



# McNEIL ENGINEERING

Economic and Sustainable Designs, Professionals You Know and Trust

## EPICENTER *Spring 2015*

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### ASCE Utah Infrastructure

### Report Card

A report card prepared by the Utah Section of the American Society of Civil Engineers (ASCE-Utah) graded Utah in 10 categories. It was presented on February 24th at the Utah Capitol during a news conference.

Dr. David Eckhoff, a member of McNeil Engineering's team, was the volunteer Project Director for this two-year undertaking. The civil engineers involved in the analysis consulted with state agencies and other groups to arrive at the daunting conclusion that it would take \$60 billion to take care of all the infrastructure needs in the state over the next 20 years.



Dr. David Eckhoff  
deckhoff@xmission.com

Dr. Eckhoff said that works out to be about \$40,000 per family. "Utah's infrastructure and what we do with it is so important to our future," he stressed. "We really need to plan comprehensively!"

ASCE-Utah came out with a number of recommendations, noting that it is no longer adequate to treat infrastructure needs as individual components of a system, but rather they should be viewed as an integrated whole.

The concept of comprehensive and integrated planning was highlighted by Andrew Gruber, Executive Director of the Wasatch Front Regional Council, who described the Council's Regional Transportation Plan: 2015 – 2040. It addresses highways, rail systems and busses in a holistic fashion.

Utah's rapid shift toward urbanization means leaders and planners will have to be more innovative and willing to address aging systems with candor that includes risk modeling and corporate-style accountability.

Bob Lamoreaux, local president of the American Society of Civil Engineers, said "Infrastructure will continue to decline. We're proposing that we stay ahead."

Both Dr. Eckhoff and Matthew Roblez, Head of McNeil's Structural Department, have served as President of the Utah Section of ASCE; Roblez serviced twice in that capacity.



Matthew Roblez  
S.E., SECB  
Structural Manager  
801-255-7700 x. 128  
matt@mcneileng.com



Ted Didas, P.E.  
President  
801-255-7700 x. 114  
ted@mcneileng.com



## Some Thoughts on Science, Technology, Human Interaction and the Economy

While some of the successes of Utah's technology economy predate the passage of the Utah Science Technology and Research (USTAR) Initiative, this important legislation has certainly played a role in furthering the state's commitment to innovation.

Although many factors boost Utah's growing technology sector, having an environment that encourages research and innovation has certainly helped. Utah's technology sector will continue to grow and benefit residents and businesses in the state. As Utah's technology expertise increases, many industries within the state will flourish as well, creating a net positive impact for the economy.

*Randy Shumway, Zions Bank  
Economic Advisor*

The bending of the moral arc of progress is primarily due to the values of science and reason developed during the Enlightenment. Science is the best tool for understanding the world and for the betterment of humanity.

*Michael Shermer, Scientific  
American Columnist*

Technology is not a substitute for human contact and interaction in public policy development. Computers, email, Twitter, Facebook, television, etc...are all useful, but never quite match the sensory and emotional reality of human contact. Decisions change lives, create opportunity and close doors not for machines, but for people. Ultimately, it is people...that make those decisions.

*David Freudenthal, Former  
Governor of Wyoming*

## Hill Air Force Base announces when F-35 will land in Utah McNeil's HDS & Survey Department Facilitates Transition

The Air Force says a squadron of its new combat jet, the F-35, will arrive in Utah at Hill Air Force Base in September 2015. Hill and its units will transition from flying and maintaining F-16s to the F-35s, according to information recently provided.

475 new jobs include airmen and civilians, from the pilots who fly the F-35 to construction workers building new hangars. Another massive task is the renovation of existing hangars.

McNeil Engineering's HDS and Surveying Group was selected to scan the existing F-16 hangars to create precise details in order to facilitate the renovation project. High Definition Scanning minimized the shutdown time of the hangars. McNeil's field work was accomplished in only one day, because of the rapid rates of precise data acquisition that are a defining feature of HDS.



The Air Force has said the 388th Fighter Wing will receive 72 F-35s. The 419th Fighter Wing, a reserve unit, will also fly the jets. The F-35 is the new fighter and bomber for the U.S. military and many foreign allies.



In a recent news release, Col. Lance Landrum, 388th Fighter Wing commander, said challenges with the F-35 are not changing preparations at Hill Air Force Base. "We're still flying as many sorties as we can, maintaining our fleet of F-16s and staying combat ready — all while making huge adjustments in preparation for the F-35", Landrum said. Transitioning from the F-16 to the F-35 is expected to continue into 2019.



**Michael Hoffman**  
P.L.S., E.I.T  
HDS & Survey Manager  
801-255-7700 x.138  
mike@mcneileng.com

### Mike says this about HDS and our Military Strength

"In order to maintain our military's readiness, the ability to respond rapidly is essential. The same is true of HDS, it allows us to respond and produce in record time. We believe that sets us apart from routine surveying."

## San Diego Looks to Indirect Potable Reuse of Reclaimed Wastewater

Within 10 YEARS the City of San Diego intends to have in place the first of three planned advanced water purification facilities that ultimately will produce up to 83 mgd for indirect potable reuse. Known as Pure Water San Diego, the ambitious program is designed to obviate the need to carry out costly upgrades of the city's main wastewater treatment plant while improving the long-term outlook for water supplies in the drought-prone municipality. In November, San Diego's city council committed itself to moving forward with the initial advanced water purification facility, marking a key step in the development of Pure Water San Diego.

San Diego imports 85 percent of its water from the Colorado River and northern California. Despite successful conservation efforts, the city needs new water sources to keep pace with population growth. Anticipated cost



Advanced Water Purification Pilot Plant

increases and risks associated with drought and other potential challenges have prompted the city to look for water sources that are more reliable. Chief among these is recycled wastewater, which could constitute as much as a third of the city's water supply within the next two decades.

To demonstrate the efficacy of Pure Water San Diego, the city earlier developed a 1 mgd advanced water purification facility equipped with membrane filtration, reverse osmosis, and advanced oxidation in the form of ultraviolet light and hydrogen peroxide.

In its current form Pure Water San Diego calls for indirect potable reuse of water produced by the advanced purification facilities. Therefore, treated effluent from the facilities will be subject to an environmental butler before it is returned to one of the city's drinking water treatment facilities. In particular, treated effluent will be sent by pipeline to the San Vicente Reservoir.



San Diego is not planning direct potable reuse because California does not have regulations pertaining to the practice. However, the California Department of Public Health is required by the end of 2016 to report on the feasibility of issuing such regulations.

San Diego intends to begin preliminary design work on the first 15 mgd advanced purification facility in the first quarter of this year.

## A Roof over your Head

Roofing technology has seen some major advances of late. Many have focused on the age-old problem of leaks, especially from punctured membranes. One of the more innovative advances – RhinoBond – uses electromagnetic induction welding, as opposed to membrane-puncturing fasteners. Other systems can pinpoint leak locations, which can greatly minimize repair costs.

McNeil's Consulting Dept. features technically-advanced roofing inspection, repair and design for a wide variety of building types. Success has resulted in an increased demand for these services. One response has been an increase in technical staff; Ryan Filby is the most recent addition.



Ryan hails from West Valley City, attended Hunter HS and received an Architectural Technology Degree from Salt Lake Community College. He has nearly 20-years of experience, most recently as a Project Manager for a local architectural firm. He and his family – his wife and 3 daughters – enjoy being together, whether camping or encouraging each other in their various individual activities.

A strong part of the family's togetherness is supporting one of the daughters who has congenital heart disease, but she doesn't let that stop her. Just like her dad

Rep. Bill Shuster, R-Pa., chairman of the U.S. House Transportation and Infrastructure Committee, has invited transportation officials to join him on his tour of construction projects around his home state. The idea is to bring into focus the state of disrepair of the country's infrastructure. Shuster doubts that a long-term transportation funding plan will be passed before the current one expires in May, but he believes something will be in place by then.

*ASCE SmartBrief April 8, 2015*

## Tevi's Long Journey

Tevi's journey began in Togo, West Africa. Where is it? It is squeezed in between Ghana and Benin on the Gulf of Guinea. Tetevi "Tevi" Lawson-Avla was born there and attended both elementary and high school in Togo. But he had impressive goals – to get a college education in the US, and to become a structural engineer!

His first stop in the US was Omaha, where he had friends with whom he could temporarily stay. He joined them at the University of Nebraska-Omaha, enrolling in Civil Engineering courses.

After two years he transferred to the University of Utah, again where he had friends (you can never have too many friends). He focused on courses that supported his desire to become a structural engineer. Dr. Larry Reaveley, a highly recognized structural engineer, was his mentor. Tevi graduated with his BS Degree in 2012, and immediately



joined McNeil Engineering's Structural Department.

Tevi's favorite project was an architecturally unique residence in Park City. That project required special analyses to design columns, beams and joints that would be able to withstand the specific loading requirements of Park City – snow, wind and seismic.

Although Tevi enjoys his current position at McNeil Engineering, he says that his journey is far from complete. His short term sights are set on becoming a registered professional engineer. Long term: obtaining a PhD, specializing in structural engineering. Wow!

## Employee Anniversaries this Quarter

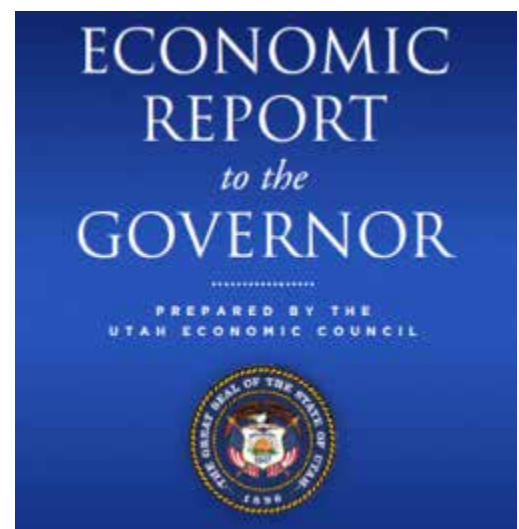
Employee	Date Started	Years of Service
Dan L Schaugaard	4/21/1999	16
David B Draper	5/22/2000	15
Walter C Travis IV	4/26/2006	9
Jacob H Felshaw	4/7/2008	7
Eunae L Kim	6/8/2009	6
Elizabeth A Draper	6/7/2010	5
Tetevi Lawson-Avla	5/7/2012	3
Becky Scholes	5/6/2013	2
Michael J Ekenstam	4/30/2014	1
Noel A Enriquez	6/4/2014	1

## Job growth, lower unemployment and positive economic performance are on the menu for Utah in 2015.

According to the 2015 Economic Report to the Governor, a collaboration between the David Eccles School of Business and the Governor's Office of Management and Budget, Utah continues to outperform national averages, with new jobs developing at a faster pace and unemployment continuing to trend far lower than the nation. Barring any major disruptions to global and national economic conditions, the state can look forward to moderate growth and improving economic conditions in 2015. Utah's labor market in 2015 is expected to taper off slightly; however, an improving national economy could increase growth forecasts.

Utah recovered from the recession faster than the nation and is expected to remain a leading economic growth state this year.

<http://bebr.business.utah.edu/article/outlook-utah-economy-positive-2015>



## Sugarhouse Revitalized



Since the late 1980s, The Sugar House Monument Plaza has been the heart of the Sugar House Business District in Salt Lake City. At McNeil Engineering, we're excited to be a part of the revitalization of this important public space, working with the lead design firm CRSA and Allstate Construction.

The \$2.5 million project on the corner of 2100 South and Highland Drive will result in an incredible community gathering place, including more than one acre of open public space, new dining areas and public art displays. You'll also see pedestrian-friendly light displays, new bike racks and even art.

If you work in or regularly visit the Sugar House Monument Plaza, then you've probably noticed all the work that has been done since the project began in August 2014. It's coming together quickly and the plaza promises additions that will attract Utah residents and tourists alike.

## 90th South Jordan River Parkway Tunnel Revisited

A year ago this Spring the Jordan River Trail's 90th South Tunnel was completed. The tunnel was celebrated because it eliminated a major "gap" in the Jordan River Trail System. It was also celebrated because McNeil Engineering donated Surveying, Structural and Civil Engineering professional services for the project. West Jordan City was the Client.

The design of the tunnel was more complex than meets the eye; several aspects of the site combined to create a major challenge. First and foremost were the vertical constraints. Incomplete data existed on the numerous pipes that lay under the roadway— active and inactive water lines; both sewers and storm sewers; and surface drainage pipes. Second was the need to have a minimum depth of cover over the tunnel, in order to support the roadway above. "Easy", you say, "just lower the tunnel". Well, in this area of the Jordan River Flood Plain, groundwater is a perpetual concern. Also, both tunnel approaches were restrictive in that they could not both be higher than the tunnel floor.

Lowering the tunnel could have resulted in a permanent pond inside the structure—not a pleasant thought. So it was a tight fit!



90th South Jordan River Parkway Tunnel  
Looking North from the Sandy side

Then there was the issue of overhead high voltage electric lines and their supporting structures. They really posed potential problems for the construction phase.

Lastly, UDOT required an approved Traffic Management Plan prior to giving the go-ahead. This required that the contractor, not yet selected, would be bound by a TMP that may or may not fit the contractors desired construction sequences.

Rob Poirier, P.E. a design engineer in McNeil's Civil Department, was the principal engineer for the project. He had support from Mike Hoffman, P.L.S., Manager of the HDS & Surveying Dept. and Matthew Roblez, S.E., Manager of the Structural Department.

Lyndon Jones Construction was the prime contractor on the project. The firm completed the tunnel in record time, doing critical traffic-improving phases on the weekends during lighter traffic periods. They also used vertical-walled trenching that minimized excavation quantities. West Jordan City was pleased with the entire sequence; they led the dedication ceremony.