'S DENVER OFFICE IS A GIGANTIC VENN DIAGRAM.

This supersized version of the company's logo has four interlocking steel rings, each nearly eight feet wide, mounted dramatically to a red wall. The logo resembles the Venn diagram used to define sustainability as the conflux of social, environmental, and economic well-being. But where the "social" ring would be, there's a ring for "community." And there is an extra ring—for "art."

Design Workshop has always had a knack for branding. When Joe Porter, FASLA, and Don Ensign started this landscape architecture and planning firm in 1969, its name stated their philosophy—to replace insular decision making in the design process with workshops that bring in a variety of people. The early workshops "went to the streets," says Richard Shaw, FASLA, who joined its Aspen, Colorado, office in 1976.

Back then, Aspen was the firm's only office, and it had four employees. Today, Design Workshop is a corporation with 80 employees in six cities—Aspen; Denver; Salt Lake City; Austin, Texas; Lake Tahoe, Nevada; and Asheville, North Carolina. Porter and Ensign have retired, and there is a new generation of leaders: Shaw; Kurt Culbertson, FASLA; Todd Johnson, FASLA; Rebecca Zimmermann; Terrall Budge, ASLA; Jim MacRae, ASLA; Jeff Zimmermann; and Rebecca Leonard.

Design Workshop is like a supermarket for landscape architecture and planning services. Looking for someone to plan a ski resort, a community, or a highway beautification strategy? Want a landscape architect to design a park, a streetscape, a golf course, or a large estate in the mountains? Design Workshop has years of experience with all these project types. The firm even has graphic designers who design signage and web sites and market analysts who provide advice to clients who want to buy land and communities that want to encourage tourism.



But it has not gone the AECOM route—it does not provide the full spectrum of design, construction, and operations consulting a client might need; it doesn't design power plants and pipelines. There is no architecture department or engineering department. When it needs that expertise, Design Workshop collaborates with other firms, and that's just the way its leaders like it. "Most of the multidisciplinary offices are driven by one discipline," says Culbertson, Design Workshop's CEO. "[Landscape architecture] ends up being the runt of the litter."

Workshops are still a big part of the firm's culture and brand. The principals like to bring in people who are not on the team and have them look at the project with fresh eyes. On the first Monday of every month, they will pick a few projects in the works and post them on a studio wall for a group critique. Staff members are invited to trade their lunch break for some pizza and design reviews. Perhaps it is these unpaid critiques that have led some to nickname the firm "Design Sweatshop," but they are voluntary. They're like studio classes. They give people a chance to learn from one another.

Also like an academy, Design Workshop takes continuing education seriously and may even pay for it, which is rare in the business. It has a faculty-in-residence program, which brings in experts from academia, like Bruce Ferguson, FASLA, and encourages employees to get graduate degrees, lending them money and retiring the loans over time if they come back to the firm after graduation.

Design Workshop has also branded its holistic design approach. As the firm's name captured the Zeitgeist of the late 1960s, the firm's trademarked Venn diagram means to encompass the expanding imperatives of landscape architecture today. Landscape architects are moving into unexplored territory as

they confront the huge puzzles of global warming, marine dead zones, shrinking budgets, growing political polarization, and new insights on how plants, animals, and people react to their environments.

The argument for holistic design seems obvious today. It wasn't as obvious when Design Workshop trademarked the Venn logo in the late 1990s. During the previous decade, a schism had arisen between landscape architects who favored intuitive artistic design and those who thought design should be grounded in environmental or social thinking. "There were several projects done in the 1980s that got considerable acclaim, which have been bulldozed because they did not perform for the users in a comprehensive way," says Johnson, who has been the firm's chief design officer since 2001. One well-documented example, George Hargreaves's Harlequin Plaza, was just a short drive from the firm's Denver office.

Not long after Harlequin was erased, in 1999, Johnson organized a retreat for Design Workshop's partners. They looked back at their own work and projects by others. Their conclusion: Projects that work on a number of levels—that address environmental, community, and economic issues in an artful way—are more likely to hold up over time than projects that tilt too far in just one direction. Johnson remembers Porter, Design Workshop's patriarch, leaning back in his chair, as he often did when he was about to make a point. Porter said: "If we're not about all four of these things, then I'm wasting my time."

This became the mantra, the core of the firm's philosophy, which it calls DW Legacy Design. (You can't always strike branding gold.) You can talk about holistic design, and you can do it; the latter is much harder, especially when your firm is as big as Design Workshop.

Culbertson likes to say: “What gets measured gets done!” The phrase, sometimes attributed to the management guru Tom Peters, has become a cliché in the business world. But it is not the sort of thing you typically hear in a landscape architecture office.

Culbertson believes landscape architects are designing to certifications like Leadership in Energy and Environmental Design (LEED) these days the way school kids train to a state test. That’s a problem because certification covers only so much. It’s hard to claim a project is sustainable if it doesn’t meet people’s needs or sustain itself financially in the long run. Culbertson recently wrote in *LAM* (“The Fuller Measure,” April 2011) about his wanting a new type of metric for a project’s worth that measures beyond environmental performance to a project’s social value, economic value, and artfulness.

At the Denver office, I met Allyson Mendenhall, ASLA, who joined the firm in 2003. Mendenhall is an associate at the firm and the manager of DW Legacy Design, the firm’s comprehensive design agenda. In 2005, she oversaw the rollout of the DW Legacy Design Metrics, a proprietary framework for setting project goals and deciding what should be measured.

The metrics are outlined on paper, like menus from which to order à la carte. Each of the four metrics sheets lists words and phrases. The Environment metrics sheet includes terms such as Heat Island Effect, Non-Motorized Alternatives, and Carbon Budget. The Economics Sheet lists terms like Absorption and Affordability. There is no further elaboration on any of these subjects. The metrics are designed to focus the discussion on how a design performs, such as how much stormwater a project will capture and the quality of the storm runoff from a site, rather than how you will get there.

The choose-your-own-adventure nature of the metrics allows them to scale up or down based on a project’s budget and scope. The sheets have become a part of every project, but no project better shows the metric possibilities of this system than the firm’s plans for South Grand Boulevard in St. Louis.

The South Grand project is one of four “Great Streets” projects overseen by the East–West Gateway Council of Governments (EWGCOG), the metro planning organization that hands out federal transportation funding in the bistate Missouri–Illinois region. Culbertson and Paul Squadrito of the Aspen office, with a team of consultants, analyzed part of the boulevard known for its ethnic restaurants, between Arsenal Street and Utah Street. It’s a dense old neighborhood that relies a lot on buses. Crossing the street there used to be treacherous, but Design Workshop worked with the community to narrow the road and make it friendlier for pedestrians. The project, which won an ASLA Honor Award for Planning and Analysis in 2011, is under construction.

By the time the DW team pulled out the metrics sheets for South Grand it had visited the site, gone to an initial meeting, and obtained a rough base map. Using the sheets, they came up with 42 metrics that pertained to the project—including stormwater quality, soil volume, noise levels, air quality, urban heat island effect, vehicle speed, accident data, crime statistics, light levels, public art, employment, community support, pedestrian mobility, and supply and demand for various types of buildings.

The engineers at Horner & Shifrin and Nelson\Nygaard acted as consultants on the South Grand project. They measured the traffic volume and speed along the road. Their report showed an average speed of 42 miles per hour—17 over the posted speed limit. Design Workshop showed these numbers at public meetings alongside research that suggested a person hit by a car going more than 35 miles per hour was unlikely to survive the accident. They got a one-month pilot project to narrow South Grand from four lanes of traffic to three lanes with Jersey barriers. The speed dropped to 32 miles per hour.

The real estate advisers at RCLCO did a market analysis of South Grand. It looked at the spending power of nearby neighborhoods and said that their shops were not capturing their “fair share” of community income—a suggestion of ripeness for retail development. Rick Chellman, then with TND Engineering and now with Nelson\Nygaard, used software called SimTraffic to model the effect of different proposals on traffic flow and emissions. Reducing the roadway from four lanes to three, and improving the timing of traffic lights, his report



ABOVE
Design Workshop’s offices share a backpack full of inexpensive tools to measure surface temperatures, noise levels, light levels, and the speed of passing cars.

OPPOSITE
Design Workshop uses these sheets to select metrics for each of its projects.

THE CHOOSE-YOUR-OWN-ADVENTURE NATURE OF THE METRICS ALLOWS THEM TO SCALE UP OR DOWN BASED ON A PROJECT'S BUDGET AND SCOPE.

DESIGNWORKSHOP DW LEGACY DESIGN

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DESIGNWORKSHOP DW LEGACY DESIGN

Economics

MARKET POTENTIAL

- Supply and Demand – Development for Sale to end users
- Supply and Demand – Rental Properties
- Supply and Demand – Retail Properties
- Absorption
- Other

FINANCIAL FEASIBILITY

- Public Financing
- Private Equity
- Return on Investment
- Debt
- Public Sector Incentives (tax breaks, etc)
- Private Sector Grants / Philanthropy
- Opportunity Costs
- Other

COMMUNITY IMPACT

- Employment
- Fiscal Impact (Governmental)
- The Gross Community Product (GCP)
- Venture Capital / Entrepreneurial Activity
- Local Businesses / Existing Businesses
- Affordability
- Public and Community Infrastructure
- Community Assets
- Economic Value of Art
- Other

ENVIRONMENTAL IMPACT

- Energy
- Carbon Budget
- Return on Investment (ROI) of LEED
- Environmental Conservation
- Recycling
- Other

DESIGNWORKSHOP DW LEGACY DESIGN

Community

SOCIAL CONDITIONS

- Social Justice/Equity
- General Demographic Characteristics
- Other

CIVIC LIFE

- Emotional Context
- Traditions
- Tax Structure
- Regionalism
- Community Leaders
- Social Contributions and Connections
- Community Interaction
- Arts, Culture and Entertainment
- Communication / Media
- Other

CULTURAL LANDSCAPE

- Historic Designed Landscapes / Architecture
- Historic Vernacular Landscapes
- Landmarks / Places of Significance
- Other

SERVICES / INFRASTRUCTURE

- Emergency Services
- Health Care
- Sanitation
- Child Care / Senior Services
- Education
- Community / Continuing Education, Youth Clubs
- Social Services
- Basic Needs
- Other

WORK FORCE SYSTEM

- Mobility
- Employment
- Other

LAND USE SYSTEM

- Residential, Retail, Industrial, Public
- Recreation and Open Space
- Compact, Complete and Connected Neighborhood
- Other

DESIGNWORKSHOP DW LEGACY DESIGN METRICS

Art

INTELLECTUAL / EMOTIONAL CONTENT

- Emotional and/or Spiritual Wellness
- Meaning
- Narrative (or Engagement)
- Other

PLACE-MAKING EXCELLENCE

- Site Specificity
- Identity / Character
- Other

TEMPORAL QUALITIES

- Permanence / Ephemerality
- Seasonality
- Succession
- Timelessness
- Timeliness
- Other

INVENTIVENESS / ORIGINALITY

- Innovation / Originality
- Authenticity
- Transcendence
- Other

CULTURAL / POLITICAL CONSIDERATIONS

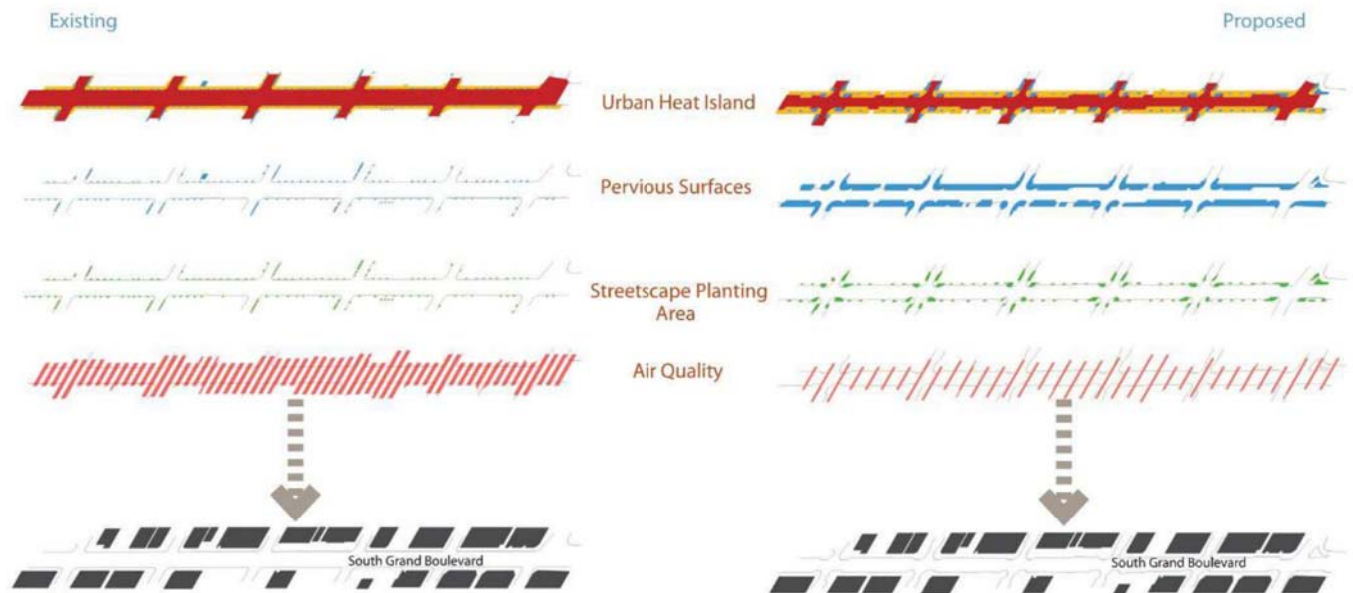
- Anesthetics
- Polemics
- Other

COMPOSITION

- Compositional Perception
- Compositional Elements
- Dilemma / Thesis Resolution
- Functional Aesthetics
- Other

TECHNICAL EXCELLENCE

- Materials
- Details / Craftsmanship
- Collaboration with Artists
- Public Art
- Other



showed, would cut carbon monoxide and mono-nitrogen oxide emissions by about half, because cars would idle less.

Then there is noise. It's hard to find the money to measure things like noise, even when it has a big impact on what a place is like. The South Grand client didn't have the budget for a noise specialist. But Design Workshop has a backpack filled with cheap tools that its employees can use for rudimentary site analysis. There are tools for measuring noise, surface temperatures, vehicle speeds, and light levels. The backpack made its first appearance on the South Grand Project and now circulates among the offices.

With a handheld noise meter, Design Workshop recorded median noise levels between 64 and 75 decibels on South Grand, with peaks much higher than normal conversation levels (about 60 decibels) and the threshold required for residential sound walls (67 decibels). After the road had been narrowed, the firm measured again, and noise levels seem to have lowered somewhat. A speed gun, typically marketed to baseball players who want to gauge their fastball, became a quick way to show people, including politicians, how fast cars were really moving. Temperature readings of various materials told how much they would add to the heat island effect. And a light meter helped to create a contour map of light levels and their inconsistency around South Grand—pools of bright light alternated with pools of darkness, which made it visually hard to take.

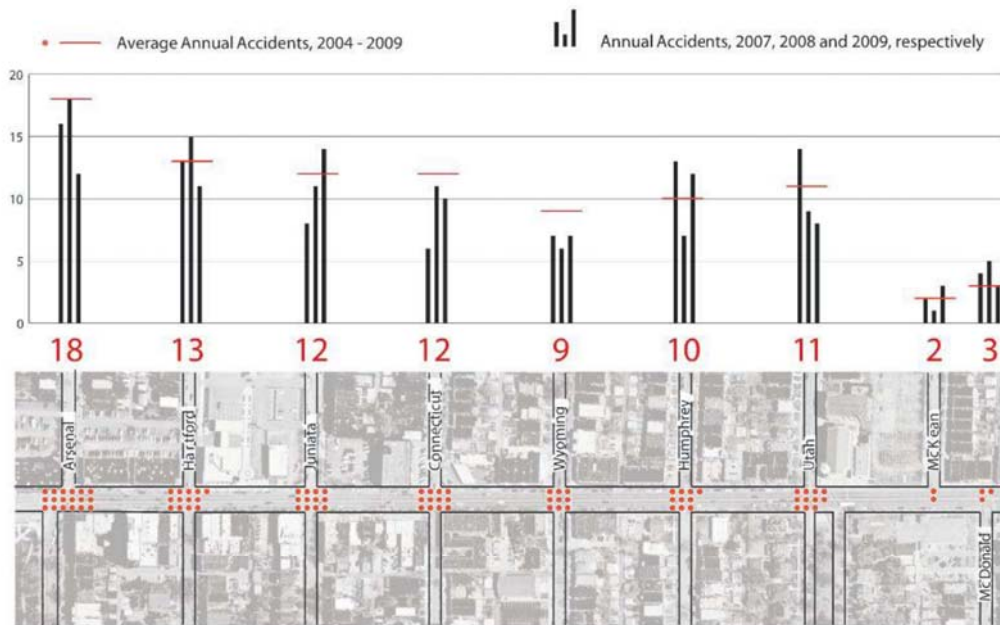
Other data helped, too. A local councilperson, Jennifer Florida, made a freedom of information request for police accident data on certain intersections over six years' time. There were 80 crashes a year on average along the short stretch of South Grand. That number seemed to drop during the pilot project,

and the designers hope to show that they can calm traffic and lower the accident rate.

During critiques, the metrics sheets come out again, to check progress toward the project's goals. It's not too hard to estimate how you're progressing toward an empirical goal, but artistic goals are tricky. For public projects, Design Workshop polls the community online and at meetings. For South Grand, the firm asked people to rate the look of South Grand today and the look of the design proposal. Nearly half of those surveyed thought the street as it stood looked poor and thought the proposal looked like a definite improvement.

Paul Hubbman, a project coordinator with EWGCOG, has worked with Design Workshop on two streetscape projects, including South Grand. He wasn't immediately sold on Legacy Design. "When I hear a branded tag line, I always get suspicious," says Hubbman. "I make fun of [Legacy Design] a little bit because everyone's got their proprietary approach." But having seen it flesh out through two vastly different projects, he's come to understand its appeal. He believes it helped the firm educate the community about the decisions they were making. "They got better feedback," he says. "Instead of just putting up section cuts and asking people based on the visual graphics, they were pretty good about laying out the related issues."

Design Workshop's metrics sheets have gone through a number of changes since they were first introduced. Initially, the sheets were extremely detailed and dense, and the process was belabored. Teams would often go through every item on the sheets together, one by one, "and realize five hours into the day [that] they'd only gotten through half of them," says Mendenhall.



Today, the meetings are usually only an hour long. All of the participants will go through and circle the goals they think are relevant before they talk as a group.

Most of the staff members I've talked to over the past year—including the eight principal shareholders—are enthusiastic about the metric framework. "We love those sheets," says Stephen Spears, ASLA, a principal at the Austin office.

Johnson believes the sheets help younger designers feel more engaged in the process. He says that filling out these sheets and defining the project's goals give young designers a platform "to stare the principals in the face" and tell them when they are not meeting one of their goals.

Amanda Steinle, a young designer who worked at the firm, appreciates the roundness of staff involvement they create. "Before this, I hadn't worked anywhere where it was so educational, where we actually knew what we were doing and why."

Johnson says the important project features are less likely to be value engineered out when the client has helped set the metrics. Projects are also better protected from the whims of wealthy donors, says Rebecca Leonard, the partner who oversees the Austin office. "It can be tricky to say no to [a donation]," says Leonard. But the setting of specific metrics helps set boundaries to clarify what belongs and what doesn't on a project—such as a gift of an Italianate fountain in a modern-looking design.

The firm has measured many things, though not the effects of the Legacy process on its bottom line. Budge, who leads the Salt Lake City office, says the firm doesn't tend to win

projects where it must compete entirely on cost, at least not in Utah. It tends to do well when cost and experience are both considerations. Johnson acknowledges that bringing a full team together, even for a one-hour metrics meeting, can be expensive; after all, with eight or nine people, that's an eight- or nine-hour meeting. But there is much less wasting time by going off in wrong directions, which is "bad for project morale, and bad for the budget," he says.

Other firms have looked at project performance and its measurement in recent years, including Nelson Byrd Woltz and OLIN (See "Making Research Matter," *LAM*, January 2010). That's good news for the profession. "A lot of people say you should do the environmentally friendly thing because it's the 'right thing,' but that's not always a winning argument," Culbertson says. "Governments are increasingly driven by metrics."

Culbertson is trying to build repetition into projects' measurement, so Design Workshop can compare one project to the next to see how design solutions affect certain variables. "If we want to argue that a 10-foot-wide lane is better than one that's 14 feet, we need to be able to show why," Culbertson says. "We need to prove it's more walkable. Engineers have reasons they want it 14 feet."

Even at Design Workshop, though, there remains a feeling that measurement is only part of what makes its work special. "It is easy to fall into the trap where you are just problem solving, [where] you're missing the poetics of what we do," says Spears. "If we get in the situation of too much measuring things and not being playful designers, we get caught in the same trap engineers do." ●

OPPOSITE
For the South Grand project, diagrams show how Design Workshop's proposal will reduce heat island effect, increase the amount of pervious surfaces, increase streetscape planting areas, and improve air quality.

ABOVE
A diagram by Design Workshop shows the number of accidents that have occurred at each intersection in the project area in recent years. They will monitor the accidents after the project is complete to see if their design makes this corridor safer.

DAYBREAK

SOUTH JORDAN, UTAH

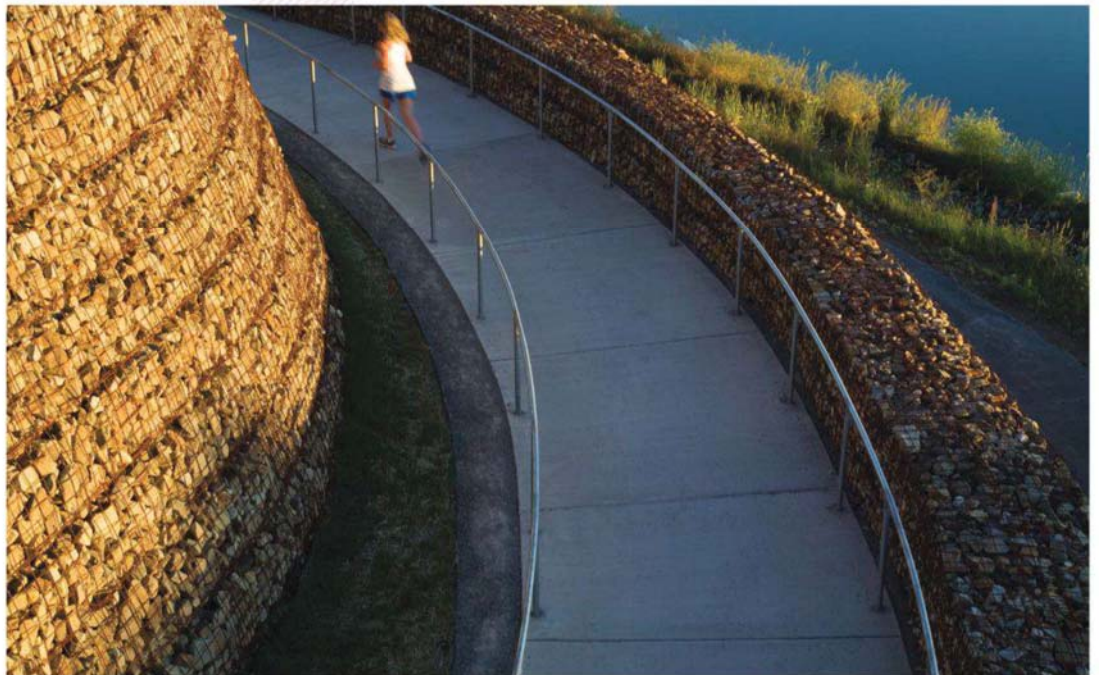
Nationally, not even 13 percent of students in grades K–8 walk or bike to school, but in the new community of Daybreak, just south of Salt Lake City, 88 percent of students do. The community has churches, parks, offices, and restaurants, all well connected to residential neighborhoods. And there is quite a mix of housing options—houses, condos, and apartments. Some look traditional; others look modern.

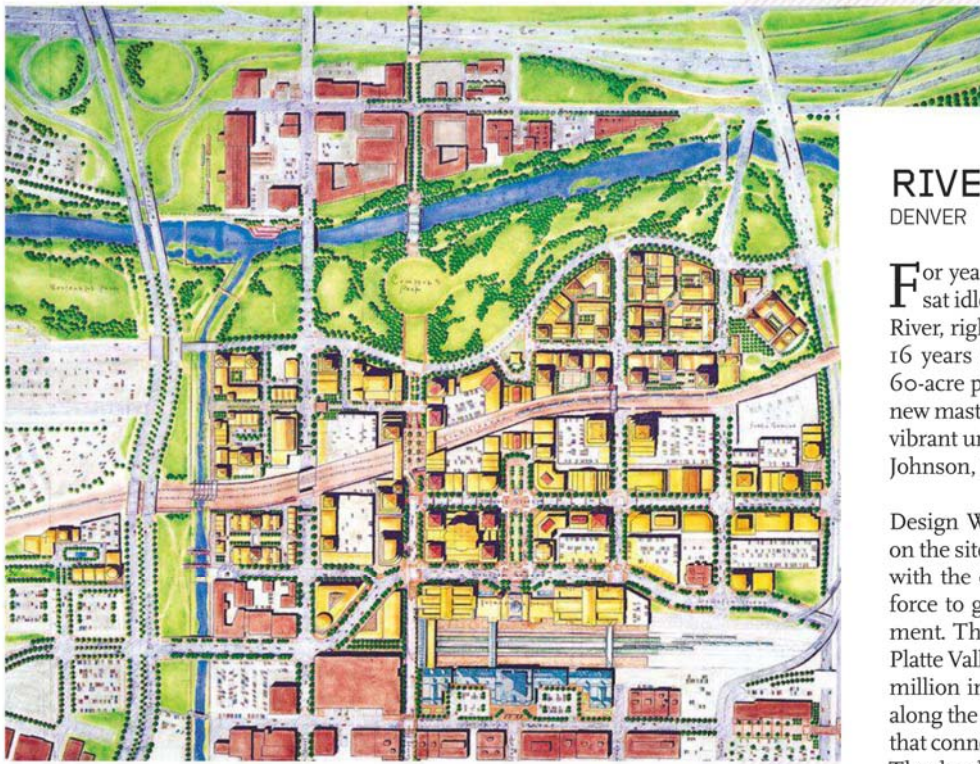
Calthorpe Associates master planned this community for Kennecott Land, which is a division of Rio Tinto, the large mining conglomerate. Design Workshop planned and designed the open-space system in Founder's Park Village, the project's first phase. The partner in charge of this project, Terrall Budge, ASLA, says its design drew on the site's relationship with the active copper mine next door—bringing in 43,500 tons of rock left over from the copper mining process. The open spaces have a distinct local character, with wire baskets filled with recycled rock and naturalistic meadows that require only occasional irrigation.

All of the rain that falls on the site is captured within the green spaces, which drain into the pond in the development's largest park.

One of the most interesting features in the community is the pedestrian bridge that passes over part of this pond. The bridge is like a land sculpture. On one side, gabions filled with recycled rock spiral up to the bridge. On the other side, the ramp winds around a cone planted with grasses.

A longer article about Founder's Park Village appeared in *LAM* in June 2010. ●





RIVERFRONT PARK DENVER

For years, the old Union Pacific rail yards in Denver sat idle, despite their prime location along the Platte River, right next to Denver's vibrant downtown. About 16 years ago, the Trillium Corporation obtained the 60-acre parcel and hired Design Workshop to create a new master plan for transforming this brownfield into a vibrant urban community. The project was led by Todd Johnson, FASLA.

Design Workshop coordinated environmental testing on the site, and over the course of 18 months, it worked with the owner, the city of Denver, and a citizen task force to get approval for a new planned unit development. The city and county of Denver and the Central Platte Valley Metropolitan District agreed to share \$48.2 million in infrastructure costs—including a new park along the river's edge and a signature pedestrian bridge that connects the site to the 16th Street pedestrian mall. The developer agreed that 10 percent of all units would be classified as affordable.

Rather than zoning the site based on use, Design Workshop worked with the city to institute a form-based zoning code. The requirements included Denver's first maximum parking ratios, mandatory ground-level retail, build-to lines, and various requirements for the building envelopes. The requirements have spawned a fairly nice-looking urban community without placing undue burdens on the developers. Over the past decade or so, "not a single building has sought a zoning change," says Chris Frampton, the managing partner at East West Partners, the master developer of the site.

Design Workshop also designed some of the landscape areas in the final development, including the plaza at the foot of the pedestrian bridge. But although the firm negotiated the configuration of the park along the river and designed its edge, the majority of the park was designed by Civitas.

The project has helped Denver attract the headquarters of DaVita, a Fortune 500 company. It includes a new contemporary art museum by the architect David Adjaye, and last summer, Class A office space leased for 15 percent more money in Riverfront Park than in other parts of Denver, according to East West Partners. The project is about halfway built out. It won an Award of Excellence from the Urban Land Institute in 2011. •



SPRINGWOODS VILLAGE

HOUSTON

Not far from Ian McHarg's famous development, the Woodlands, Design Workshop is working on plans for another community that takes stormwater seriously. The firm was hired by the Coventry Development Corporation to help lure a high-profile corporate headquarters to a site along Spring Creek near Houston. The idea was to show how the headquarters could fit into a new community that would be developed around it.

At first they had no idea what corporation they were trying to lure. "[The company's representatives] wouldn't even tell us their last names for the first few visits," says Jim MacRae, ASLA, who's leading the project from the firm's Denver office. It was, in fact, the nation's most profitable company: the oil and gas giant ExxonMobil.

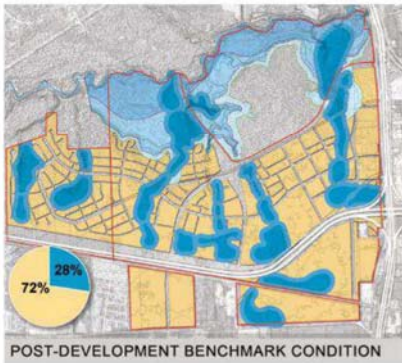
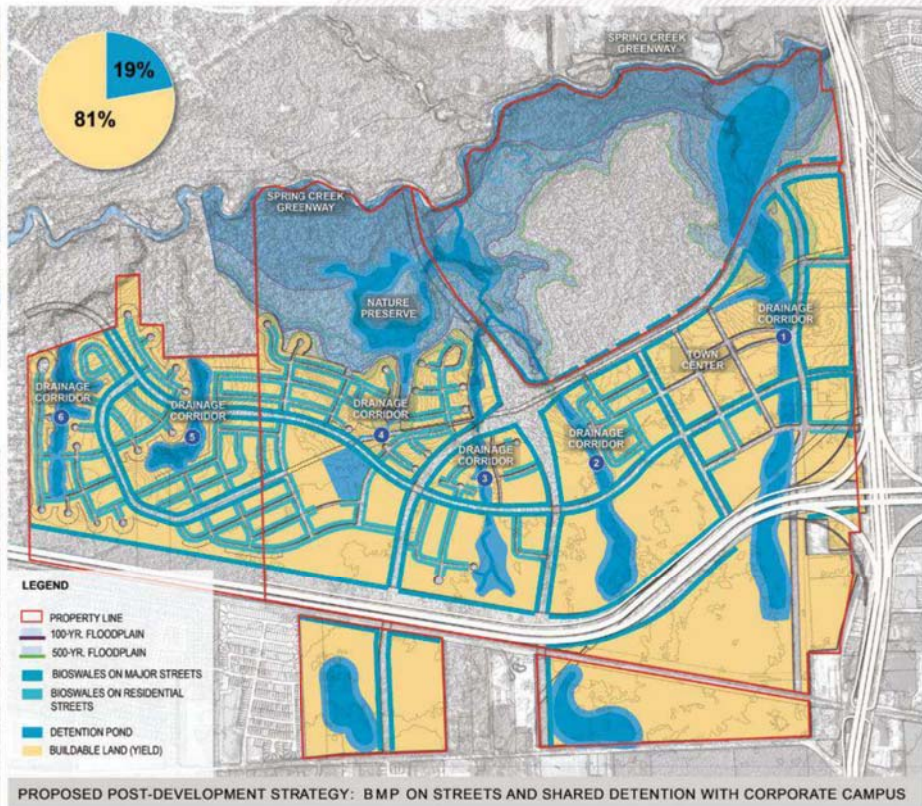
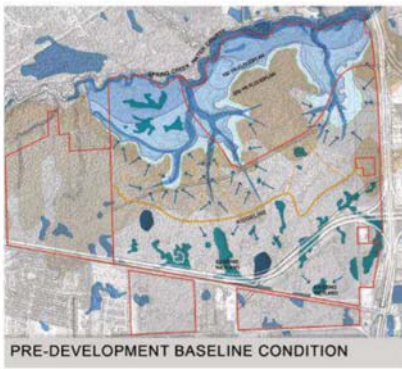
In the run-up to Exxon's decision to build on this site, Design Workshop led a two-and-a-half-day charrette focused on measuring sustainable design, bringing in staff from three different offices—Denver, Aspen, and Austin. Todd Johnson, FASLA, of Design Workshop thinks the firm's interest in metrics and measuring outcomes helped attract Exxon to this site. Keith Simon of Coventry thinks that was only one of many aspects that drew Exxon here, but Design Workshop's enthusiasm definitely fed Exxon's interest in measuring outcomes. The design standards for Springwoods Village, developed by the Gensler architecture firm, will actually require the land buyers to report on things like water and energy usage so that the developer can adjust its designs based on performance.

Design Workshop's plan makes a few interesting moves. When the highway was built to the south of the project, a number of wetlands were cut off from the system of creeks flowing into Lake Houston, leaving them much less useful for wildlife and flood control. Design Workshop's plan would reconnect those wetlands to the river system. It would develop drainage corridors that also provide park space for the community.

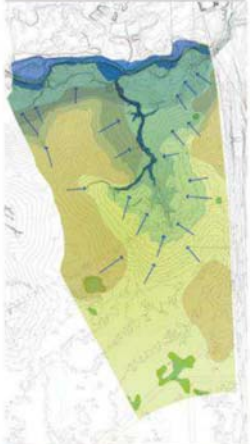
To maximize the amount of area that could be used for recreation, "each of the parcels [to be developed] will be given a mandate to maintain a certain amount of water on site," says MacRae. The strategy will include green roofs and "green streets" with planted drainage areas along their edges.

Design Workshop's plan would create a new nature preserve along Spring Creek and attempt to save as many trees as possible within the community itself by limiting grading. To cool open spaces, it would harness the prevalent winds by making streets parallel to those winds wider. ●

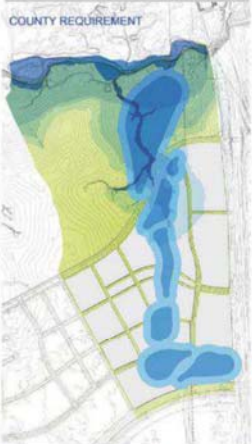




EXISTING WATERSHED



BENCHMARK STRATEGY



BMP STRATEGY: STREETS



BMP STRATEGY: STREETS + PARCELS



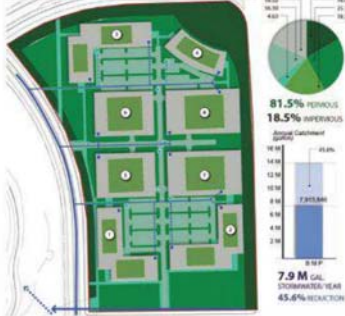
BMP STRATEGY		32% REDUCTION FROM BENCHMARK		
BMP 1: STREETS	SPRINGWOOD SITE DETENTION	33.4 ac	33.4 ac	
	PTO SITE DETENTION		38.1 ac	
	TOTAL		71.5 ac	
BMP 2: STREETS + PARCELS		40% REDUCTION FROM BMP 1		
	SPRINGWOOD SITE DETENTION	21 ac	21 ac	
	PTO SITE DETENTION		21.5 ac	
	TOTAL		42.5 ac	
PARK AREA: 47.3 AC				
		BMP1	BMP2	
DETENTION	33.4 ac	70.61%	21 ac	44.40%
TREE PRESERVATION	6 ac	12.68%	9.6 ac	20.30%
CIRCULATION	3 ac	6.34%	3 ac	6.34%
EASEMENT (GAS, AT&T)	2.9 ac	6.13%	2.9 ac	6.13%
PARK AMENITY SPACE	2 ac	4.23%	10 ac	21.34%
PARK DEVELOPABLE SPACE	0 ac	0.00%	0.8 ac	1.69%

LEGEND

- WATERSHED BOUNDARY
- 100-YR FLOODPLAIN
- 500-YR FLOODPLAIN
- DETENTION POND
- DETENTION POND BUFFER
- DEVELOPABLE LAND
- BIOSWALE ON STREETS
- WETLAND
- PERMEABLE SOILS
- DIRECTION OF WATER FLOW

KEYMAP

BLOCK 1 S.M.P. PROTOTYPE



BLOCK 2 S.M.P. PROTOTYPE



BLOCK 3 S.M.P. PROTOTYPE



- SOFTSCAPE:
- PERVIOUS - FOREST PRESERVATION
 - PERVIOUS - RAIN GARDEN, BIOSWALE
 - PERVIOUS - GREEN ROOF
- HARDSCAPE:
- PERVIOUS - POROUS PEDESTRIAN PAVING
 - PERVIOUS - POROUS VEHICULAR PAVING
 - IMPERVIOUS - ROOFTOP
 - IMPERVIOUS - PAVING