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Aug|Sept 2018

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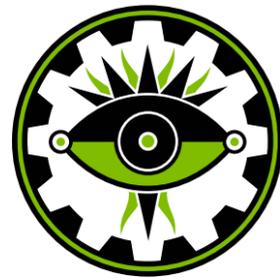
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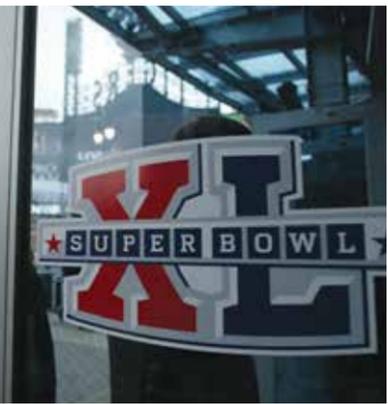
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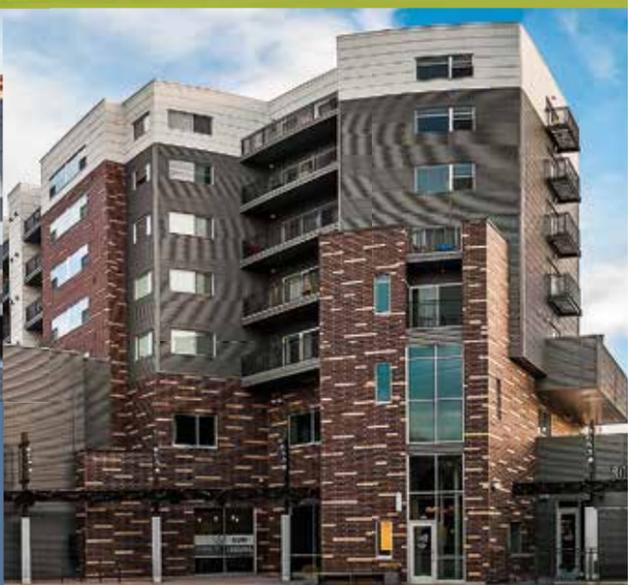
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On the cover: Grove Tower is the first office building at the 62-acre master planned Valley Grove development in Pleasant Grove. (photo courtesy Beecher Walker Architects)

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← Publisher's Message

Rising to Greatness in the Face of Adversity

Anniversary profiles have become a staple of *UC&D* during our nearly six years covering Utah's A/E/C industry, and I consider it a privilege to interview the great individuals behind these successful firms celebrating key milestones, and to find out what drives them, what makes them tick.

The ability to rise above adversity is a common theme for the three anniversary profiles in this issue – Watts Construction (50th), Horrocks Engineers (50th), and Pentalon Construction (25th). Each of the leaders of these firms have overcome significant personal and professional challenges in their lives that ultimately made them stronger, more resilient people.

Watts Construction founder Richard Watts was hit hard by the Savings & Loan Crisis in the late 70s-early 80s and ended up relocating his company from northern Utah to St. George, scaling back to 10% of previous capacity just to keep the business afloat. During the last recession beginning in 2008, the company saw revenues bottom out from 2010-2012, and second-generation company leader Doug Watts experienced three trying years before righting the ship. Watts today is the largest commercial GC with headquarters in Utah's sixth-largest city, with annual revenues over \$25 million. (page 48)

The story of Horrocks Engineers' founder Gilbert Horrocks is nothing short of inspiring. He endured a hardscrabble upbringing during the Great Depression, living in a tiny two-room log cabin in rural Duchesne County that was sans running water and electricity, with potable water drawn from a well a mile away. Horrocks' mother died during his early teen years and he had to forego much of his schooling to help his father tend to the family as the oldest of six children. He ultimately earned a degree in Civil Engineering and founded Horrocks Engineers in 1968, where he specialized in water resources projects, understanding perhaps more than anyone who designs water infrastructure projects how essential they are to our quality of life. The firm ranked as the No. 1 engineer in Utah this year based on 2017 revenues of \$39 million (see page 26).

Pentalon Construction founder Carl Tippetts also battled through tough times during the recession, and gained great perspective about life during the economic downturn, partly through his love of long-distance running, a sport he picked up in 2006 at the behest of a subcontractor friend. Pentalon has averaged nearly \$100 million the past three years and Tippetts, despite turning 65 this year, has plans to grow the firm to \$150 million annually. (page 44)

The fortitude of these men brings to mind the 1906 poem 'Worth While' by Ella Wheeler Wilcox:

*It is easy enough to be pleasant,
When life flows by like a song,
But the man worth while, is one who will smile,
When everything goes dead wrong.
For the test of the heart is trouble,
And it always comes with the years,
And the smile that is worth the praises of earth,
Is the smile that shines through tears.*

This issue of *UC&D* is also highlighted by our list of 2018 Top Utah Engineering Firms (page 60), an article on Salt Lake-based Bodell Construction's prowess in the heavy-industrial market outside of the Beehive State (page 32), and a look at St. John's Properties (page 36), an out-of-state headquartered development firm that came to Utah four years ago based on pure speculation that is making a splash in Utah County with Valley Grove, a \$300 million, 62-acre master planned development in Pleasant Grove that is expected to build out over the next 5-7 years.

It's hard to believe the final quarter of 2018 is here – our **Most Outstanding Projects of the Year competition** is here, and we're excited to host our 6th annual MOP Awards Breakfast Tuesday, December 11 at Little America Hotel in Salt Lake City. We look forward to seeing many of you there!

Regards,

Bradley Fullmer



UC&D

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Coming in October issue of *UC&D*:
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Promotions, New Hires Dot Local A/E/C Industry

BHB tabs Pettit as CEO; Reaveley announces new hires; Nation named NAWIC President; Horrocks names new Associates.

Salt Lake-based BHB Consulting Engineers recently named **Scott Pettit** as its new CEO, as co-founder **Don Barker** is stepping down to dedicate more time serving his clients and mentoring BHB's engineering team.

During Barker's tenure as CEO, the 16-year-old firm has established itself as one of the largest structural engineering firms in the Intermountain region with offices in SLC and Boise. Barker graduated with a Master of Structural Engineering from Utah State University in 1983 and has over 35 years of experience. Barker, along with BHB executives **Chris Hofheins**, President, and **Jay Miller**, COO, helped create a culture of responsiveness to clients and a firm capable of designing significant projects in myriad commercial markets.

Pettit, who earned a Master of Structural Engineering (1997) from California State University, has more than 23 years of experience, and has been a Principal at BHB for 14+ years. He said he's committed to BHB's future development as a firm, and eager to execute its progressive strategies for growth.

"I am honored to serve as CEO at BHB...we are an organization focused on hard work and continual improvement," said Pettit. "As CEO, I want to elevate our customer service experience, develop our employees, and take BHB to an even higher level of excellence."

Reaveley Engineers of Salt Lake City recently hired two new Project Engineers.

Tim Strickland is a Salt Lake City native and recently relocated back to the area from California to pursue a career

with Reaveley. He holds a Bachelor in Civil Engineering from the University of Delaware and a Master of Structural Engineering, Mechanics, and Materials from the University of California Berkeley.

He brings 10 years of prior experience. Since joining the Reaveley team, Strickland has offered his expertise on projects such as BYU's Lavell Edwards Stadium Mezzanine Addition and the University of Utah Orthopaedic Center Skills Lab Addition.

Catherine Tucker graduated from Lewis & Clark College in 1997 with a Bachelor of Art degree. In May 2002 she received a Master in Architecture from the University of Utah, and then pursued a Master in Civil & Environmental Engineering, also from the U of U. She is currently finishing her Ph.D. in Civil & Environmental Engineering at the U of U.

Prior to joining Reaveley, she worked as a project manager/project architect for eight years. Tucker brings valuable insight to her projects, given her experience as an architect. She has added expertise to projects such as the Holladay Library Addition and Renovation, and the Capitol Theatre Phase 2 Renovation.

The Utah Chapter of the National Association of Women in Construction (NAWIC) announced that **Tracy Nation**, a Project Administrator for Salt Lake-based **Big-D Construction**, has been named President of SLC Chapter 90 for 2018-19. She takes the reigns from Karla Steele-Hunter.

Nation started her career at NAWIC in 1997 and has since held positions of Treasurer and Vice President. She also served as the chapter's President from 2001 - 2003. "With more than 4,600 members

nationally, I am very excited to guide the SLC Chapter 90 to new heights," said Nation.

Tracy currently works as a Project Administrator for Big-D Construction in Salt Lake City, Utah. She plans to use her experience in construction, and her role with NAWIC to attract more women to the construction industry. "There is potential in the construction industry for women in the Wasatch Front and I hope to empower them to join an organization that believes in them and is here to support them."

NAWIC also announced the following changes: **Jodi Simpson** will serve as the Chapter's Vice President; **Patty Waldhouse** will serve as the Chapter's Secretary; and **Paula Sorensen** will serve as the Chapter's Treasure.

Salt Lake-based **bowen studios** announced two new additions to its staff.

Audrey Cross has joined the progressive 3D/graphics firm as its Office/HR Manager, working directly with owner **Brent Bowen**. She comes to the team with experience and enthusiasm, while also driving in-house excitement.

Pete Kane is the firm's new Business Development/Project Manager. He worked previously as a Senior Project Manager for an East Coast-based visualization firm and has served on the public-sector side as the Director of Community Development for a seaside Massachusetts town.

ajc architects of Salt Lake City recently named **Ryan McMullen** and **Trent Smith** as Associates, individuals who are making significant contributions to the firm, work well with clients and demonstrate forward-thinking design practices.

McMullen has an interest in the responsible growth of Salt Lake City and overall sustainability, and has experience in various markets including retail spaces, residences, restaurants and museums.

Smith is a Revit Certified Professional with technical expertise with Autodesk and Adobe products. He also teaches classes and workshops at the University of Utah's College of Architecture and Planning.

Salt Lake-based **Cameron Construction** welcomed **James Kilpatrick** and **Debra Wickizer** to its firm, with both individuals working as Business Development/Marketing Managers.

Kilpatrick has more than six years experience in marketing and business development within the A/E/C industry. He is a member of NAIOP, CCIM, ULI, SMPS, and ICSC, serving on several committees. He earned a Bachelor of Marketing from the University of Utah and is currently pursuing a Master of Real Estate Development from the U of U.

Wickizer has an extensive background in BD/Marketing. She was a Founding Principal and is President of USCIS-approved EB 5 Regional Center, and holds a current license in Real Estate. She is a graduate of UAR Leadership, and Past VP of the Utah Association of Realtors.

Horrocks Engineers of Pleasant Grove announced that 15 employees have been named to the position of Associate. The firm said this title is given to individuals who exemplify Horrocks' 'Core Values', have a strong character, and display competency in their performance. The firm's Associates Program is integral to the success of the company.

The group includes: **Austin Chappell, Chris Melander, David Simmons, Dustin Richins, Jared Olsen, Jordan Sheets, Karie Davidson, Kasey Chestnut, Katie Kourianos, Kip Davidson, Leith Sheets, Mark Atencio, Michelle Craner, Mike Raddon, Steve Bellino, Tony Curtis, Trevor Youd, Tyrone Atkin.** ■



Scott Pettit



Don Barker



Tim Strickland



Catherine Tucker



Tracy Nation



Audrey Cross



Pete Kane



Ryan McMullen



Trent Smith



James Kilpatrick



Debra Wickizer

Wildlife Crossing at I-80/Parley's Summit Aims to Reduce Vehicle-Animal Collisions

In an effort to improve traffic safety on Interstate 80 in Parley's Canyon, UDOT has built a new \$5 million 'Wildlife Crossing' – a 48 ft. wide by 330 ft. long bridge that crosses I-80 just west of the Parley's Interchange – the first of its kind in the state.

UDOT worked in collaboration with the Utah Division of Wildlife Resources on this project, which is part of an overall \$20 million 'Climbing Lanes' project that includes adding a lane for slower semi trucks, and a sound wall near Jeremy Ranch. Crews from Draper-based Ralph L. Wadsworth Construction placed a total of 12 steel beams (319 ft. long) weighing more than 760,000 pounds.

According to Clint Wiscombe, Project Manager for RLW, this CM/GC project was the state's first IDC project using a model as the contract document. It added more than three miles of new climbing lane on I-80 through the heavily traveled trucking route from Jeremy Ranch to Parley's Summit and included the rehab of both eastbound and westbound bridges at Jeremy Ranch.

The new bridge has integral concrete coloring that harmonizes with the existing habitat. Various form liners were utilized, including stacked stone liner on abutments and wood ship liners on parapets, plus v-shaped columns on the pier. RLW collaborated with DWR on migratory paths, aesthetics, and specific needs to help influence wildlife to use the bridge.

The team used models to visualize project improvements before construction started including a visualization of the wildlife overpass, climbing lane, and noise wall and made it available through virtual reality goggles at open houses for the public. This created a sense of understanding and support from members of the community prior to and during construction.



UDOT received federal funding for this \$5 million Wildlife Crossing bridge near Parley's Summit on I-80, the first project of its kind in Utah (top photo by Dana Sohm; aerial by Don Green Photography)

This was also one of UDOT's first projects implementing the Model Based Design and Construction (MBDC) initiative, where design and construction teams worked together to ensure that models were compatible with a variety of estimating, survey, and visualization packages to gain the maximum benefit from MBDC. The model makes clash detection easily identifiable. This saves

significant design costs creating sheets and greatly reduces errors. The 3D model can be imported into a variety of estimating take-off software to more easily calculate quantities, especially earthwork and drainage related items.

Between the 13-mile stretch from Lambs Canyon and Kimball Junction, UDOT reported that vehicles killed an estimated 140+ animals. Additional wildlife fencing is

also expected, with the intent of funneling much of the wildlife over the new crossing.

Naomi Kisen, Environmental Project Manager for UDOT, said federal funding was used for this important project.

"We hope it will reduce (collisions) significantly," she said. "We plan to monitor the crossing for several years to see how effective it is, and we can determine how well it's helping with public safety."

UVU Construction Management Provides Key Training

Utah Valley University's Department of Construction Technologies recently held a 'Lean Planning' training seminar on the UVU campus in Orem. Led by new Department Chair, Rob Warcup, the training was requested by the Utah Division of Facilities and Construction Management and the UVU Facilities Management teams. The training provided an interactive simulation intended to streamline construction projects; reducing time, inefficiencies,



Participants at a recent training session hosted by Utah Valley University's CM program learned about the nuances of streamlining the construction process.

resources, and budgets.

"The benefit is that it is hands-on learning and participants feel the effects of lean on a project in a nonthreatening, fun environment," said Warcup. "This helps

them internalize the concepts so that when they conduct a pull-planning session on a real project they are comfortable doing so and know what to expect."

This 7-hour training session included »



method studio
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five hours of hands on Villego simulation training. Three groups built a Lego structure with traditional planning in round one, then built a similar structure again with Lean Planning in round two. They discussed the differences together throughout the day. Each team improved its results through lean planning by at least 300%.

“This was a great opportunity for these industry professionals to sharpen their mental tools,” added Warcup. “I was happy to see how seriously they took the insights from this training and I think it will make a big difference for them and their organizations moving forward.”

The seminar provided a tremendous opportunity for interaction for the 30+ men and women who participated. The ultimate goal was to more effectively plan a project in a collaborative Lean environment. Studies show that lean planning typically achieves a 36% increase in schedule reliability over traditional scheduling.

Voters to Decide on SLC Bond for New Roads

The Salt Lake City Council voted in August to put an \$87 million bond on the fall ballot so voters can decide whether or not they believe local streets should be better maintained.

Various engineering professionals with Salt Lake City said the need for repairs and maintenance is a never-ending problem for most cities and towns, and that more funding is a necessity. An increase in local sales tax is expected to generate \$33 million annually for road projects.

80% of bond money would go towards repairing the most heavily traveled roads. The average cost per lane for reconstruction is \$500,000 per mile, an expense that would be less if maintenance were done more frequently (7- to 10-year intervals, vs. 15-plus years). The \$87 million is a fraction of the estimated \$400 million needed to upgrade all SLC roads to ‘good’ condition.

Pioneer Park Gets Facelift

Salt Lake’s Pioneer Park recently received a much-needed \$1 million ‘facelift’ at the south end of the park, including a new field with lights, and a lighted 10-ft. concrete path around the perimeter. Existing bathrooms and trees will be removed, with new trees planted in the project area.

The project is aimed to attract youth sports, after-work leagues, and other outdoor-related events and activities. The Pioneer Park Coalition provided much of the money for the project.

Gravel Pit Expansion Proposal Modified

A 73-acre proposed expansion by Geneva Rock of its Point of the Mountain gravel pit has been modified, with a new application to rezone 18.5 acres. The Utah-based company decided to scale-back expansion after considering feedback by the local community, most of

whom expressed concern with how the expansion will affect local air quality.

Draper City officials aborted a public hearing Sept. 12 because of significant changes to the originally submitted application. In addition to expanding the pit, the company will build a dirt road and parking lot to accommodate visitors and hang gliders at the top of the mountain. Geneva Rock is one of six gravel pits (or other material operations) at the Point of the Mountain.

Geneva Spokesman Dave Kallas said the pit needs to be expanded so that important materials remain easily accessed for construction work along the Wasatch Front. Moving gravel pits and other like mining operation to Utah’s west desert – which opponents of the gravel pit expansion have suggested – would spike construction costs across the board for sand, gravel and ready-mix.

A ruling on the pit expansion is expected before the end of the year.

method studio Hosts Open House to Mark 10+ Years

Salt Lake-based method studio held an Open House celebration August 1 to celebrate more than 10 years of architectural excellence, at its headquarters at 360 Aspen Avenue.

The firm moved to its present location last November, a facility that was once

home to Cummins Engine Company (now Cummins Rocky Mountain) and originally built in the 1950s, and is now a modern, hip architectural office. Even though the office was mostly completed, final touches have been incorporated in the past three months.

As the firm heads into its 11th year of business, company executives are proud of what they have achieved in just over a decade, and highly optimistic about method’s future.

“It was just the last 10% [of design] that took us time to...really layer our personality,” said Becky Hawkins, Founding Partner. We love the wide open spaces and the barrel vaulted ceiling. [The ceiling] is just beautiful with its texture and feel. We consider ourselves to be a little gritty, so we like the fact that part of our emphasis was the use of these materials.”

She continued, “I think it is a very modern look for us, and we were able to keep those modern lines, while also paying homage to the context of the place.”

“It was a jam of collaboration,” said Joshua Greene, a Principal with method. “We really just tried to celebrate the bones of the building, and then you have the insertion of modern architecture, and that was a good balance to the beautiful bowstring structures, wood ceilings and raw systems. It has a subtle, but human

comfort with incredible views and daylighting, but without the overwhelming glare. There is a unique history to this building and we made it into a great re-use of space.”

AGC, FMI Study Illustrates Workforce Challenges

The Associated General Contractors of America (AGC) and FMI have collaborated on a new study related to workforce shortages. Highlights include:

- 88% of respondents had encountered risks related to shortage of craft workers and 67% had encountered risks related to the shortage of field supervisors;
- Respondents expect to lose anywhere from 14% to 20% of certain employee groups, including executives, senior managers, field managers and project managers, over the next 5 years;
- 92% of respondents had found design documents to be less complete than they were in the past; and
- Nearly 40% of respondents planned to bring design work in-house, and of those, over 80% had either completed the process or planned to do so within the next 3 years.

Follow-up questions can be directed to AGC’s General Counsel, Michael Kennedy, at 703-837-5335 or kennedym@agc.org. ■



Salt Lake-based method studio held an Open House celebration recognizing 10+ years in its recently finished headquarters – a stylish, modern renovation of a former industrial building built in the 50’s for Cummins Engine Co. (courtesy method studio)

Pros and Cons of LiDAR

By Shawn Herring

When it comes to capturing existing conditions, a general initial question is “to scan or not to scan?”

With all the technologies out there, the next question is “which tool is best for the job?” Complicating the ability to answer these questions is the accelerated pace at which new technology developments and commercially available products enter the market.

When overwhelmed by choices - especially new, unproven and expensive options - we're often moved to inaction, making it difficult to invest in proper technology. By not investing now, firms risk falling further behind their competition.

In the past 2+ years we have invested in a wide range of **reality-capture technologies** ranging from traditional, ground-based survey tools to terrestrial laser scanning to unmanned aerial vehicle (UAV)-mounted capture platforms. We now find ourselves flying drones on jobs that previously may have been captured with terrestrial-based scanners. Drones seem to capture the majority of headlines these days, but terrestrial, tripod-mounted LiDAR scanning is still as important as it always has been, and even more so with the increase in coordinated BIM models.

Pros and Cons of LiDAR

When considering investing in the purchase and implementation of a LiDAR system, it's important to understand the pros and cons of such an investment.

PROS

Amount of Data Captured
Even some of the most basic terrestrial scanners take almost 1 million shots per second - and in color! However, don't be fooled by the ease with which you can capture these vast amounts of data: proper scan planning and location placement is

key. Remember, successful data capture relies on a clear line of site, so, if you can't see it, then more than likely the scanner can't. In addition, terrestrial LiDAR won't penetrate walls, vegetation, snow, etc.

Safety

LiDAR scanning is much less intrusive than traditional survey, and typically faster. A recent detailed mapping scan of a large ammonia plant allowed the plant to be down for only two hours, and required us to wear hazmat suits. We were in and out in 45 minutes and captured all the information needed for proper modeling.

As another example, consider the hazards of collecting survey data in a busy four-way intersection. It's like a real-life version of the video game Frogger, with much more serious consequences if you get hit by a vehicle. With LiDAR, this dangerous situation becomes much safer. Simply set up the scanner on each of the four corners and another in the middle of the intersection, and collect all the info you need in relative safety.

3D Models Are Superior

A 2D drawing - hand measured or traditionally surveyed - just doesn't give the client the “wow factor” they need (and often now come to expect). And in most instances, a 2D drawing couldn't accurately portray what's happening within the project. LiDAR scanning provides such a dense point cloud, and in real color, that it's almost like being there yourself. You can take more measurements throughout the model and create accurate/complex piping systems directly from the point cloud.

CONS

Steeper Initial investment
Although the prices of LiDAR scanners have gone down in recent years, a new scanner can still carry a hefty price tag. Some



Shawn Herring

new systems, like the BLK360 from Leica, can get you into the scan world at a lower investment, but it comes with limitations. Know what you need before you buy it.

Learning Curves

Scanning hardware has been pretty simple to learn, and some devices integrate with daily mobile devices. However, it has taken some time for software to catch up to hardware and fully exploit LiDAR technology. There are several software applications available for scan registration, auto feature extraction, viewing, creating classifications, “virtual surveying,” etc. With so many options, it takes effort to determine which software is best for you. Usually you'll need more than one software application, and each one comes with a slight learning curve.

Many Projects, Many Tools

LiDAR isn't a “one size fits all” tool. As such, we continuously mix terrestrial-based LiDAR scans with UAV-flown projects, or traditional survey with LiDAR- and UAV-captured data. On a recent project for an oil and gas company, we captured in detail the main portion of a building and conveyor belt with our FARO terrestrial LiDAR scanner, and supplemented those data with a flight of the 20-acre site. The combined data resulted in a detailed as-built of the focal area as well as a way for those offsite

to understand the bigger picture without the cost or time involved in scanning the entire project.

At the outset of every project, we always work with the client to clarify the goals and desired end product; the level of detail of the model (will it be used for modeling or only planning?); and whether the client only wants/needs a 3D point cloud or a true horizontal and/or vertical as-built.

Most of the time, when a client wants something “LiDAR'd,” they simply want a 3D point cloud. But it's always good to dig deeper, ask them what the end goal is, and ask about the project's purpose. Sometimes just a few questions can help decide what tool to use and why. There's a huge difference between a piping system that needs to be 3D modeled in Revit vs. a piping system where they just want a good representation of the existing features.

It sounds a bit odd, but timeline, cost, data acquisition and turnover all are fairly dependent on just a few simple questions. Being impartial to any specific technology and understanding the strengths and weaknesses of different technologies in our toolbox helps us recommend the most suitable and cost-effective approach to each and every project.

Bringing It All Together

Think of using all these technologies like baking a cake: with the proper ingredients and techniques, you can create something amazing. But if you throw an inexperienced cook into the kitchen with shiny tools, you have a recipe for disaster.

Many people, myself included, have invested substantial time in learning technology early on, and have overcome many obstacles that you surely will face.

The market is quickly learning the pros and cons of vehicle-mounted lasers, stationary/terrestrial lasers, dual scan/survey equipment, drones and so on. To avoid disappointment, or slow to non-existent ROI (and/or customer disappointmen) consult with someone who has done it before, and invest in training if needed. Whatever you do, don't do it alone. ■

Shawn Herring is a Vice President with Orem-based ProSoft, Inc.

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Limitation of Liability

How to ensure your limitation is enforceable.

By Brad M. Liddell

In today's society the term 'LOL/loI' has become ubiquitous for 'laugh out loud' – our response via daily text messaging and emails to something funny or humorous. In the world of construction law, LOL – Limitation of Liability – is a far more serious topic, and one that can be an effective tool to businesses in limiting liability and damages.

In addition, LOL provisions limit a party's exposure to unlimited liability disproportionate to the party's fee on the project. LOL provisions establish a contractual limit on potential liability and damages that can be awarded if the party's client prevails in a dispute against the design professional. LOL provisions can help parties manage their respective risk on a project given the project reward (fee, relationship, marketing exposure, ect.).

LOL provisions are also a way to allocate unknown risk; they must be drafted carefully to be enforceable. As a practical matter, most involve design professionals or subcontractors. This article is geared to A/E/C professionals, but applies generally to any LOL provision.

Not An Indemnification Provision

As an initial matter, a properly drafted LOL provision is not an indemnification provision and should not be viewed as such. It is not intended to relieve the design professional of its obligations for any errors or omissions, but rather is intended to allocate liabilities between the design professional and client.

Utah courts have clarified that limitations of liability are not indemnification provisions and are therefore not against public policy. The Utah Supreme Court has stated "indemnity, where one party agrees to answer for

a specified or unspecified liability or harm that the other party might incur, is inapplicable to a circumstance where...the contracting parties agreed to assign the risk of loss between themselves and limit the damages available."

Factors for LOL to be Enforceable in Utah

1. LOL Must Be In the Contract

While it may seem obvious, in order to be enforceable, LOL must be in the written agreement between the design professional and the client, hence the need for a signed contract, professional services agreement, etc.

2. Clear Intent of the Parties

Intent of the parties is typically implied where the contract is signed. Plain language of contract terms determines intentions of the parties. The LOL provision must be clear on its face and demonstrate the intent of the parties to limit the design professional's potential liability arising from all or some circumstances. Courts generally refuse to enforce LOL provisions where the provision is ambiguous or unconscionable.

3. How Much?

Utah courts have recognized and clearly stated that contracting parties "are free to adjust their respective obligations to satisfy their mutual expectations." However, Utah courts have not offered guidance on how much the LOL provision can limit a design professional's potential liability. What is clear is that LOL provisions must be balanced against the principal of substantive unconscionableness, which focuses on the substance of the provision. Thus, the LOL provision must be for an amount that creates an incentive to exercise due care, which has been interpreted as the design professional, at a minimum, risking its fee for the project.



Brad M. Liddell

4. Who?

Utah Code Ann. Section 13-8-2 provides that certain limitations of liability agreements violate public policy. These violations of public policy occur where a LOL provision attempts to limit third-party liability. As an example, under Utah Code Ann. Section 13-8-2, it is against public policy where an owner attempts to limit a third-party design professional's liability through a contract with a contractor or where a contractor attempts to limit a third-party design professional's liability through a contract with a subcontractor. Thus, a properly drafted LOL provision should only limit the design professional's potential liability exposure to the party that the design professional contracts with, i.e. the client.

While some clients may not initially accept LOL provisions, design professionals should always try to negotiate one into contracts. ■

Brad Liddell is an attorney at Salt Lake-based Jones Waldo Holbrook & McDonough specializing in contract negotiations, risk management, dispute resolution, litigation, and other daily issues faced by A/E/C industry professionals. He can be reached at (801) 521-3200 or www.joneswaldo.com.

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Five Reasons to Hire 'Certified' Low-voltage System Designers

By Gerald F. Nelson

There are many factors to consider when looking for low-voltage technology design professionals for a project team. Among these include choosing individuals with the appropriate licenses and certifications, and those who can adapt to new technological advances in an efficient manner.

Best of the BEST

A critical factor in choosing a team for effective delivery of low-voltage technology design services should be the certifications of team members. Certifications by leading, third-party industry associations are awarded to individuals who demonstrate through examination and experience that they possess the skills necessary to practice in their area of expertise, and provide a degree of assurance that the individual is qualified.

Professional engineering (P.E.) licensure is the engineering profession's highest standard of competence, a symbol of achievement and assurance of quality and P.E. stamped drawings have been required for many years. Yet, anyone claiming to be a low-voltage systems designer is able to practice as such. This is disconcerting when one considers the absolute critical nature of low voltage systems in modern buildings.

Increasing Demand for High Performance

Consider health care's increasing reliance on electronic health records (EHRs). Compared to paper systems, EHR's have many benefits. One benefit is the ubiquitous access to large amounts of clinical information. Because of the tremendous amount of information available to many users at any time, system usability and the human interface with the data are essential considerations. Users can quickly become overwhelmed and miss critical pieces of

information resulting in life-threatening situations if usability is not optimized. Additionally, imagine the impact to lives if vast amounts of data were lost due to system failure or communication loss.

Less Room for Error

Not always does a low-voltage system failure result in life-threatening situations. More often, the result of poor system design is failed delivery and reception of information by industry or institutions. Business, education, and societal organizations all rely on the successful delivery of information to meet their missions. Appropriate signal transmission and image display, image display device placement and sizing, as well as acoustics, are all critical factors in the successful delivery of information that could be the difference in a company winning a multi-million dollar contract or a student mastering mathematics or a congregation feeling moved.

Credibility

The days when qualifications could be faked are gone. Today, owners require low-voltage technology system designers to be certified, and two of the most common certifications being required is the RCDD (Registered Communications Distribution Designer) and the CTS-D (Certified Technology Specialist-Design).

The RCDD certification is awarded by BICSI, the worldwide association for cabling design and installation professionals. BICSI established its credential programs to provide a level of assurance to the industry that an individual has knowledge in a designated area of information and communications technology design or installation.



Gerald F. Nelson

Candidates for BICSI credentials are required to show industry experience and pass rigorous exams. Those who pass and receive the RCDD designation, must adhere to strict standards of conduct and keep their knowledge current through continuing education and recertification.

The CTS-D is awarded by AVIXA (formerly InfoComm), which has offered its certification program for more than 30 years. The CTS-D certification program assesses individuals against peer-developed standards and competencies and provides a credential that is time-limited. Continued competency must be demonstrated through ongoing renewal requirements. The CTS-D must adhere to a strict code of ethics and professional practice.

National & International Recognition

Both the RCDD and the CTS-D are recognized by ANSI (American National Standards Institute), which endorses North American standards, and ISO (International Organization for Standardization), which endorses global standards. ■

Gerald Nelson is a Principal at Salt Lake-based Spectrum Engineers with 30 years of experience designing technology systems.



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The floor plan (above) shows areas within the space that are highlighted with the striking yellow accent color. Sleek modern lines and open collaborative areas are hallmarks of the design. (photos courtesy method studio)

Dental Select HQ

Newly branded ‘sunny yellow’ color playfully used throughout stylish, transparent office digs of Salt Lake-based insurance firm.

By Marbe Agee

The design of the new Salt Lake-based corporate office of Dental Select needed to be different, to match the cavalier, forward-thinking attitude of founder and CEO Brent Williams, who believes in doing things differently and is something of a rebel, if you will, in the otherwise complicated insurance industry.

The company’s underlying philosophy is to make dental simple. Williams is also the kind of leader that understands what it means to stand back and deliver. He allowed his creative team carte blanche with the design, to ensure the road map set early with the C-level team in visioning could be manifested.

When Dental Select’s creative team partnered with method studio of Salt Lake City to design the firm’s new corporate headquarters, they wanted a space that embodied the organization’s approach to business and its internal culture for 145 employees. The space needed to relay a “simplicity that makes you smile” and leave visitors with no question that the space is home to a group of clever rebels that make noise, ruffle feathers, and get things done.

As part of programming, method studio worked to increase efficiency to

free up space for more amenity spaces – a key goal for employee recruitment and retention. Spaces were designed to be flexible, serving more than one purpose. Clean, purposeful lines were used to create continuity and flow, simultaneously injecting distinct, canted shapes that highlight key spaces. Many of these spaces were positioned in the middle of major pathways as a strategic way to provide “elevated disruption” – a key visioning concept. The organization’s newly branded “sunny yellow” was used playfully throughout the space to galvanize these paths and navigate circulation to run into the interrupting spaces, ensuring things were slightly off kilter.

Another hot button item for the new environment was to have better transparency, and do away with the sequestered executive office model employees had been living with for the past decade. Executive offices were incorporated within their respective teams with glass facades. This newfound transparency helps build trust and provides more direct connections for team members.

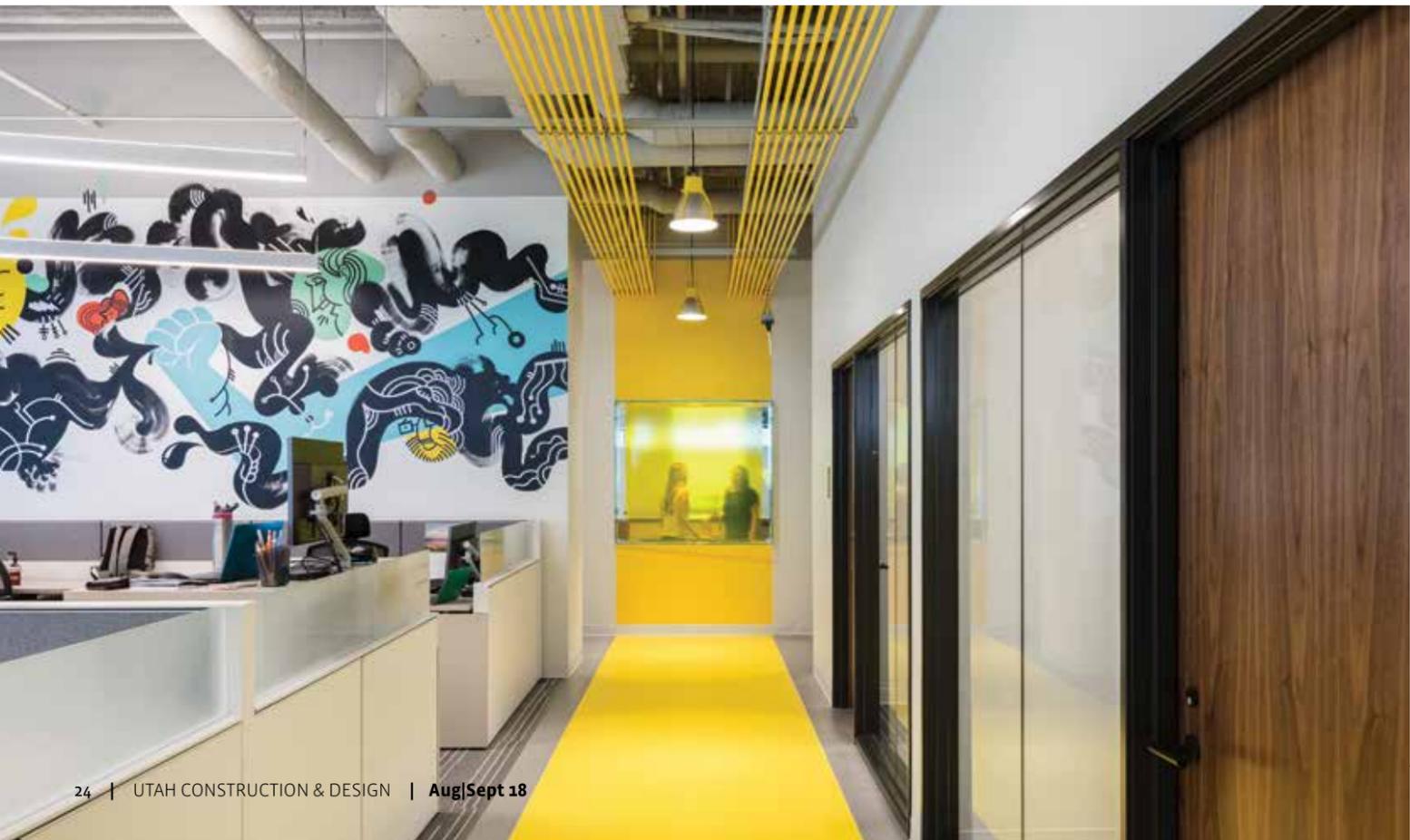
Famous rebel icons like Amelia

Earhart, Muhammad Ali, Marie Curie, serve as room names and themes for gathering and meeting spaces. The space is still set to receive an integrated branding package (currently in the works) and will add the final touches to the cheeky space. ■

Marbe Agee is a Principal with Salt Lake-based method studio.

Dental Select Corporate HQ

- Size:** 22,082 square feet
- Location:** West Towne Ridge Parkway, Tower II
- Architect:** method studio
- MEP Design:** Spectrum Engineers
- GC:** Interior Construction Specialties, a Layton Company
- MEP:** Rocky Mt. Mechanical
- Electrical:** Taylor Electric
- Millwork:** Granite Mill
- Flooring:** Spectra Contract Flooring
- Doors:** Architectural Building Supply
- Painting:** Fisher Painting
- Window Coverings:** The Right Touch Installs
- Glazing:** Bountiful Glass, Inc.
- K-13:** USI
- Acoustics:** Alternative Acoustics & Drywall
- Furnishings:** HB Design Group





50 Years Strong

Pleasant Grove-based Horrocks Engineers has grown into a regional powerhouse, with 14 offices in eight western states and a diverse service portfolio.

By Brad Fullmer

As Horrocks Engineers marks its 50th Anniversary this year, the Pleasant Grove-based civil engineering firm finds itself at the top of its game as it begins transitioning to its third generation of leaders.

In the past three years, the firm has seen total revenues from its four Utah offices climb significantly, from \$25 million in 2015 to a record \$39 million in 2017.

Company President Jim Horrocks says the firm's growth has been organic over the years, with executives able to recruit and retain talented engineers into the fold from all sectors of the civil engineering industry, and by starting/acquiring offices in multiple western region markets as opportunities arose, with 14 current offices in eight states.

"Most of those expansions are a result of giving individuals a chance to succeed," said Horrocks, 67, President of the firm since taking over the reins 20 years ago from his father and company founder Gilbert (Gil) Horrocks, 93. He points to Horrocks' offices in Albuquerque, NM and Boise, ID, as examples of that natural growth.

"If you look at any statistics and projections, I can assure you that New Mexico is not at the top of the list [economically], but we met a great >>



Horrocks Engineers founder Gilbert Horrocks (above), now 93, specialized in water resources projects during his long-time career and is renowned for his kindness. Current board members include: (standing, l to r) Jim Horrocks, Brian Atkinson, Ron Mortimer, Bryan Foote; (sitting, l to r) Russell Youd, Matt Horrocks. (photos by John Niederhauser) Top: Engineers consult on SR-193 projects. Opposite: The firm designed the innovative I-15 Auxiliary Lanes/Underpass in St. George.





With 19 divisions, Horrocks' expertise extends to all aspects of civil engineering, with an emphasis on infrastructure projects for transportation, water, wastewater, etc. Recent projects include: (top) Bangerter Highway Four Interchanges; (right) new Utah State Correctional Facility 24-inch waterline; (left) Dixie Drive Interchange. (courtesy Horrocks)

individual who was retiring from the New Mexico DOT (Department of Transportation) and we made an investment in that individual, not the area."

The firm's Idaho operations kicked off 15 years ago with an office in Boise when former employee Bryan Foote came back to Horrocks after a decade with a national firm in Colorado. "His roots were in Boise; we stayed in contact over a decade and one day said 'come back and we'll open a Boise office and try to build an operation in Idaho,'" said Horrocks. "Today, he has a couple of sub offices [Idaho Falls and Twin

Falls] under him and 50 employees." "It's about finding the right talent – geography wasn't the most important factor," adds Russell Youd, Executive Vice President who started with the firm in 1989. "Our growth has been strategic to give our employees opportunities so they wouldn't feel stifled. For some people it meant going and starting new offices, for others it meant being good technical engineers or support people. The growth in geography and service was to provide opportunities for people." Youd said growth started happening

at the turn of the 21st Century, and ramped up considerably. Horrocks hired its first full-time Marketing Director, Sandi Lampshire, in 2005 when it had but three offices. Bringing in new talent also has helped the firm expand its service offerings, evident by 19 divisions. "The board is big on finding career paths for people," said Lampshire. "It's a challenge to find the right people and grow the right way. We start with one service in a satellite office, with a goal to add support services. [Jim] is good at understanding risk and being able to see it. He's been

flexible to allow us to...go into other markets and still be cost conscientious."

Culture Built on Founder's Kindness, Strong Work Ethic

Born in 1925, Gilbert Horrocks was shaped by a hardscrabble background growing up in the tiny Utah town of Arcadia in rural Duchesne County, the oldest of six children living in a two-room log cabin with a dirt floor and no running water or electricity. Non-potable water was hauled daily from an irrigation canal 100 feet from the house, while drinking water had to be fetched from a well more than a mile away. At age 13, his mother died, and Gil was thrust into the role of caregiver, often missing school to tend to his myriad chores.

At 17, he left home to find work in Salt Lake City, starting in the brickyards of Sugarhouse, and also working at places like Utah Copper (Kennecott), Hill Air Force Base, and the state's Soil Conservation Service, which led to him working as an engineering aid doing surveying work for diversion and irrigation structures, land leveling, drainage and construction supervision.

At age 30, Gil transferred to the Soil Conservation Service's Murray office, which allowed him to pursue an engineering degree at the University of Utah. He and a partner formed Todd & Horrocks in 1958, and a decade later he finally finished his degree and gained his Professional Engineering license. In 1968, he and wife Lois finally realized their dream of starting their own consulting engineering firm, opening Horrocks & Associates in American Fork in 1968.

Gil developed a passion for water resources projects, understanding the importance of reliable, clean drinking water system infrastructure to communities large and small. He is renowned for his overall kindness and genuine concern for people, and his ability to maximize people's talents.

"Gil always knew each employee and their spouse – he was always looking out for everyone," said Dale Harris, a 40-year veteran of the firm. "He is the rock of Horrocks Engineers, the foundation that we have built upon."

"He has always been driven, primarily by his desire to provide infrastructure [design] for communities, as well as meeting his personal and professional goals," said Horrocks. "He lived through the depression era, so he had great respect for infrastructure and a better quality of life for people."

While Gil specialized in water resources projects, it was Jim who deserves a lion's share of credit for the firm's expertise in transportation engineering, which began in the late 80s, and has progressed to the point where more than 60% of its revenues come from transportation projects. >>



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Horrocks Engineers 50th Anniversary

“My intention was to do water resources and general municipal engineering,” said Horrocks. “UDOT started to outsource more work and reduce the number of state employees and let out consultant contracts. We built on one success at a time – we provided good service to UDOT and was given the opportunity to do more and more work over the years.”

With the firm thriving, and as the second decade of the 21st Century draws to a close, Horrocks realizes his time as the top executive of the firm is nearing an end. His son, Matt, 38, is part of the third generation of workers and likely will move into the top role someday, although no decisions have been made in that regard. Jim is confident Horrocks Engineers will be able to maintain its momentum and future growth long after he decides to retire.

“I’m concerned about making sure that I don’t impede the growth of generation three, that I give them the right opportunities, but as the same token I want to stay around long enough to assure there will be continued success at Horrocks” ■

Office Locations

Pleasant Grove, UT	Riverdale, UT
Heber City, UT	St. George, UT
Phoenix, AZ	Tucson, AZ
Meridian, ID	Idaho Falls, ID
Twin Falls, ID	Las Vegas, NV
Albuquerque, NM	San Diego, CA
Spokane, WA	Denver, CO

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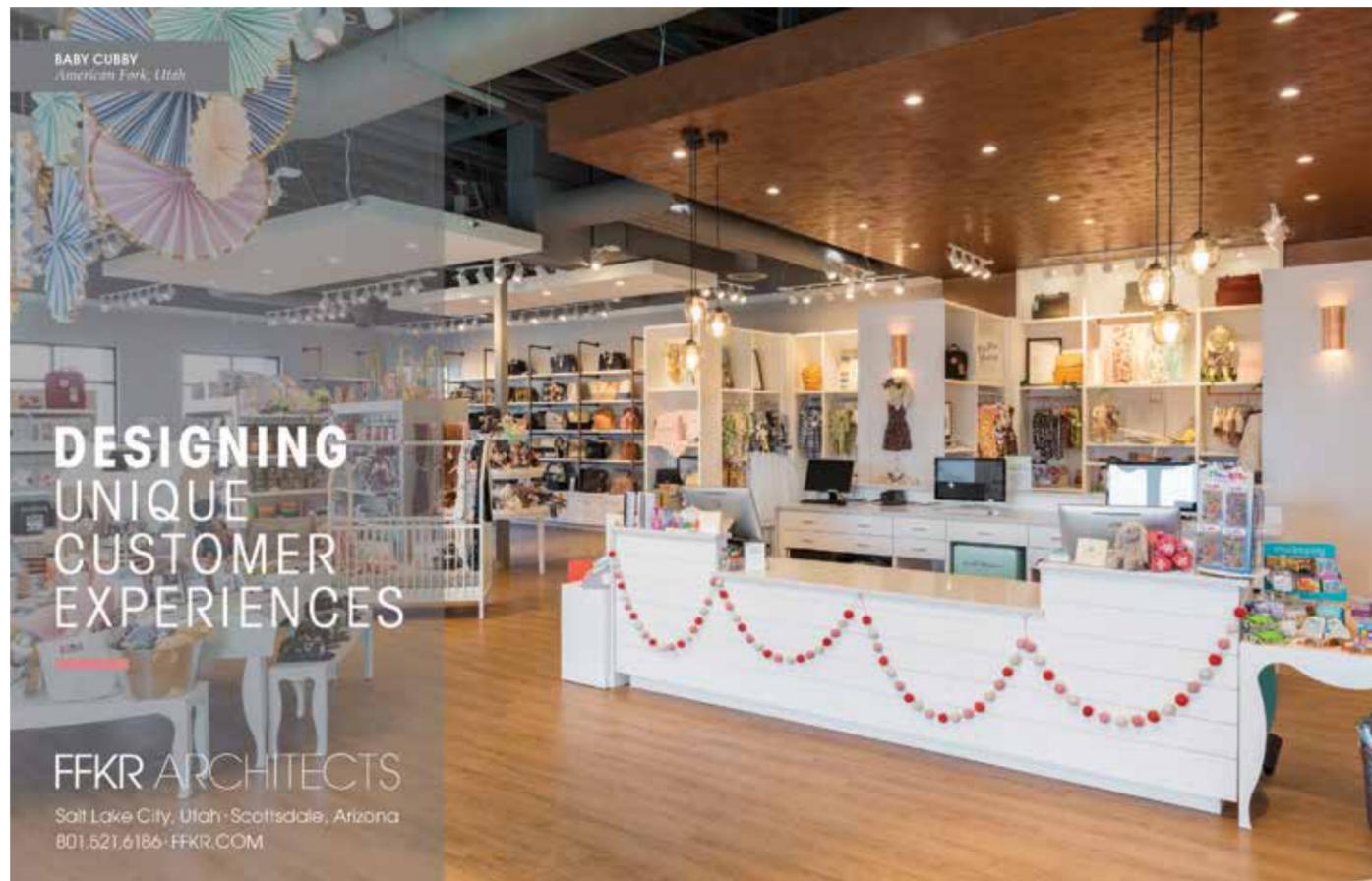
Jim Horrocks	President
Russell Youd	Executive VP
Ron Mortimer	Principal
Bryan Foote	Principal
Matt Horrocks	Principal
Brian Atkinson	Principal

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Wayne Horlacher	PE
Tracy Conti	PE
Doug Graham	PE

Revenues - Utah Offices (millions)

2011	\$21.2
2012	\$20.3
2013	\$26.1
2014	\$25.7
2015	\$25
2016	\$32





\$12.4 M Lihue Airport HFFC Fuel Farm Facility; Kauai



Top left: Rendering of Lihue Airport HFFC Fuel Farm Facility; Kauai



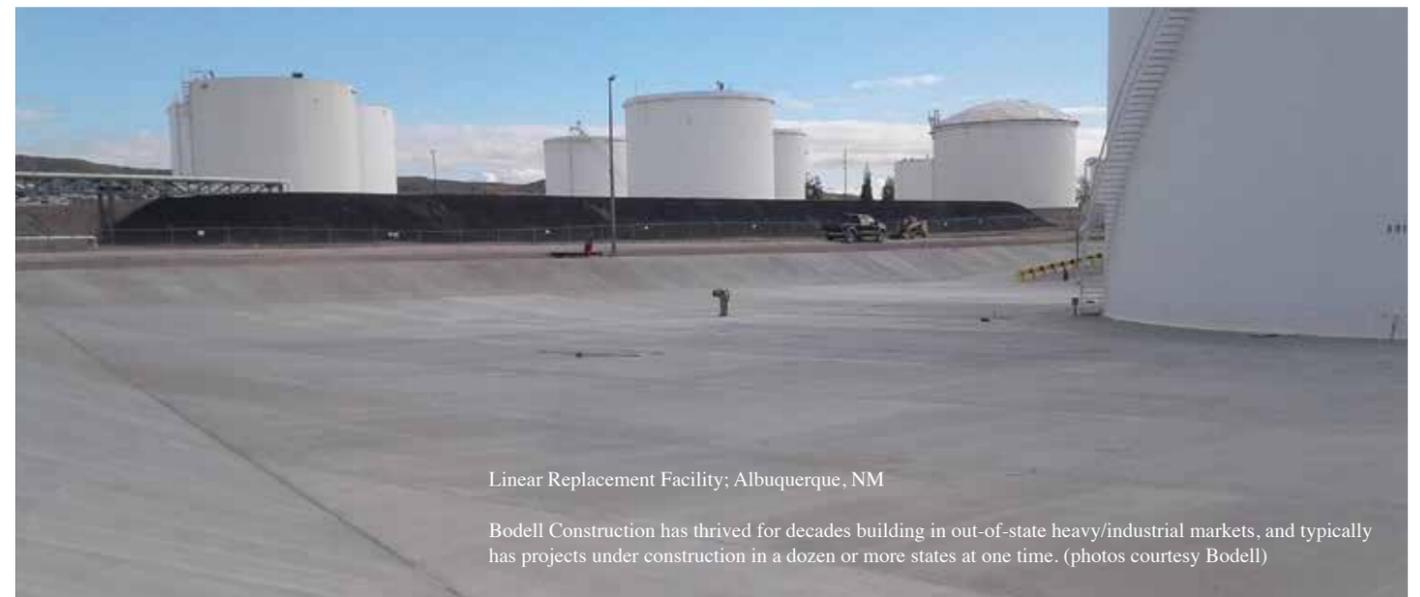
\$21.4 M IAO Surface Water Treatment Plant; Maui



\$3.5 M Linear Replacement Facility; Albuquerque, NM



\$12 M Waimea Water Treatment Plant; Hawaii



Linear Replacement Facility; Albuquerque, NM

Bodell Construction has thrived for decades building in out-of-state heavy/industrial markets, and typically has projects under construction in a dozen or more states at one time. (photos courtesy Bodell)

Remote Control

Salt Lake-based Bodell Construction’s niche building complex, highly-technical heavy industrial projects has taken the firm all over the U.S.; Hawaii has been a fertile market over four decades, and it recently landed its first project in Alaska.

By Brad Fullmer

Modern technology has made designing and building projects out-of-state no big deal for A/E/C firms headquartered in the Beehive State, but some companies have been successful managing projects from remote locations long before the digital information age kicked into full swing in the mid-90s.

Salt Lake-based Bodell Construction is one veteran Utah general contractor who started transitioning some 30 years ago from working primarily in commercial general building to specializing in heavy industrial work, which in turn has led to more and more out-of-state projects,

depending on where repeat client work takes them, and which industries are investing in capital expenditure projects. In addition to its SLC headquarters, Bodell has offices in Casper, Wyoming and Honolulu, Hawaii.

“Since I’ve been with the company (2002) we’ve been mostly active in the heavy industrial space; we began that shift in the late 80s,” said Mike Bodell, Executive Vice President, whose father Michael Bodell Sr. and grandfather James Bodell founded the firm in 1972. “Over time the transition has seen us specialize in and place greater focus more to heavy construction. Our construction team can

build just about anything; we’d rather focus in the heavy space because we offer differentiating competitive advantages to those markets as a value-oriented, specialized service provider.”

Bodell said the types of projects in the firm’s wheelhouse include those with a manufacturing or purifying process or energy/product output, like power generation, oil and gas refineries, petrochemical plants, and water infrastructure – projects with highly complex mechanical and electrical processing systems not found on typical commercial buildings. Food/beverage and agricultural facilities are further markets the firm is looking to >>

break into. Bodell Construction is licensed and has experience in 25 states and annually works in 10-12 states at a time; most are in the Western/Intermountain U.S., with states like Texas, Oklahoma, Kentucky, Missouri and North Carolina in the mix, depending on market activity.

“Our emphasis is west of the Mississippi River, and best-fit opportunities in the Southeast,” said Bodell. “We’ve looked at opportunities internationally. We’re pretty adventurous – we’ll consider anything, even if it may be for only five minutes as we assess the prospect’s risk and reward, and the specific value propositions we can actually bring to the table for that client.”

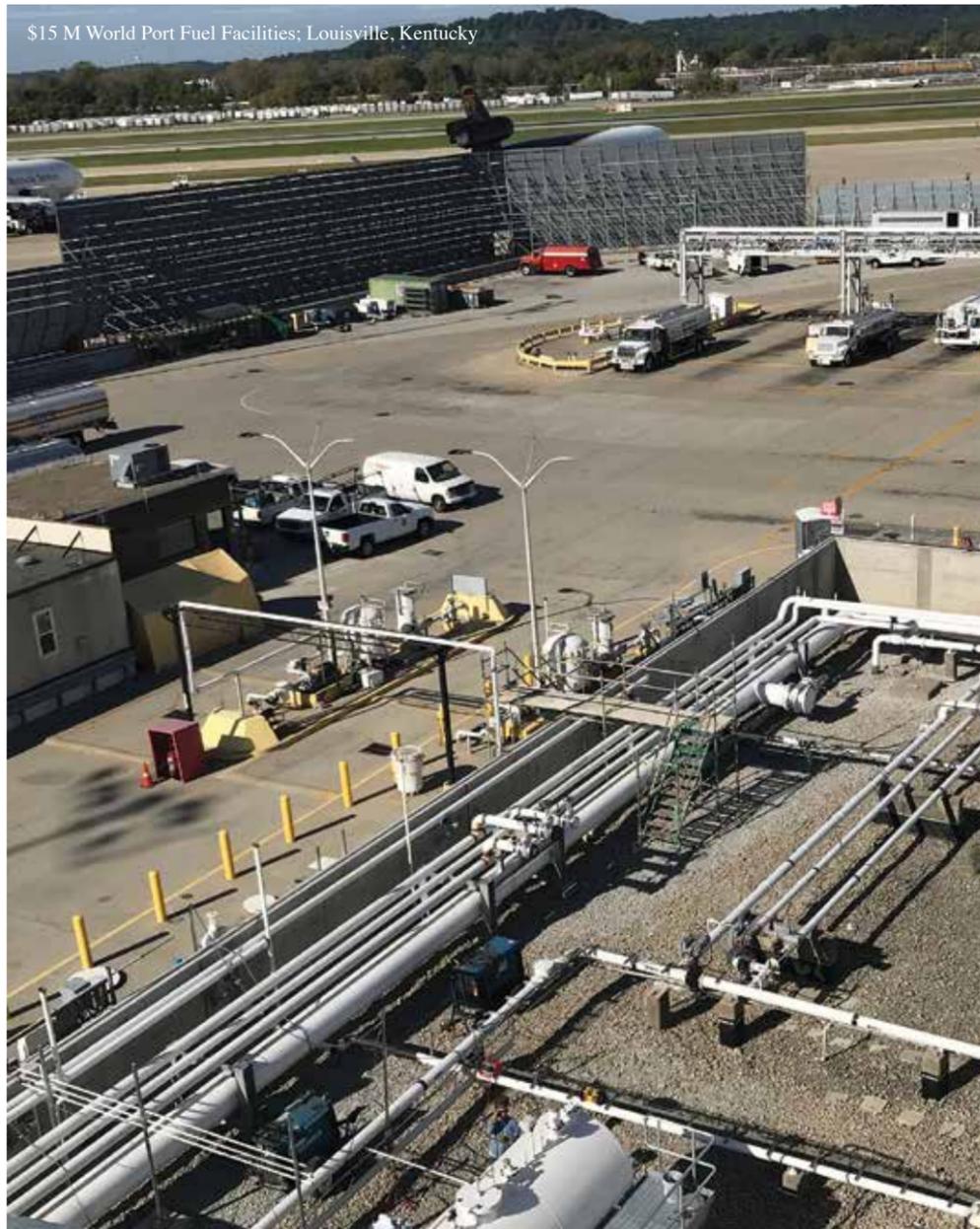
Hawaii Work Experience Boosts Ability to Work Remote

Bodell’s capabilities to work throughout the country was developed through its successful history building in the Hawaiian Islands, which traces back to James Bodell’s time working there for other firms in the late 60s and early 70s. When he and Michael Sr. started the company in 1972 they already had established relationships with local specialty contractors. Early work included religious and institutional projects and morphed into industrial work for clients like Honeywell, Boeing, Ormat, Monsanto, and the University of Hawaii.

The firm self-performs most of the work on projects it manages, so finding the right mix of labor can be challenging in Hawaii. Field workers obviously enjoy the perks of a year-round, 80-degree tropical climate; the downside is it can seem like an especially long way from the mainland during lengthy project durations of 12- to 24-months.

“It’s a pleasant temperature, certainly, but it can be hard for them because it is so far away,” he said. “There can be a [labor] turnover challenge because [workers] initially get excited about it. There was a time when half our employees came from the Southeast. They’ve chosen this career; they don’t expect to get home all the time, but they usually like to once or twice a year, so Hawaii is a challenge in that regard.”

The firm typically averages between 150-175 specialty craft workers at a time,



Bodell said, with some 80 maintaining full-time, year-over-year employment. These are the highest caliber of craft labor, workers who consistently perform technical, yet physically demanding work at the highest levels of quality and safety.

“They are aware of what our company is doing – their primary motivator is financial, but they do like working for us for a multitude of reasons,” he said. “For another 100 (workers), we’re one of their favorite three or four companies. It depends on the kind of work, the location, anticipated weekly hours in the work schedule. We get calls all the time from people who want to get their name in our database.”

Bodell said the firm works primarily as a general contractor and is adept at all project delivery types, and also works as a design-builder, specialty subcontractor, or partners with other firms on large joint-ventures.

“We see ourselves as a unique service provider because of our diversity of experience, and our resistance to operating as a commodity/low-bid contractor,” said Bodell. “We’re competitive, but we prefer not to work in solely low-bid, commodity environments. Projects go well when we appear as early in the process as possible and we lead the project, because we want to fully understand client need and foster those relationships.”

“We still see general contracting as our most frequent delivery method,” he added. “The more we’re involved with the design team, the better a project is going to go. I think most clients would say that, too. Whether a client puts us in charge of the delivery method like design-build, or even if they bring us on early in the cycle as a partner to collaborate with the main engineer during the design phase to consult on constructability, that’s always better than bringing us in later.”

Bodell opened its Mountain Plains Division office in Casper, Wyoming in 2015, with a focus on the region’s energy resources clients, including projects for natural gas/power plants, oil/gas midstream projects, meter stations, pump stations, compressor stations, pipelines and industrial warehouses.

The company is close to finishing its first ever project in Alaska, an \$8.7 million contract working as a subcontractor to Seattle-based Osborne Construction on the EIE 406 Arctic Utilidor project at Eielson AFB in Fairbanks.

“The trend we see with our clients is transitioning, upgrading or expanding their facilities to provide cleaner products.” says Dave Freston, Bodell’s Director of Client Services. “Oil, gas and mining are still commodities and clients often add infrastructure due to increased market demand.”

Locally, the firm is close to finishing the Brigham Young University Co-Gen Plant in Provo, a critical \$35 million campus infrastructure improvement and one of the more significant projects the firm has built in Utah in recent years.

A renewed, more concentrated focus on municipal and infrastructure projects, and the recent hiring of a new project director, is expected to yield future work and bolster future project backlogs.

“We’re working more in state than we’ve done in a long time,” he said. “Because of our expertise there isn’t always consistent work for us in state. We’re trying to keep more of a local presence and we can do that with an emphasis on infrastructure, municipal, military and federal government work. Our work in Alaska is an example of that.” ■



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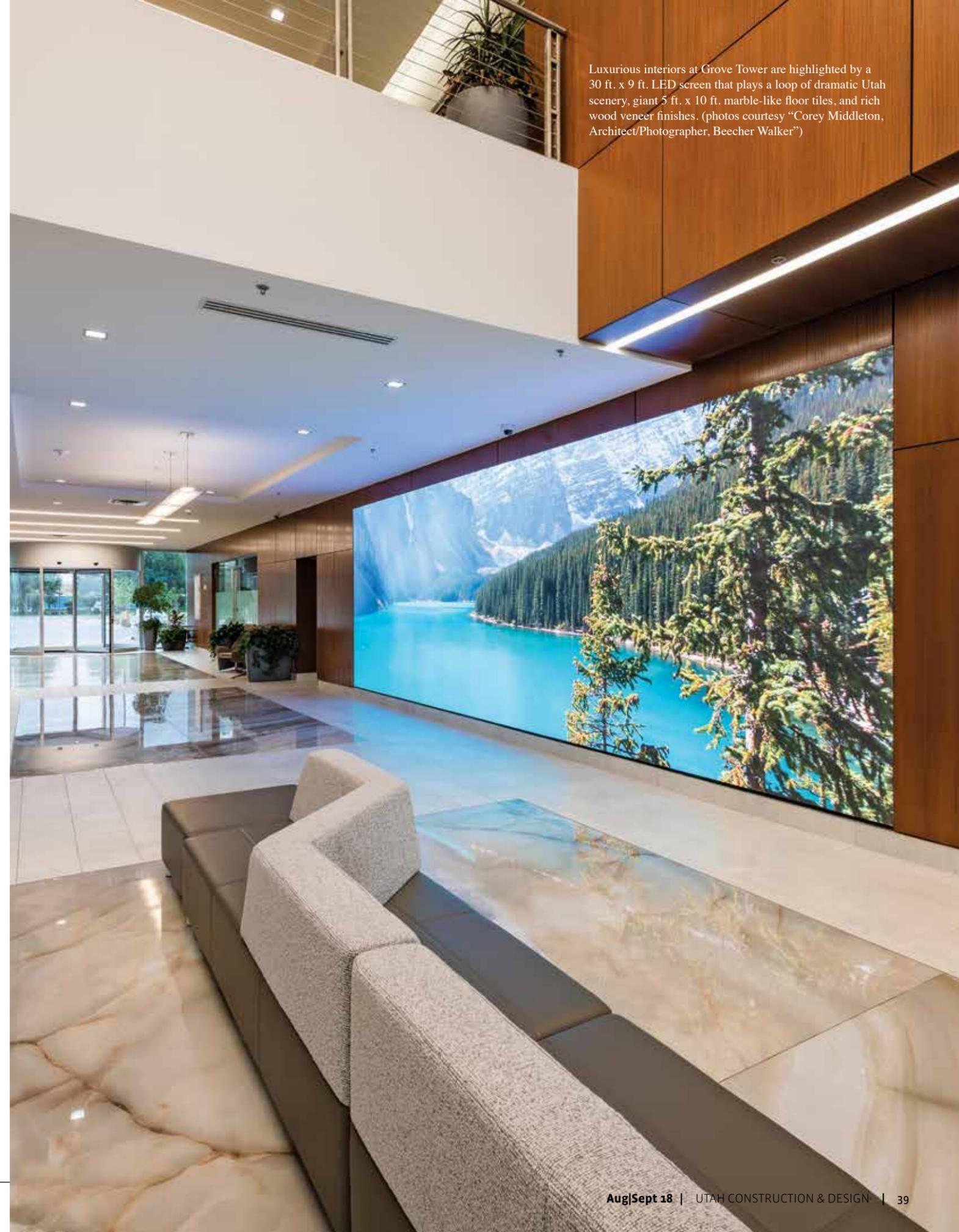
St. John's Bullish on Future in Utah County

Maryland-based firm's Valley Grove is a 62-acre master-planned development in Pleasant Grove will feature \$300 million in capital investments, including six major office buildings and other mixed-used projects.

By Brad Fullmer



Luxurious interiors at Grove Tower are highlighted by a 30 ft. x 9 ft. LED screen that plays a loop of dramatic Utah scenery, giant 5 ft. x 10 ft. marble-like floor tiles, and rich wood veneer finishes. (photos courtesy "Corey Middleton, Architect/Photographer, Beecher Walker")



Baltimore-headquartered St. John's Properties is a great example of a well-established, out-of-state commercial developer recognizing Utah's vast development potential by establishing an office in Utah on sheer speculation and rolling the dice.

Daniel Thomas, a Partner with St. John's for more than 11 years, established the firm's office in Pleasant Grove in 2014 after spending seven years working under founder Edward St. John (he established the firm in 1971) in Maryland, where he researched different markets for two years before settling on Utah County.

In July, the firm was named 2018 'Developer of the Year' by NAIOP, the Commercial Real Estate Development

Association – the association's top national honor.

"Given the outstanding and highly-deserving commercial real estate companies competing for this award on an annual basis, our entire organization takes great pride in this achievement," said St. John in a statement. "I am particularly proud of the work ethic we have instilled into our loyal employees, which places the daily real estate needs of our clients as our number one priority. This national recognition validates our corporate culture of performing to the best of our ability each day and doing what it takes to get the job done right."

Thomas said Utah's top-ranked population growth (over 2% the past three years), youthful demographic and >>

"I like that Utah is growing. Whenever you're adding bodies to a market it takes away risk from what we're doing. The fact that the market is growing means the product will be absorbed over time without risk."

– Daniel Thomas

business-friendly environment all factored into the firm's decision to invest in the Beehive State, evidenced by Valley Grove, a multi-phase, 62-acre master-planned development just east of the Pleasant Grove Blvd./1-15 Interchange that ultimately will include 1 million SF of space in six major office buildings, eight different retail sites

and 10 additional pad sites. The anticipated \$300 million investment is expected to generate \$800 million in tax revenue for the state, county, and city, while hosting 7,000+ employees.

"Ed and I are partners; we boiled it down to three markets – Seattle, Portland and Salt Lake, and when it came to making

the decision, I picked Salt Lake because of regulatory and business environment and the fact that the population is growing with natural (in-state) growth. We're a speculative builder; we didn't have anything pre-leased, no financing, we just started building. We put \$35 million into the project before we got any financing. We figured we had this great location that other developers had passed over."

Projects include Grove Tower, a 190,000 SF, six-story Class A office building, and Grove 1, a 170,000 SF office building that broke ground in July and should be completed by August 2019.

Designed by Beecher Walker Architects of Holladay and built by Jacobsen Construction of Salt Lake, Grove Tower's entrances and dramatic six-story edges create angular cutouts that capture natural and man-made light in unique ways. Materials include gunmetal gray and warm wood-colored metal panels – in addition to walls of glass – that reflect and aid in the play of light coming into the spaces of the building at all times of the day. The sensory experience continues into the two-story lobby where visitors are greeted by a sea of reflective finishes juxtaposed to matte ones. The 30' X 9' LED screen on the opposite wall can't be missed as it plays a continual loop of iconic and dramatic Utah scenery.

High-end finishes continue with 5 ft. x 10 ft. light-colored, marble-looking floor tiles, the largest of its type available, surrounded by smaller, matte porcelain tiles, which offers a subtle contrast in light reflection. Poured-in-place GFRC panels encasing the elevator have a polished black finish, offering yet more dramatic design contrasts.

St. John's boasts a notable development portfolio with more than 18 million square feet of space in eight states spanning three regions, including office, flex/research, warehouse and retail, in addition to residential units. Besides Maryland, it has offices in Louisiana, Pennsylvania, Virginia and Wisconsin; Colorado and Nevada are western locations besides Utah.

Thomas expects the local economy to hum along, both short- and long-term, and said St. John remains bullish on his Utah investment. "He loves it – he's spending a

lot of money out here and is pretty happy with it."

"I like that Utah has been growing," he added. "Whenever you're adding bodies to a market it takes away risk from what we're doing. The more new bodies, the more people eating at your restaurant. The fact that the market is growing means the product will be absorbed over time without risk."

He also has enjoyed the relationships he's built with local contractors and designers, and said St. John's as a company does well managing the construction of its own projects.

"As we track our construction pricing, we do \$400 million a year in new construction. We've been able to control our pricing better than some of our competitors. We offer net 10 (10-day) payment to our subs; it's allowed us to control our pricing. We show a lot of fidelity to our subs that take care of us and we give them a lot of work." ■



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Bowen Collins & Assoc. co-founder Michael Collins is nearing 40 years as a professional engineer. He's designed many important water resources infrastructure projects in Utah, including the Lower Steinaker Canal Enclosure for Uintah Water Conservancy District (below), the Point of the Mountain Aqueduct for MWDSLCS (opposite, left), and the Provo Reservoir Canal Enclosure. (portrait by Dana Sohm; project photos courtesy BC&A)

Collins Enjoying Twilight of Career

By Brad Fullmer

After nearly four decades as a professional engineer, Michael Collins of Draper-based Bowen Collins & Associates (BC&A) has scaled back to half-time work at the firm he co-founded in 1997, enjoying a more relaxing pace working directly with clients and not worrying about the day-to-day nuances of managing a firm with 19 partners and 70 employees in three offices (St. George and Eagle, Idaho are the others).

Collins, 62, is a native of Caldwell, Idaho and attended Utah State University in Logan, graduating with a Masters in Civil Engineering in 1979. He took a job in Boise with CH2M Hill in 1980 and ended up moving to the Salt Lake office, taking over as manager in '88. Collins grew that office from three people to over 100 by the time he left in '97.

He knew Larry Bowen, who worked for another local civil firm, and had tried to hire him in the past. Ultimately, Collins and Craig Bagley (another CH2M Hill engineer) convinced Bowen to team up in starting BC&A. Their collective experience with



water districts and municipalities made the firm viable within a couple of years and an immediate contributor to Utah's water resources infrastructure.

"Probably 70% of our work is repeat clients," said Collins. "You keep (clients) by doing good work and delivering projects on schedule. Our goal is to make our clients' managers look good in their organizations."

Collins points to BC&A's culture as a reason the firm is able to retain its best engineers.

"Our philosophy has always been to hire good people, spoil them rotten, and let them do their job," said Collins. One of the annual incentives (10 years in a row now) is a company-paid trip – this year's destination is Maui.

Collins has designed several large infrastructure projects in his career, including the \$125 million Jordan Basin Water Reclamation Facility for South Valley Sewer Improvement District, the first plant owned/operated by the District, and he worked on the Master Plan for system improvements for the Metropolitan Water District of Salt Lake and Sandy – a \$300 million project spanning several years.

These huge infrastructure projects will serve Utah communities for decades to come.

The biggest satisfaction is I've worked on a number of huge projects for the state that will be in place for (many) years, so I've had some impact on the infrastructure," said Collins. "The enjoyment of engineering

is figuring something out on a piece of paper and seeing it built."

"Mike is visionary and has always led by example," said Bagley. "He has expectations – he expects a lot out of those that he works with, and is passionate about exceeding client expectations. He

has mentored a lot of engineers who are now becoming leaders in the firm."

"That's how you keep good people – you have to get them involved in the firm," added Collins about BC&A's status as an employee-owned firm. "We have a broad ownership base." ■



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Pentalon is led by founder and President/CEO Carl Tippetts (below right), and right-hand man Shay Johanssen. Multi-family projects have been a hallmark of Pentalon since the firm's inception in 1993, including Parkway Lofts and Wilmington apartments. (photos courtesy Pentalon Construction)



Marathon Man

Pentalon Construction founder Carl Tippetts is an avid runner (180+ completed marathons/endurance events). For him, the journey is infinitely more valuable than the finish line.

By Brad Fullmer



Carl Tippetts likes to run. A lot.

Running gives him an emotional outlet, a way to climb into a comfortable zone and contemplate life's challenges, or ponder the best way to tackle his daily/weekly to-do list. By his estimation, the 65-year-old President/CEO of Murray-based Pentalon Construction has run 94 marathons and 88 ultra-marathons to date, all in the past dozen years since taking up the sport in 2006 at the behest of Joe Larsen, a persistent electrical contractor (and now close friend) who did work for Tippetts and kept asking him to go on a run.

"I run a lot, and I don't run to cross the finish line," said Tippetts. "It's a great release for me and I'm able to solve a lot of problems on long runs. You run for the experience – the journey is what it's all about. And I'm still on the journey...I'm not close to approaching the finish line."

Tippetts views his role at the construction company he founded in 1993 – one that has averaged nearly \$100 million

annually the past three years (\$93 million in 2015; \$98 million in 2016; \$97 million in 2017, good for No. 10 among commercial general builders on UC&D's list of 2018 Top Utah General Contractors) – in the same light. As Pentalon celebrates its 25th anniversary this year he knows a succession plan is needed, even though he intends to remain in charge well into the next decade.

"If you want to build a successful project, you better hit it hard. If you want to build a successful company, you better still keep hitting it hard," said Tippetts. "I would hope to be associated with Pentalon in some capacity for as long as I can, but there has to be a next generation in place in three years – that's what my timeframe is."

Riding the Wave Through Good and Bad Times

Tippetts put himself through college working for Alder Construction of Salt Lake, and contemplated law school before realizing it wasn't a good fit. He ultimately >>

"I run a lot, and I don't run to cross the finish line. It's a great release for me and I'm able to solve a lot of problems on long runs. You run for the experience – the journey is what it's all about."

Carl Tippetts

Projects like the District North Apartments in Salt Lake showcase the firm's ability to build state-of-the-art, multi-faceted buildings with stylish, high-end finishes.



Pentalon has built a stellar reputation for delivering well-built, high-end multi-family projects in a timely fashion, mainly along the Wasatch Front, with more than 6,000 units built in the past decade.

went to work for a small development firm, Sunstone Development, before spending a decade as a Project Manager at RK Management of Salt Lake, where he oversaw the construction of 3,000+ units.

In 1993 he launched Pentalon Construction, confident in his ability to navigate the fast-paced, highly cyclical multi-family market, which led to work in other commercial markets including health care, resort/hospitality, office/retail, and institutional.

"You have to be optimistic or you don't get into business for yourself," Tippetts said about his decision to become a commercial GC. "The transition from RK to Pentalon was not that different – paying the bills became the fundamental difference. It was a matter of chasing and finding a job, and we could find small jobs at that point. Where you get scared is hiring the first overhead employee. When you're a small contractor most issues become code and

constructability issues. When you grow in size, you start having banking and bonding issues, and it's a whole different world."

Pentalon has built a stellar reputation for delivering well-built, high-end multi-family projects in a timely fashion, mainly along the Wasatch Front, with more than 6,000 units built in the past decade. Approximately 80% of the firm's '17 revenues came from the multi-family market; health care (10%) and resort/hospitality (8%) were other strong markets last year.

As the company grew in size and ability during its first five years, Tippetts became active in the Utah Chapter of the Associated Builders and Contractors (ABC), serving on its Board of Directors for several years, including Chairman in 2001-02. He sees tremendous value in participating in local trade associations and appreciates the friendships he's developed.

"I liken it to a neighborhood," he said

of being active in ABC. "If you move into a neighborhood and don't get to know the neighbors, you don't like it. [ABC] gives you a chance to associate with people on a first-name basis. On bid day you're fiercely competitive, but it's nice to be associated with those people. I've developed a lot of good friends in that 'neighborhood'. We have a lot of common problems, a lot of common interests. To sit down and share those, it adds meaning to life. It makes the journey that much better."

"Pentalon has been an ABC member for over 20 years; Carl served not only as the Utah Chairman of the Board in 2002, but also on ABC national committees," said Chris DeHerrera, President/CEO of ABC Utah. "The success of his company belongs to the leadership of Carl, his passion for the craft and the integrity of his character. The industry is better off for having his leadership."

Pentalon's board consists of: Tippetts; Shay Johannsen, Vice President of Construction; Jill Day, Controller; Brian Childs, Operations. The firm recently brought Cy Waldron on board as its Marketing/Business Development Director; he worked in the tile/stone market for 20+ years before being hired in March.

Like many local commercial contractors, Pentalon saw revenues peak from 2006-08, followed by 3-4 years of essentially surviving, with Tippetts saying "we lived off our balance sheet for a while – it was a tough time." Revenues bottomed out at \$12 million in '11, with the rebound beginning in '12 (\$26 million) and '13 (\$41 million), before spiking to \$74.5 million in '14.

The firm's operations also essentially switched gears post-recession, becoming a CM firm rather than a general contractor that self-performed a significant amount of work on a project.

"At one point we had 130 employees and did concrete, framing, excavation, painting, finished carpentry – we dabbled in all of it," said Tippetts. "About 10 years ago, as the market was transitioning, we became a construction management firm."

Johannsen joined Pentalon in 2000 and serves as Tippetts' right-hand man. He was persuaded by Tippetts to start running 10+ years ago – much like Tippetts was influenced to engage in the sport by

Larsen of Marathon Electric – and finds similarities between his career and hobby.

"In ultra-running, like in business, success depends on prior preparation and planning," he said. "It requires a lot of time in the mountains, a lot of time running trails. In life, people need to find balance, to be happy with yourself and find things you enjoy outside of work."

Tippetts said he and Larsen run about three days a week on average (mixing in some swimming for diversity), and have traveled to many places together competing in marathons and various endurance events, including the famed Ironman Triathlon in Hawaii (Larsen has done 24 of

them; Tippetts is at 10, and counting).

"We have a good relationship," said Larsen. "I met him about 15 years ago and every time I'd see him, I'd say 'you want to go running?' Finally he did so, and he's been running ever since. It's our way to get away from reality, to talk about everything."

Tippetts added: "It's taken me to all kinds of places – Hawaii, Colorado, the Wasatch 100 [in Utah] is a great run [he's done it five times]. Joe convinced me to run a marathon [his first was the Ogden Marathon in 2006]; my wife [Michele] wants to know when I'm going to finish the marathon," he laughed. ■

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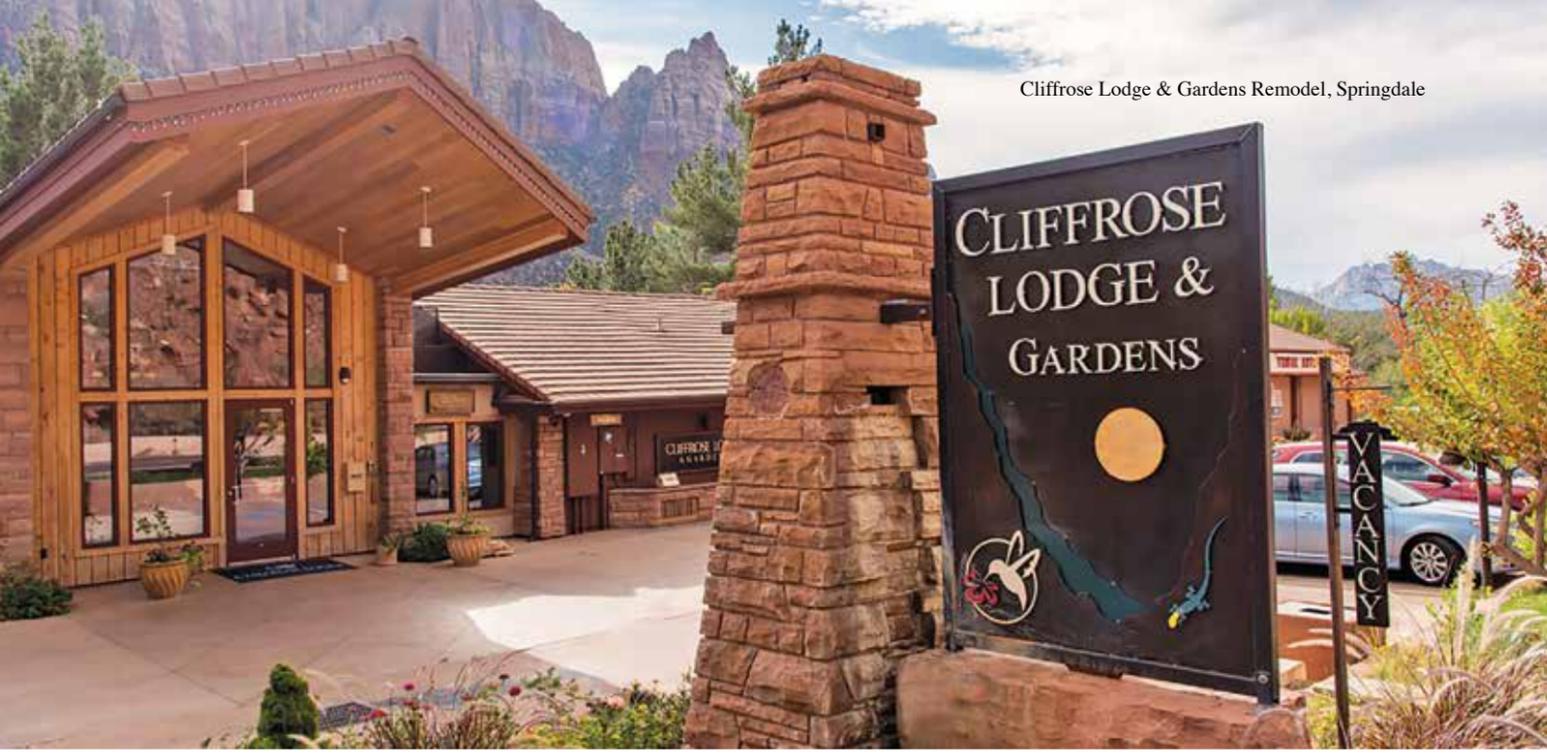
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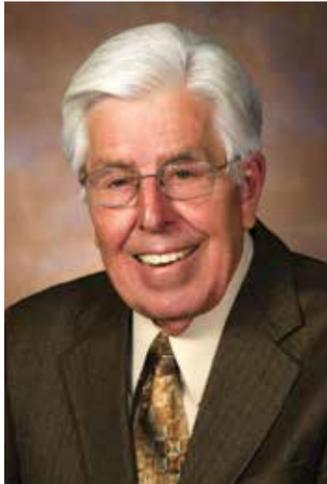
Washington City Rec Center



Viracon Manufacturing Facility, St. George



Zion Factory/Promenade Mall, St. George



Richard Watts



Doug Watts



Annie Howell



Chris Boudrero

As the largest commercial general contractor with headquarters in St. George (Utah's sixth-largest city), Watts Construction has built numerous key public and private projects throughout Southern Utah and the surrounding region. The firm has thrived historically in a host of markets, including hospitality/resort, commercial office/retail, industrial and municipal. (photos courtesy Watts)

NIFTY FIFTY

Optimism runs high at St. George-based Watts Construction as it marks 50 years; third generation of family leaders poised to take the firm to greater heights in the future.

By Brad Fullmer

From 2010-2012, St. George-based Watts Construction found itself mired in the same boat as many other commercial contractors at that time in Utah, trying to navigate through a choppy, unstable construction market left in tatters by the recession.

Doug Watts, current company President/CEO and the son of founder Richard Watts, served on the board of the Associated General Contractors of Utah during that time prior to his one-year stint as AGC Chairman in 2013. He credits that time – one that had him rubbing elbows with top executives from some of the biggest general contractors in the state – for boosting his morale and reviving his motivation to get Watts Construction back on track.

“The AGC was a real motivator for me,” Watts recalled. “I remember driving up to

Salt Lake for board meetings, wondering if I was going to be the only contractor to close up shop while serving as the Chairman of the prominent association. Just being around people like (AGC President/CEO) Rich (Thorn), Rob Moore, Randy Okland, Doug Welling – all of those guys were very kind to me and respectful. I give AGC a lot of credit, at least helping with my attitude.”

“It boosted his confidence to be around those people at AGC and for him to be in that important position, and also to hear that everybody at that time had similar struggles,” said his daughter, Annie Howell, who serves as Chief Financial Officer and joined the firm in June '99.

In the eight-year period from 2010-17, Watts' revenues grew steadily over the first four years with surprisingly good gross

margins despite the slow economy. In 2016, revenues grew by 25%, while 2017 was the second largest year in Watts' history in terms of revenues (\$36 million) and net profit.

In addition to Watts, who turns 62 in October, and Howell, 42, a third family member, Watts' nephew Chris Boudrero, 43, started with the firm in 2000 and is currently its Chief Operating Officer, overseeing all field operations.

Having a third generation of Watts' family members in place makes the company primed to be a major player in the commercial building market for decades to come, especially with the hard lessons learned bouncing back from the recession.

North to South: Cache Valley Roots; Long-time Dixie Presence
Watts Construction was founded in >>

1964 in Logan by Doug's father, Richard >> Watts, who incorporated the firm in 1968. Richard's father, Conley Watts, owned and operated a lumber yard – Cache Valley Builder's Supply – so Richard grew up around construction and realized at a young age its career potential. Richard, 82, started out building

residential homes for a short time before switching his focus to commercial projects and finding success in markets like office, retail, higher education and K-12 from '68-'81. By the end of the 70s, business was rolling along nicely for the senior Watts, who had also started building/developing condominium projects at Deer Valley. When

the savings and loan crisis hit, Richard saw the value of his investments plummet, and he was forced to liquidate all assets and re-evaluate the future of Watts Construction. "He had the world at his feet, but that Park City (deal) knocked him out," Watts said. "He came to St. George to start over. He didn't file bankruptcy; he was able to negotiate his debts and pay them off, which is admirable."

Richard said his decision to relocate to Southern Utah was partly due to his desire to escape inclement winter weather conditions and having better year-round building conditions, even during the region's blistering hot summers.

"(Weather) had a lot to do with it," said Richard. "I had a close friend who owned property down here so we moved to St. George. It was one of the best decisions we've ever made."

Doug worked for his father as a youth during summers, spending time in the company 'boneyard' pulling nails out of boards or sweeping shop floors, before moving on to carpentry and concrete work. Doug gained valuable experience working for other firms from '80-'85, mainly building and remodeling homes, including two-plus years in Oregon ('80-'82) when he got married, went to school and worked for Red Hat Remodeling, and another two years ('83-'85) as a superintendent in Salt Lake.

In 1985, Doug and his family moved to St. George as he re-joined his father at Watts Construction, quickly moving into the role as its top field superintendent for eight years before coming into the office full-time in '93.

Watts credits his father's confidence, upbeat nature, and ability to sell himself as the primary reasons for the company's success over its first three decades in Southern Utah. Business was slow during the early years, with Richard landing some condo projects at Brian Head Resort, along with some projects for St. George Federal Credit Union and other local businesses.

"We were doing 25% of the volume we had previously done, but it was enough to keep us going," Richard recalled. "We made it work economically."

In 1992, a developer from California

came to St. George looking at building a sizeable retail project. With Watts as the only significant local commercial builder at that time, Richard negotiated with the owner and ended up constructing the now-iconic Zion Factory Stores and The Promenade on River Road just east of I-15, a milestone project, one that cemented the firm's reputation in the historical context of Washington County growth.

The company started also started delivering projects via design build and construction management by bringing an architect in-house. Richard said he started doing design-build work in northern Utah after learning about it through an AGC seminar in the 70s.

As Southern Utah's population swelled – Washington County nearly tripled in size from 1990-2010 (48,500 to 138,000 people), Watts' revenues eventually peaked at \$50+ million in 2007 and 2008.

One of the hallmarks of the company over time has been its ability to work in different markets – office, retail, municipal, industrial, hospitality – depending on which ones were most active.

Prosperous times would not last, however, and the housing market crash/recession in '08 had a particularly damning effect on the greater-St. George area, beginning a difficult five-year period. In 2010, a leadership change was made as Richard was bought out, and the firm trudged on despite harsh economic conditions.

Howell remembers those difficult times, and credits her father's resolve in steering the firm through that period: "He's tenacious in his own way; he's passionate about our reputation for doing a good job."

"I remember clearly Doug making that 300-mile trek often (in '13), in some cases several times a month to carry out his responsibilities as Chairman," said Thorn. "They've been able to weather hard times and turn those hard times into a learning experience. They are a well-respected contractor across the Intermountain West; they should be proud of the legacy they've created."

Boudrero credited the firm's reputation

with repeat clients for getting them through those trying years at the beginning of this decade and is confident in his and Howell's ability to keep building the firm, even after Doug begins his transition into retirement sometime in the next 5-7 years. "We're trying to grow right now, but stay lean," said Boudrero. "Risk

management is a big factor – we haven't extended ourselves too much. We went from doing design-build to straight bid jobs, but we're really good with our vetting process and how we assess the job. We'll take calculated risks. We see some big projects coming to St. George and we're excited about the future." >>

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Third Generation and Beyond

Although he hasn't been involved with Watts Construction the past eight years, Richard has kept tabs on the activities of the firm he founded a half century ago, and is thrilled that it's set up to remain successful heading into a third generation of Watts family members. He gives Doug, Annie and Chris a tremendous amount of credit for steering the firm through the recession, and rebuilding it back to where it was a dozen years ago.

"You don't see that happen too often," he said. "It's not a high percentage chance that the son is going to come in and take it over...and do anywhere near to what the old man did. But he's done better - he's run the company in a successful way and he's doing a lot of business. It appears he has a couple of good ones in Annie and Chris. They're very talented."

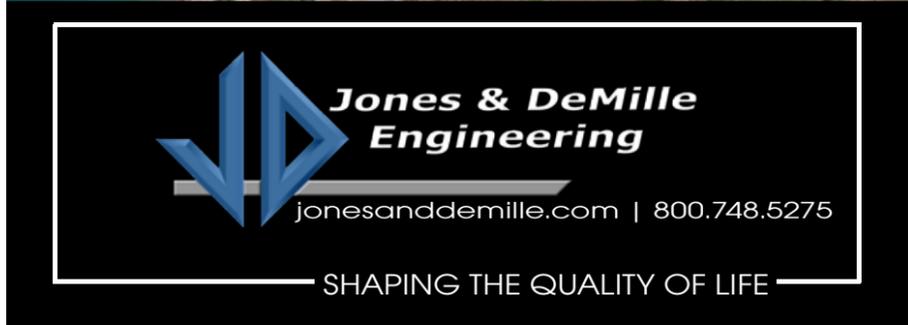
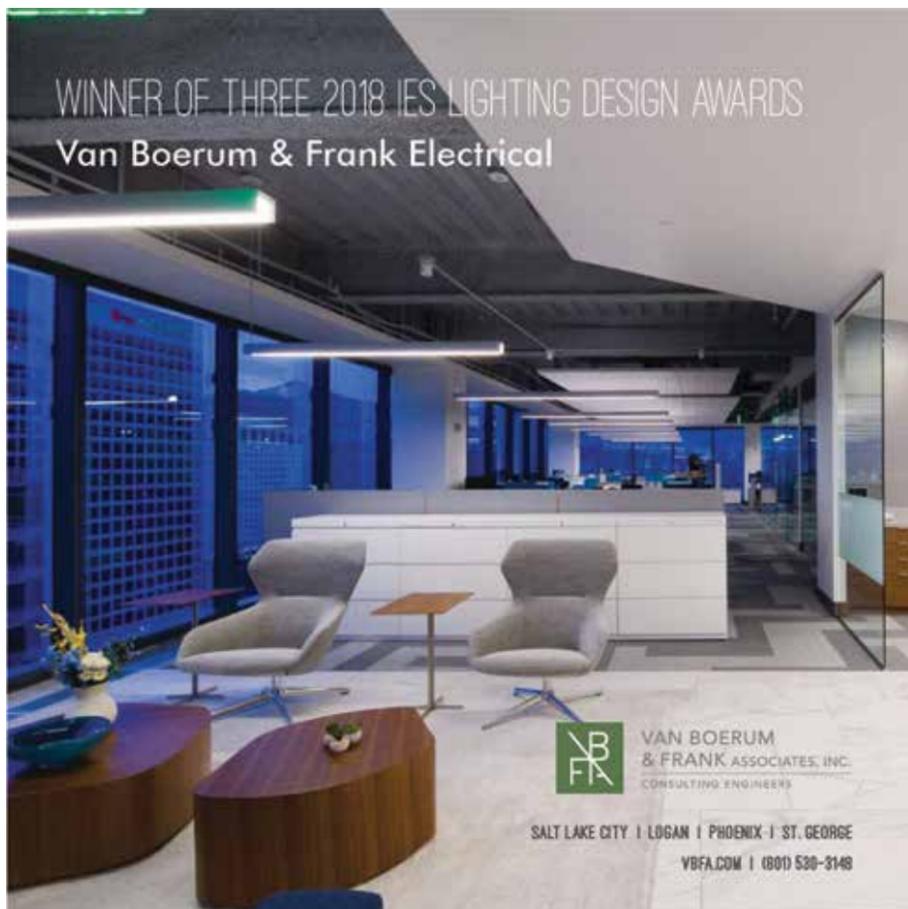
Richard paused when asked about the legacy of Watts Construction, now running three generations deep over half a century.

"It's extremely gratifying...because when you're going through it - the 70s, 80s, and 90s - you're really not thinking about that stuff - it just doesn't enter your mind until you're ready to step down and retire," Richard mused. "Frankly, it's been a pleasant surprise. They have the talent, but you need more than talent to make it work."

"We've been lucky," he added, "and we've had the right people. Success of the operation has been the people and the way they were deployed. I don't care what business you're operating, whether it's a company doing \$5 billion or \$20,000 - if you don't have the right people you're not going to be successful. My satisfaction is that we've been the No. 1 (commercial) contractor in St. George for a long-time. It is a great accomplishment."

Doug, for one, is bullish about the firm's future.

"We're moving forward - we're going after bigger projects and we're making investments back into the company for future growth, so the competition better watch out. We're the local guys - we can do anything the biggest contractors in the state can do, in terms of service and project delivery. No fear!" ■



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PHOTOGRAPHS/DIGITAL IMAGES

Firms should plan on submitting a minimum of ten (10) photos (max 20), all high resolution files (minimum 300 dpi by 5" x 7", .jpg and .tif preferred). Firms can also submit other documents, including renderings, floor plans, etc. Applicants need to ensure they have total permission to copy and submit photographs to Utah Construction & Design for publication without limits. Any liability for copyright violations will be borne solely by the applicant.

JUDGING CRITERIA

1. Contribution to the Industry and Community
2. Innovation in Design and Construction
3. Overcoming Unique Challenges/Obstacles
4. Safety, Quality and Craftsmanship
5. Aesthetics/Design

SUBMISSIONS

All entries must complete the submission overview document. This document may be found at www.utahcdmag.com/events. Entries should be submitted electronically, either by email/email delivery service (such as DropBox/You Send It, etc.). Submissions emailed should be sent to: lmarsall@utahcdmag.com AND bfullmer@utahcdmag.com. Questions may be emailed to Ladd Marshall AND Brad Fullmer at: lmarsall@utahcdmag.com AND bfullmer@utahcdmag.com.

UC&D will host an **Outstanding Projects Awards Breakfast**, Tuesday, **Dec. 11** at Little America Hotel. Registration from 7:00-8:20 A.M., Breakfast at 8:20 A.M. sharp. Program will run from 9:00 A.M. To 10:30 A.M.

Massive 840,000 SF UPS Regional Hub a Precursor to SLC's Future Inland Port

By Brad Fullmer



“From the very beginning there was a unique and pervasive culture of problem seeking and problem solving. Every assumption was critically challenged and evaluated to see if there was a better solution.”

David Anderson,
Principal, Babcock Design



The perimeter of the main building is more than 1.3 miles long with 25-ft. high tilt-up concrete panels. Crews placed an average of 40 panels a day during peak construction activity. The project is located in the heart of the proposed 'Inland Port', one of the more hotly debated future projects in the state currently in its infancy. (photos courtesy Layton Construction)

It might be apropos to say the design and construction team had to 'think outside the box' on the new \$275 million (\$80 million construction cost), 840,000 SF UPS Regional Hub facility at 380 South 6400 West in Salt Lake City – the firm's largest hub in the northwest, and one of the largest ever 'big box' projects to grace the Beehive State.

The project is a notable investment to the local economy by the international shipping behemoth, as it creates more than 1,500 jobs at this 160-acre site that will process some 69,000 packages – per hour(!) – within a facility that functions as one massive integrated machine, designed to streamline all aspects of the distribution process. The facility is a precursor – the first of what is likely to be many future projects in this area – for the northwest quadrant of Salt Lake, transforming it from a sheep/horse pasture into what will ultimately be an internationally recognized Inland Port, solidifying Utah's century-old claim as the 'Crossroads of the West' and strengthening its economic base.

Poor soil and groundwater conditions challenged contractors from the outset, who came up with a soils remediation plan that included 31,000 CY of grubbing, moving 270,000 CY of earth, and adding 802,000 tons of imported structural fill and compaction.

Tilt-up concrete panels are 25-feet high (clear height), and Layton crews placed more than 900,000 LF of concrete form edge and 34,000 CY total. Robinson Bros. Construction of Draper efficiently placed an average of 40 panels per day, with a one-day record of 50 panels.

The facility's central core parcel receiving building is connected to five outbound distribution buildings with a complex conveyance system. The system is operated and supported by a decentralized network of 32 independent office areas within the larger hub. Interwoven into the three-dimensional field of conveyors, these "buildings within the building" house a central automated hub control center, administrative offices, engineering and maintenance, locker rooms, etc. Interior office pods are stand-alone spaces that required their own footings and shear walls – essentially separate structures within the main building.

The concrete tilt panels form the perimeter gravity and lateral load resisting system; along building joints, buckling restrained braces also provide lateral resistance, with numerous stand-alone, cold-formed steel stud and joist buildings used in office spaces.

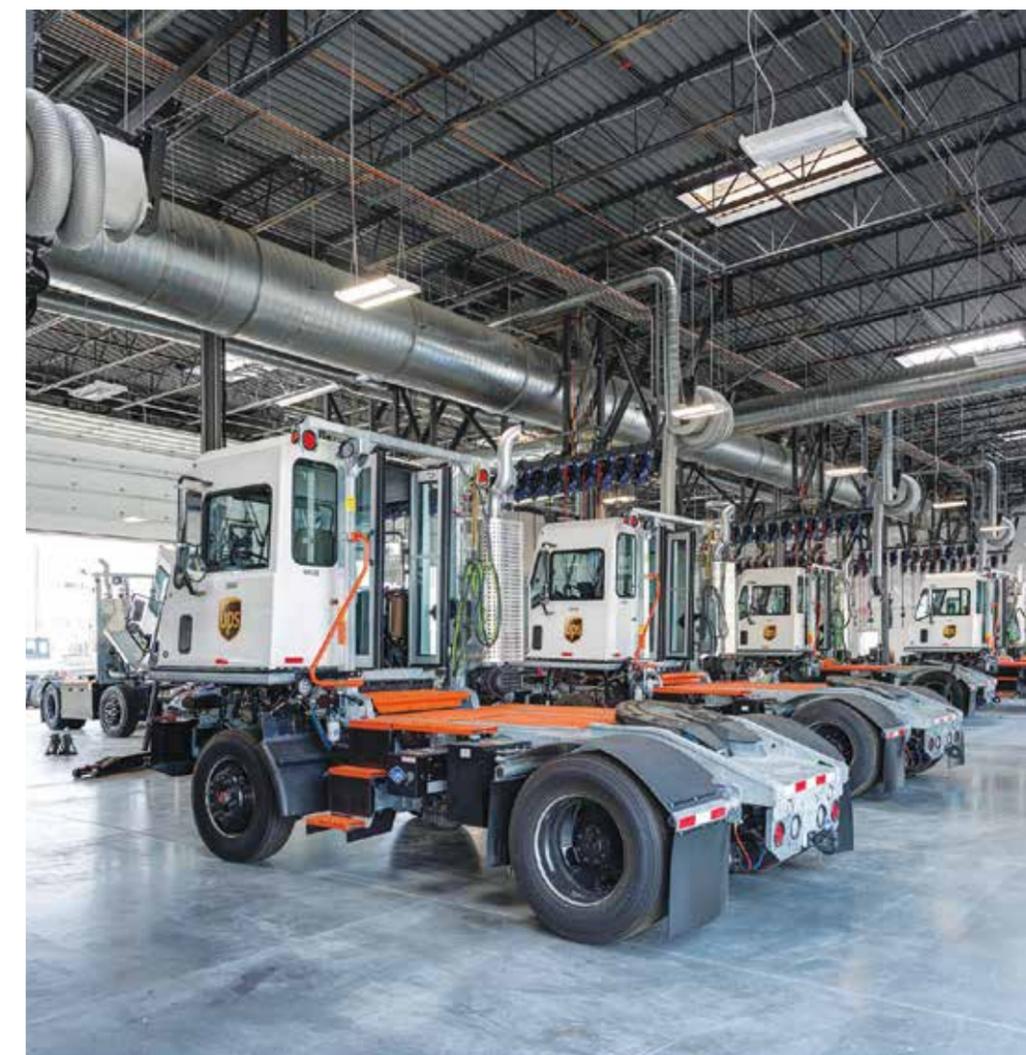
Hunt Electric of Salt Lake installed a 12mw substation for the facility's massive electrical requirements. During

preconstruction, Hunt's survey team captured accurate underground as-builts to help pre-determine the best routes for laying conduit during the underground phase.

The perimeter of the building is approximately 1.3 miles, with the cumulative length of joists measuring an astonishing 23 miles. All joist and decking sections were pre-fabricated on the ground and lifted into place, improving schedule, safety and quality. Hunt also pre-installed interior and exterior wall conduit prior to tilt-up, which helped expedite the schedule.

“It was cool being part of a project of that size and scope, with such a tight schedule,” said Michael George, Project Manager for Layton. “The poor soil conditions were one of the hardest parts of the job. The subcontractors really stepped up.”

According to David Anderson, Principal-in-Charge for Salt Lake-based Babcock Design, design aesthetics operated on two scales. The Guard House and Customer Counter are the two 'outward-facing' buildings that interface with employees and the public, respectively. These components provide comfortable, inviting areas – collaborative spaces for people to talk/mingle – in addition to promoting the UPS brand >>



UPS Regional Hub

through design, graphics and service.

On a larger scale, the brown and gold arcs abstracted from the iconic UPS logo adorn the end of each wing, visible from both the Interstate and on the flight path into the Salt Lake International Airport. The graphic termination to the otherwise crisp, white building wings has become a standard that UPS will incorporate on future projects.

Anderson said there were “numerous unique qualities about this project” including the design-build process that required phased permitting and close coordination between designers and contractors throughout.

“From the very beginning there was a unique and pervasive culture of problem seeking and problem solving,” said Anderson. “Every assumption was critically challenged and evaluated to see if there was a better solution – shorter construction times, lower cost, better functional value to UPS. That process of continuous improvement was initiated by UPS, and executed by the entire team.”

Construction was completed in late spring; the facility is expected to be fully operational in November. ■

UPS Regional Hub/ Parcel Distribution Facility

Location: Salt Lake City

Cost: \$275 Million
(\$80 M construction cost)

SF: 840,000

Owner: United Parcel Service

DESIGN

Architect: Babcock Design

Civil: Dominion Engineering

ELECTRICAL:

Mechanical: David L. Jensen & Assoc.

Structural: Dunn Associates

CONSTRUCTION

GC: Layton Construction

Electrical: Hunt Electric

Mechanical: DB Mechanical

Plumbing: Chaparral Plumbing

Earthwork/Utilities: Newman Construction

Tilt-up Concrete: Robinson Bros. Construction

Masonry: IMS Masonry

Precast: Olympus Precast

Drywall: Standard Drywall

Roofing: Superior Roofing & Sheet Metal

Painting: Universal Painting

Steel: Wasatch Ornamental Iron

Rebar: Western States Rebar Fabrication

Concrete Paving: Geneva Rock

Asphalt: Morgan Asphalt



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It's Time to Use Big Data! (Here Are 5 Mistakes to Avoid)

By Chris Cook

Far too few businesses are using big data to support their decision making. In January 2018, a senior analyst with *Forbes* revealed that business competitors are using data to come after your customers. *The Harvard Business Review* surveyed Fortune 1000 business executives and found the most common reasons for using big data were to decrease expenses, improve operational efficiency, make more informed decisions, and increase revenue. And 80% say their investments in big data are successful.

Basing business decisions on big data is great – except when it's not. Basing high stakes decisions on poor-quality research

is a recipe for financial disaster.

Here are some of the most common big data errors we see:

- 1. Misleading statistics.** You may remember the advertisements claiming 80% of all dentists recommend Colgate toothpaste, leading the consumer to believe 20% of the dentists recommended different brands. The truth, though, was that when the dentists were surveyed about the toothpastes they recommended, they were allowed to identify all of the brands of toothpaste they would recommend; other brands could have been equally as or more popular than Colgate.
- 2. Failure to test the survey**



Chris Cook

questions. It's easy to create a set of survey questions and send them out through SurveyMonkey or Qualtrics. But if you haven't pretested and piloted the questions, you can end up with questions

that make sense to you—but not to the person taking your survey. Recently, we were asked to complete a survey about our spending on wine purchases made at wineries. Unfortunately, it was unclear whether our spending was to include – or exclude – wine purchased from the winery as part of a wine club membership. Had the survey been pilot-tested, this flaw would have been quickly identified and corrected before deployment.

3. Biased interpretation of findings. It matters who does the analysis of survey responses to open-ended questions. This is especially true when a survey is conducted in-house because it is difficult for staff to separate themselves from the data. Unless your team has a staff member specifically trained in eliminating bias, it's better to outsource your research.

4. Lack of candor from survey participants. Your customers generally do not want to hurt your feelings. They are not going to tell you directly your annual customer appreciation event is a dud. This is especially the case where staffing is concerned—and even more so if the staff person administering the survey is also the source of dissatisfaction.

5. Failure to collect data. Fewer than half of all businesses collect data at all. In retail businesses, many do not have any idea how many customers come through the door each day, which means the average sales per customer is also an unknown. You can get a ballpark idea using a people-counting electronic system. Sure, the UPS or FedEx carrier may walk through each day, as may staff, but that number will be fairly consistent and you will have a tangible way to measure growth in the number of customers coming through the door. And you'll know which staff members are doing the best job selling your product and which may need additional training – or a new line of work. ■

Chris Cook is the founder of Capiche, a firm specializing in custom marketing and branding. Visit capiche.us for more information.

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2018 Top Utah Engineering Firm Rankings

Utah-based engineers by-and-large enjoyed prosperity last year based on an analysis of reported 2017 revenues by engineering firms in UC&D's 2018 Top Utah Engineering Firms rankings.

Of the 20 firms to disclose revenues earned from Utah-based offices in '17 (6 other firms submitted surveys without disclosing revenues and are ranked per number of employees), 15 reported an increase from the previous year. Civil engineering firms ranked in 10 of the top 12 spots, led by Horrocks Engineers at \$39 million (up from \$32 million), HDR at \$35.4 million, and AECOM at \$27.5 million (up from \$19.6). MEP firm Van Boerum & Frank Associates claimed the fourth overall – and top MEP – spot at \$17.1 million (a \$2 million jump from '16), Michael Baker Int. was fifth at \$15.9 million (up \$3.1 million), and Spectrum Engineers was sixth at \$14.8 million.

Civil firms claimed positions 7-12, with Jones & DeMille at No. 7 with \$13.8 million, followed by Sunrise Engineering at \$12.5

million, H.W. Lochner at \$12.2 million, WSP at \$11.3, Terracon at \$10.63, and Stanley at \$10.60. Of those firms, WSP had the biggest growth (a \$5.2 million increase).

Structural firm Reveley Engineers was at No. 13 with \$6.4 million, followed by BNA with \$6.1 million, McNeil Engineering (\$5.2 million), Wilson & Company (\$4.9 million) and Dunn Associates (\$4.6 million). IGES (\$4.5 million), Psomas (\$4.4 million) and Royal Engineering (\$3.6 million) closed out the rankings.

The six firms who did not disclose revenues include: one civil firm (Ensign Engineering); three structural firms (BHB, J.M. Williams, Calder Richards); two MEP firms (Envision, Heath).

A Look at Top Markets

Transportation work was plentiful last year, with Highway (roads, bridges, etc.) being the top market for 9 of 14 civil firms: Horrocks (63%), HDR (67%), Michael Baker (70%), Jones & DeMille (40%), H.W. Lochner (100%), WSP

(66%), Stanley (88%) and Wilson & Company (85%). Water was a strong market for Sunrise (30%), Jones & DeMille (30%), Stanley (10%), Psomas (10%) and Ensign (25%).

For non-civil firms, the top markets were Healthcare, Higher Ed, Civic/Institutional, Office, and Retail. VBFA was strongest in Healthcare (25%), Higher Ed (15%), Retail (13%) and Office (10%), while Spectrum reported significant revenues from Healthcare (22%), Office (19%) and Civic/Institutional (14%). BNA's top markets were K-12 (26%) and Civic/Institutional (22%), Dunn Associates fared well in Office (20%), Civic/Institutional (20%), Industrial (15%) and Higher Ed (15%). Royal Engineering had success in Multi-Family (30%), Retail (25%) and Office (11%).

Among non-disclosing firms, BHB's top market was Office (20%), while J.M. Williams reported Industrial (25%) and Office (25%) as its most fruitful markets last year. Envision posted strong numbers in K-12 (28%) and Higher Ed (18%); Calder Richards had K-12 as its top market (20%).

Utah Construction & Design is pleased to publish a list of the Top Engineering Firms in Utah based on revenues generated in 2017 by firms with headquarters and/or offices in Utah. Firms are ranked by revenues generated from their UTAH OFFICES. Firms who chose not to disclose revenues (DND) are ranked after revenue-disclosing firms in order based on number of employees. Every effort was made to contact respective firms and encourage their participation.

Firm Name Address (HQ) Phone Website	Year Est. # of Employees # LEED AP	Annual Revenues (millions) Top Executive Title Years at Firm	Largest Project Completed in 2017 Largest to Break Ground in 2018	2017 2016 2015			Top Markets	%
				2017 (Utah offices)	2016	2015		
1. Horrocks Engineers 2162 W. Grove Parkway #400 Pleasant Grove, UT 84062 (801) 763-5100 www.horrocks.com	1968 313	Jim Horrocks President 49	Bangerter Highway & 600 W Intchg. I-15 Southbound; 12300 S to SR-201 Program Management	\$39	\$32	\$25	Highway Civic/Inst. Comm/Retail Water	63% 15% 5% 3%
2. HDR 2825 E. Cottonwood Pkwy SLC, UT 84121 (801) 743-7800 www.hdrinc.com	1917 75 1	Brent Jensen Sr. VP 11	DND DND	\$35.4	\$35.7	\$22.0	Highway Healthcare Water Industrial	67% 21% 6% 4%
3. AECOM 756 E. Winchester Street SLC, UT 84107 (801) 904-4000 www.aecom.com	1990 308 1	Travis Boone 19	Provo/Orem BRT Final Design North Fork Siphon Replacement	\$27.5	\$19.6	\$15.2	Haz. Waste Highway Industrial Water	50% 27% 11% 6%
4. Van Boerum & Frank Assoc. 330 S. 300 E. SLC, UT 84111 (801) 530-3148 www.vbfa.com	1972 114 14	Steven T. Shepherd P.E. 14	Huntsman Cancer Primary Children's U of U Ambulatory Care (Transformation Project)	\$17.1	\$15.1	\$14.7	Healthcare Higher Ed Comm/Retail Office	25% 15% 13% 10%
5. Michael Baker Int. 7090 Union Park Ave. #500 Midvale, UT 84047 (801) 255-4400 www.mbakerial.com	1977 in Utah 65 4	Michael Arens Vice President 13	Four Interchanges on Bangerter Hwy. I-15 Southbound; 12300 S to SR-201	\$15.9	\$12.8	\$7.5	Highway Civic/Inst. Water Comm/Retail	70% 25% 3% 2%
6. Spectrum Engineers 324 S. State St. # 400 SLC, UT 84111 (801) 328-5151 www.spectrum-engineers.com	1982 100 15	Stewart Greene CEO 36	U of U Campus wide Electrical Upgrade Cirrus Data Services View78 Data Center	\$14.8	\$14.3	\$13.5	Healthcare Office Civic/Inst. Higher Ed	22% 19% 14% 11%
7. Jones & DeMille 1535 S. 100 W. Richfield, UT 84701 (435) 896-8266 www.jonesanddemille.com	1982 110	Brian Barton President 17	Duchesne Co. SSD#2 Victory Pipeline Rich County Cisco Road	\$13.8	\$12.1	\$12.4	Highway Water Civic/Inst. Industrial	40% 30% 7% 5%

Top Overall Engineering Firms

Firm Name Address (HQ) Phone Website	Year Est. # of Employees # LEED AP	Annual Revenues (millions) Top Executive Title Years at Firm	Largest Project Completed in 2017 Largest to Break Ground in 2018	2017 (Utah offices)	2016	2015	Top Markets	%
8. Sunrise Engineering 25 E. 500 N. Fillmore, UT 84631 (435) 896-7613 www.sunrise-eng.com	1978 325 31	Mark Huntsman President/CEO 31	Fillmore Main Street	\$12.5	\$10.1	\$10.8	Water Wastewater Natural Gas Highway	30% 30% 25% 15%
9. H.W. Lochner 3995 S 700 E #450 SLC, UT 84107 (801) 713-5222 www.hwlochner.com	1944 57	Jeanne Cormier President/CEO 30	Bangerter Highway 4 Interchanges	\$12.2	\$9.1	\$7.3	Highway	100%
10. WSP USA Inc. 488 E. Winchester St. # 400 Murray, UT 84107 (801) 262-3735 www.wsp.com	1985 63 1	Dana Meier SR. Area Manager 2.8	Hill Field Road Design-Build I-15; Lehi Technology Corridor Design-Build	\$11.3	\$6.5	\$8.7	Highway Rail	66% 34%
11. Terracon Consultants 6949 S. High Tech Dr. Midvale, UT 84047 (801) 545-8500 www.terracon.com	1980 80	Kent Wheeler Regional Manager 29	"Bangerter Quad" 4 Interchanges (UDOT) SLC International Airport - North Terminal	\$10.63	\$9.4	\$8.7	Airports Highway Industrial	28% 12% 11%
12. Stanley Consultants 383 West Vine Street # 400 Murray, UT 84123 (801) 293-8880 www.stanleyconsultants.com	1913 54 17	Mark Freeman Vice President	I-215 & SR-68, DDI Interchange Retrofit I-15 South Bound Add a Lane, 12300 S to SR-201, Independent Quality Firm	\$10.60	\$8.4	\$8.4	Highway Water Higher Ed	88% 10% 1%
13. Reaveley Engineers + Assoc. 675 E. 500 S. # 400 SLC, UT 84102 (801) 486-3883 www.reaveley.com	1972 46 8	Dorian Adams President 21	Huntsman Cancer Inst. Primary Children's Spanish Fork Hospital	\$6.4	\$8.3	\$6.7	DND	
14. BNA Consulting 635 S State St. SLC, UT 84111 (801) 532-2196 www.bnaconsulting.com	1974 45	Brian Hicks President 13	Vivint Smart Home Arena SLCIA North Terminal	\$6.1	\$5.1	\$3.1	K-12 Civic/Inst. Religious Comm/Retail	26% 22% 15% 13%
15. McNeil Engineering 8610 S Sandy Parkway #200 Sandy, UT 84070 (801) 255-7700 www.mcneilengineering.com	1983 40 1	Ted Didas President	Airport Expansion Project Tier 3 - Gallup, New Mexico	\$5.2	\$3.7	\$4.7	Comm/Retail Multi-Family Residential Industrial	25% 25% 15% 10%
16. Wilson & Company, Inc. 10813 S. River Frt Pkwy #125 20 South Jordan, UT 84095 (801) 364-3164 www.wilsonco.com	1932 20	Michael King SR. VP 16	SR-154, Bangerter Highway & 600 W. I-15; Technology Corridor	\$4.9	\$5.2	\$7.9	Highway Comm/Retail Water	85% 3% 2%
17. Dunn Associates, Inc. 380 W. 800 S. #100 SLC, UT 84101 (801) 575-8877 www.dunn-se.com	1995 24 3	Ron Dunn SE 23	Hale Centre Theatre Fairborn Station & West Valley City Police Headquarters	\$4.6	\$4.1	\$3.7	Office Civic/Inst. Industrial Higher Ed	20% 20% 15% 15%

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Top Overall Engineering Firms

Firm Name Address (HQ) Phone Website	Year Est. # of Employees # LEED AP	Annual Revenues (millions) Top Executive Title Years at Firm	Largest Project Completed in 2017			Top Markets	%	
			Largest to Break Ground in 2018	2017 (Utah offices)	2016			2015
18. IGES, Inc. 2702 S. 1030 W. #10 SLC, UT 84119 (801) 270-9499 www.igesinc.com	1998 40	John Wallace President 20	M P \$ Virgin River Bridge Replacement CVWWTP Expansion	\$4.5	\$3.8	\$3.2	Highway Industrial Wastewater Civic/Inst.	20% 20% 20% 10%
19. Psomas 4179 Riverboat Rd. #200 SLC, UT 84123 (801) 270-5777 www.psomas.com	1946 35 5	Ryan McLean President 34	Jordan Valley TOD Project Project Steeplechase (Facebook Data Center - Eagle Mt.)	\$4.4	\$4.7	\$4.7	Civic/Inst. Higher Ed Comm/Retail Water	30% 20% 15% 10%
20. Royal Engineering 1837 S East Bay Blvd. Provo, UT 84606 (801) 375-2228 www.mcneilengineering.com	199 29	Nathan Sweat President	University Downs Fairborn II Apartments 2	\$3.6	\$3.6	\$2.8	Multi-Family Comm/Retail Office Healthcare	30% 25% 11% 8%

Overall-Did Not Disclose Revenues (Ranked by Number of Employees)

Ensign Engineering 45 W. 1000 S. # 500 Sandy, UT 84070 (801) 255-0529 www.ensignutah.com	1987 101 2	Robert Elder DND President 11	DND	DND			Office Water K-12 Wastewater	40% 25% 15% 10%
BHB Consulting Engineers 2766 S. Main SLC, UT 84115 (801) 355-5656 www.bhbengineers.com	2002 52	Chris Hofheins President 16	U of U Farmington Health Center U of U South Campus Housing	DND	DND	DND	Office Civic/Inst. Multi-Family Resort/Hosp.	20% 11% 11% 11%
J.M. Williams & Assoc. 909 W South Jordan Parkway South Jordan, UT 84095 (801) 575-6455 www.jmwa.com	1992 35 1	James Williams 26	Prestige Office Building Kamatsu Elko	DND	DND	DND	Industrial Office Multi-Family Resort/Hosp.	25% 25% 20% 20%
Envision Engineering 240 E. Morris Ave #200 SLC, UT 84115 (801) 556-1523 www.envisioneng.com	1994 31 8	Jeff Owen Principal in Charge 24	U of U Crocker Science Center Utah State Prison Relocation, SLCIA North Concourse	DND	DND	DND	K-12 Higher Ed Civic/Inst. Military	28% 18% 11% 9%
Heath Engineering, Inc. 377 W. 800 N. SLC, UT 84103 (801) 322-0487 www.heatheng.com	1948 27	Jeffrey Anderson P.E. / CEO 38	Post Cereal Distribution Center Washington DC Temple Renovation	DND	DND	DND	Private Office Higher Ed Industrial	25% 15% 12% 8%
Calder Richards Cons. Eng. 634 S. 400 W. # 100 SLC, UT 84101 (801) 466-1699 www.crceng.com	2005 22 1	Jonathan Richards Managing Partner 13	New Provo High School Canyons Centre Parking Structure	DND	DND	DND	K-12 Healthcare Comm/Retail Civic/Inst.	20% 10% 10% 10%

Top Civil Engineering Firms

Firm Name Address (HQ) Phone Website	Year Est. # of Employees # LEED AP	Annual Revenues (millions) Top Executive Title Years at Firm	Largest Project Completed in 2017			Top Markets	%	
			Largest to Break Ground in 2018	2017 (Utah offices)	2016			2015
1. Horrocks Engineers 2162 W. Grove Parkway #400 Pleasant Grove, UT 84062 (801) 763-5100 www.horrocks.com	1968 313 49	Jim Horrocks President	Bangerter Highway & 600 W Interchange I-15 Southbound; 12300 S to SR-201 Program Management	\$39	\$32	\$25	Highway Civic/Inst. Comm/Retail Water	63% 15% 5% 3%
2. HDR 2825 E. Cottonwood Pkwy #200 SLC, UT 84121 (801) 743-7800 www.hdrinc.com	1917 75 1	Brent Jensen Sr. VP 11		\$35.4	\$35.7	\$22.0	Highway Healthcare Water Industrial	67% 21% 6% 4%
3. AECOM 756 E. Winchester Street SLC, UT 84107 (801) 904-4000 www.aecom.com	1990 308 1	Travis Boone 19	Provo/Orem BRT Final Design North Fork Siphon Replacement	\$27.5	\$19.6	\$15.2	Haz. Waste Highway Industrial Water	50% 27% 11% 6%
4. Michael Baker Int. 7090 Union Park Ave. #500 Midvale, UT 84047 (801) 255-4400 www.mbakerial.com	1977 in Utah 65 4	Michael Arens Vice President 13	Four Interchanges on Bangerter Hwy. I-15 Southbound; 12300 S to SR-201	\$15.9	\$12.8	\$7.5	Highway Civic/Inst. Water Comm/Retail	70% 25% 3% 2%
5. Jones & DeMille 1535 S. 100 W. Richfield, UT 84701 (435) 896-8266 www.jonesanddemille.com	1982 110	Brian Barton President 17	Duchesne Co. SSD#2 Victory Pipeline Rich County Cisco Road	\$13.8	\$12.1	\$12.4	Highway Water Civic/Inst. Industrial	40% 30% 7% 5%
6. Sunrise Engineering 25 E. 500 N. Fillmore, UT 84631 (435) 896-7613 www.sunrise-eng.com	1978 325 31	Mark Huntsman President/CEO 31	Fillmore Main Street\	\$12.5	\$10.1	\$10.8	Water Wastewater Natural Gas Highway	30% 30% 25% 15%
7. H.W. Lochner 3995 S 700 E #450 SLC, UT 84107 (801) 713-5222 www.hwlochner.com	1944 57	Jeanne Cormier President/CEO 30	Bangerter Highway 4 Interchanges	\$12.2	\$9.1	\$7.3	Highway	100%
8. WSP USA Inc. 488 E. Winchester St. # 400 Murray, UT 84107 (801) 262-3735 www.wsp.com	1985 63 1	Dana Meier SR. Area Manager 2.8	Hill Field Road Design-Build I-15; Lehi Technology Corridor Design-Build	\$11.3	\$6.5	\$8.7	Highway Rail	66% 34%
9. Stanley Consultants 383 West Vine Street # 400 Murray, UT 84123 (801) 293-8880 www.stanleyconsultants.com	1913 54 17	Mark Freeman Vice President	I-215 & SR-68, DDI Interchange Retrofit I-15 South Bound Add a Lane, 12300 S to SR-201, Independent Quality Firm	\$10.6	\$8.4	\$8.4	Highway Water Higher Ed	88% 10% 1%
10. Terracon Consultants 6949 S. High Tech Dr. Midvale, UT 84047 (801) 545-8500 www.terracon.com	1980 80	Kent Wheeler Regional Manager 29	"Bangerter Quad" 4 Interchanges SLC International Airport - North Terminal	\$10.6	\$9.4	\$8.7	Airports Highway Industrial	28% 12% 11%

Top Civil Engineering Firms

Firm Name Address (HQ) Phone Website	Year Est. # of Employees # LEED AP	Annual Revenues (millions) Top Executive Title Years at Firm	Largest Project Completed in 2017 Largest to Break Ground in 2018	Annual Revenues (millions)			Top Markets	%
				2017 (Utah offices)	2016	2015		
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12. Wilson & Company, Inc. 10813 S. River Frt Pkwy #125 South Jordan, UT 84095 (801) 364-3164 www.wilsonco.com	1932 20 16	Michael King SR. VP	SR-154, Bangerter Highway & 600 W. I-15; Technology Corridor	\$4.9	\$5.2	\$7.9	Highway Comm/Retail Water	85% 3% 2%
13. IGES, Inc. 2702 S. 1030 W. #10 SLC, UT 84119 (801) 270-9499 www.igesinc.com	1998 40	John Wallace President	M P \$ Virgin River Bridge Rpl. CVWWTP Expansion	\$4.5	\$3.8	\$3.2	Highway Industrial Wastewater Civic/Inst.	20% 20% 20% 10%
14. Psomas 4179 Riverboat Rd. #200 SLC, UT 84123 (801) 270-5777 www.psomas.com	1946 35 5	Ryan McLean President	Jordan Valley TOD Project Project Steeplechase (Facebook Data Center - Eagle Mt.)	\$4.4	\$4.7	\$4.7	Civic/Inst. Higher Ed Comm/Retail Water	30% 20% 15% 10%

Civil-Did Not Disclose Revenues (Ranked by Number of Employees)

Ensign Engineering 45 W. 1000 S. # 500 Sandy, UT 84070 (801) 255-0529 www.ensignutah.com	1987 101 2	Robert Elder President		DND	DND	DND	Office Water K-12 Wastewater	40% 25% 15% 10%
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Top MEP (Mechanical + Electrical) Engineering Firms

1. Van Boerum & Frank Assoc. 330 S. 300 E. SLC, UT 84111 (801) 530-3148 www.vbfa.com	1972 14 14	Steven T. Shepherd P.E.	Huntsman Cancer Primary Children's U of U Ambulatory Care (Transformation Project)	\$17.1	\$15.1	\$14.7	Healthcare Higher Ed Comm/Retail Office	25% 15% 13% 10%
2. Spectrum Engineers 324 S. State St. # 400 SLC, UT 84111 (801) 328-5151 www.spectrum-engineers.com	1982 100 15	Stewart Greene CEO	U of U Campus wide Electrical Upgrade Cirrus Data Services View78 Data Center	\$14.8	\$14.3	\$13.5	Healthcare Office Civic/Inst. Higher Ed	22% 19% 14% 11%
3. BNA Consulting 635 S State St. SLC, UT 84111 (801) 532-2196 www.bnaconsulting.com	1974 45	Brian Hicks President	Vivint Smart Home Arena SLCIA North Terminal	\$6.1	\$5.1	\$3.1	K-12 Civic/Inst. Religious Comm/Retail	26% 22% 15% 13%
4. Royal Engineering 1837 S East Bay Blvd. Provo, UT 84606 (801) 375-2228 www.mcneilengineering.com	1991 29	Nathan Sweat President	University Downs Fairborn II Apartments	\$3.6	\$3.6	\$2.8	Multi-Family Comm/Retail Office Healthcare	30% 25% 11% 8%

MEP-Did Not Disclose Revenues (Ranked by Number of Employees)

Firm Name Address (HQ) Phone Website	Year Est. # of Employees # LEED AP	Annual Revenues (millions) Top Executive Title Years at Firm	Largest Project Completed in 2017 Largest to Break Ground in 2018	Annual Revenues (millions)			Top Markets	%
				2017 (Utah offices)	2016	2015		
Envision Engineering 240 E. Morris Ave #200 SLC, UT 84115 (801) 556-1523 www.envisioneng.com	1994 31 8	Jeff Owen Principal in Charge	U of U Crocker Science Center Utah State Prison Relocation, SLCIA North Concourse	DND	DND	DND	K-12 Higher Ed Military	28% 18% 9%
Heath Engineering, Inc. 377 W. 800 N. SLC, UT 84103 (801) 322-0487 www.heatheng.com	1948 27	Jeffrey Anderson P.E. / CEO	Post Cereal Distribution Center Washington DC Temple Renovation	DND	DND	DND	Private Office Higher Ed Industrial	25% 15% 12% 8%

Top Structural Engineering Firms

1. Reaveley Engineers + Assoc. 675 E. 500 S. # 400 SLC, UT 84102 (801) 486-3883 www.reaveley.com	1972 46 8	Dorian Adams President	Huntsman Cancer Inst. Primary Children Spanish Fork Hospital	\$6.4	\$8.3	\$6.7	DND	
2. Dunn Associates, Inc. 380 W. 800 S. #100 SLC, UT 84101 (801) 575-8877 www.dunn-se.com	1995 24 3	Ron Dunn SE	Hale Centre Theatre Fairborn Station & West Valley City Police Headquarters	\$4.6	\$4.1	\$3.7	Office Civic/Inst. Industrial Higher Ed	20% 20% 15% 15%

Top Structural-Did Not Disclose Revenues (Ranked by Number of Employees)

BHB Consulting Engineers 2766 S. Main SLC, UT 84115 (801) 355-5656 www.bhbengineers.com	2002 52	Chris Hofheins President	U of U Farmington Health Center U of U South Campus Housing	DND	DND	DND	Office Civic/Inst. Multi-Family Resort/Hosp.	20% 11% 11% 11%
J.M. Williams & Assoc. 909 W South Jordan Parkway 35 South Jordan, UT 84095 (801) 575-6455 www.jmwa.com	1992 1	James Williams	Prestige Office Building Kamatsu Elko	DND	DND	DND	Industrial Office Multi-Family Resort/Hosp.	25% 25% 20% 20%
Calder Richards Cons. Eng. 634 S. 400 W. # 100 SLC, UT 84101 (801) 466-1699 www.crceng.com	2005 22 1	Jonathan Richards Managing Partner	New Provo High School Canyons Centre Parking Structure	DND	DND	DND	K-12 Healthcare Comm/Retail Civic/Inst.	20% 10% 10% 10%



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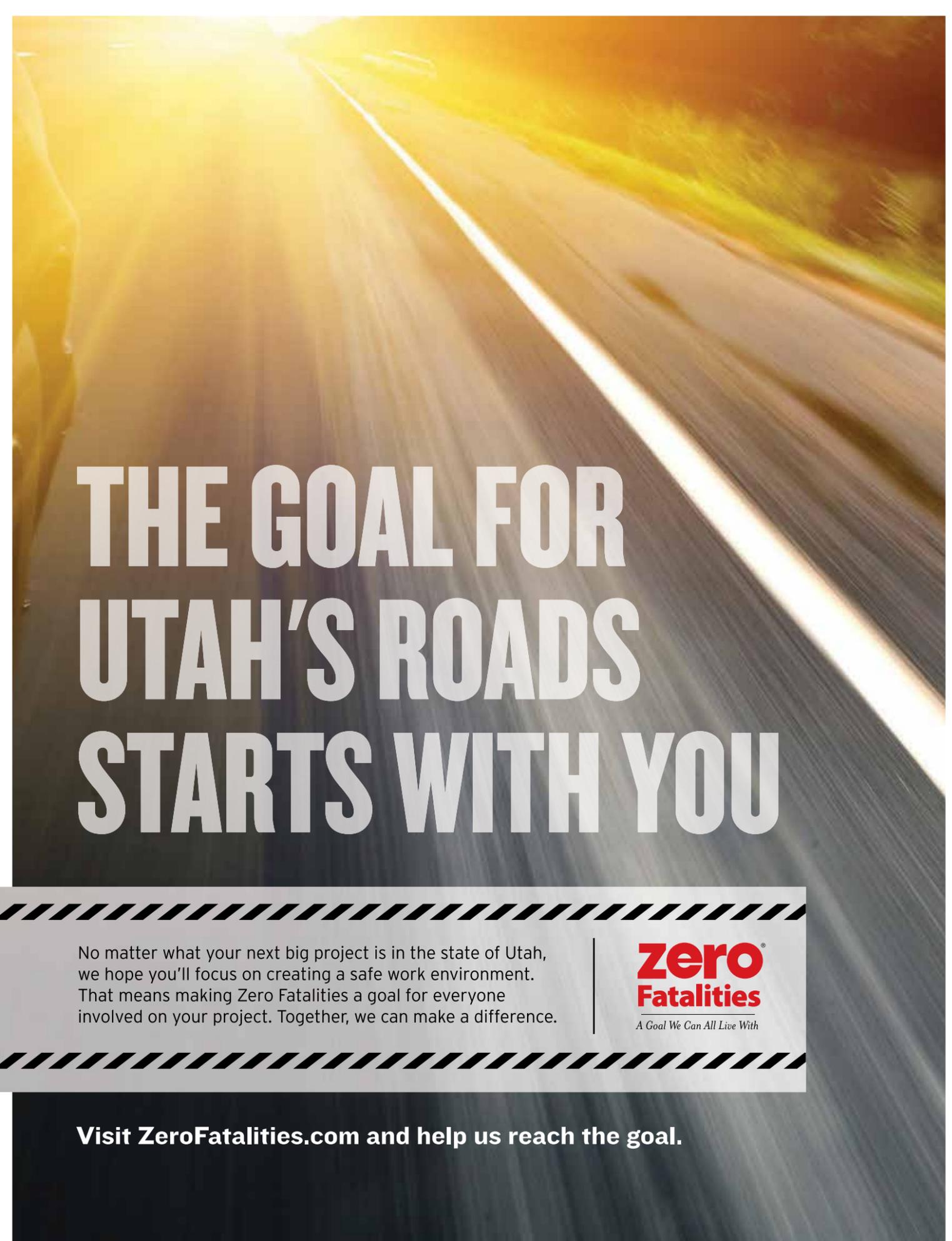
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