McNEIL ENGINEERING™

epicenter

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Inside this issue:

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An introduction to Building Information Modeling

Building information modeling or BIM is becoming increasingly popular in today's AEC (architecture, engineering and construction) environment. The combination of improved workflows and associated software programs has made designing everything from bridges and highways to skyscrapers and government structures far more efficient and cost-effective. Building information modeling has a number of benefits. Here at McNeil Engineering, we firmly believe in BIM and its capabilities.

Building information modeling isn't new

If you aren't familiar with BIM, you might be under the impression that it's a relatively new invention. Surprisingly, that isn't the case. Engineering.com says the technology was first mentioned in a 1962 paper written by Douglas Engelbart. Titled "Augmenting Human Intellect: A Conceptual Framework" Engelbart imagined a future where engineers and architects could plug various measurements and data into a computer and ultimately have software model a structure based off of that information. Engelbart was undoubtedly ahead of his time, but by the early 90s, the forefathers of modern BIM software were being utilized on construction projects.

BIM allows for better design decisions

Before the introduction of BIM, project managers, contractors and construction leads had to rely on 2D designs based off of blueprints. While there's nothing inherently wrong with a flat image, it does not provide a comprehensive view of how a structure will ultimately look once it's built. In addition, a blueprint doesn't account for challenges that may arise later like building codes, municipal regulations or cost-saving measures.

Before BIM, mistakes often weren't caught until far along in the construction process. Not only was this frustrating for investors and building crews, it often led to lengthy delays and costly repairs, placing dozens of projects over budget.

BIM improves mechanical, electrical and plumbing design quality

Contractors and construction crews might not come equipped with x-ray vision, but BIM provides the next best thing. Because the plumbing, electrical and mechanical aspects of a building are often placed beneath the floors or within a structure's walls, it's often difficult to make final decisions until the construction process is already

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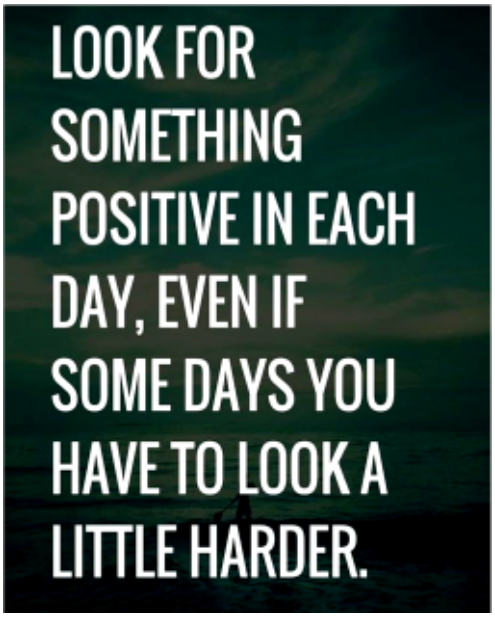
UnFreshing Believable!!!

It's lunch time any time when is comes to "UnFreshing Believable" food. At Del Taco "UnFreshing Believable" is just how they describe their food.

McNeil Engineering's **Landscape Architecture, Civil Engineering** and **Survey Departments** have played a role in the design and construction of several Utah Del Taco locations. Two new Del Taco locations currently under construction are located in West Jordan and North Salt Lake.

Watch for the opening of the two new Del Taco locations or visit another location to get some of that "UnFreshing Believable" food when your next hunger pains hit.

Del Taco location at Oquirrh Mountain Marketplace in South Jordan, Utah



Yesterday's Toys, Today's Tools…

Remember back when you were a kid and opened your first remote controlled car or airplane. Those were the days, out in the yard, remote in hand and having the time of your life. You might even remember the first Television to come with a remote and how excited you were to be able to sit on the couch and change the channel. Zenith came out with a TV that had a remote attached to it with a cord. That remote was called "Lazy Bones." A very fitting name since people watching TV haven't left the couch since then.

A lot has changed over the years, and those remote controlled cars and airplanes you played with as a kid have also changed. Remote controlled airplanes now have a sophisticated name: Unmanned Aerial Vehicles (UAVs) or Remotely Piloted Aerial Systems (RPAS). However, they are more commonly known as drones. For decades drones have been used by the military, and are called Predators. Fast forward to the last few years drones are now being developed for other professional areas, from Hollywood to law enforcement to construction. Commercial usage of drones is gaining steady momentum and has become the talk of the hour, as multiple industries are working with drones as part of their daily regular business functions. Drones are used in many areas and what's more, there is no end when it comes to their possibilities. Therefore, the areas of applications are numerous today and there is the growing use of drones all around the world.

Some Areas of Drone Applications:

Search and rescue – Drones are very useful in search and rescue operations.

Inspections – Many systems such as power lines, wind turbines, buildings and pipelines can be checked by drones.

Surveillance – A drone allows recording and monitoring from the sky, and therefore, they are suitable to monitor public events, protests, or any suspicious happening without being heard and seen.

Science & research– Drones help scientists a lot in research work to observe different occurrences in nature or a particular environment from the sky. For example, drones are used to document the archaeological excavations, in nuclear accidents (measuring contamination), in glacier surveillance, to observe a volcanic eruption, etc.

Aerial photography & video – With a drone that is equipped with an HD camera, you can take the fascinating photos and shot footage of great quality from the sky.

Surveying & GIS (mapping) – Using multi-spectral cameras and laser scanners, drones are able to create high quality 3-D maps. Therefore, they found applications in

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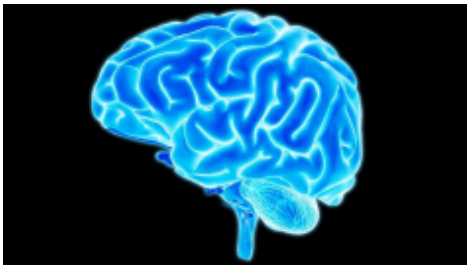
FUN FACT According to a study from the University of Iowa, playing brain-teasing games for just two hours a week may help slow the degree of mental decay.



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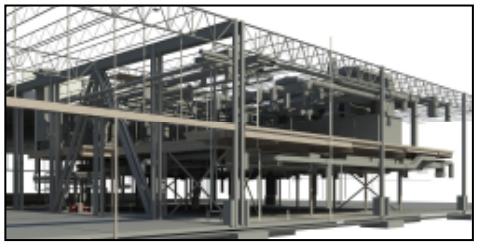
started. After all, one wrong measurement could lead to an entire re-design of a particular system.

With BIM software, a designer can input all of the necessary data and information and then determine where plumbing, wiring and other mechanical features (ie: ducts, HVAC piping) will best fit. BIM software can also provide a comprehensive, detailed overview of potential issues that may arise during the construction process.



3D BIM Model

Saving money with BIM

Thanks to both the accuracy of the software associated with the BIM process and the formula it provides for our team to follow, we regularly realize incredible savings for our clients through BIM. Change orders have been part of the design process for years, and they're often costly and time-intensive. BIM can eliminate many potential change orders altogether, resulting in cost savings to the client.

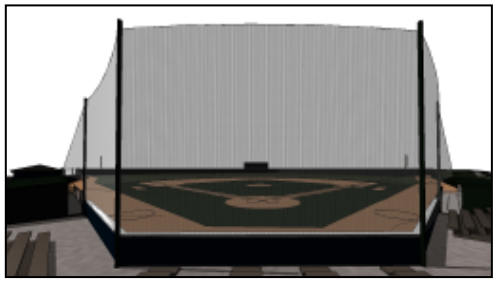
How can we help you?

At McNeil Engineering our goal is to aid contractors, owners and architects in meeting the requirements of the BIM process. We provide 3-D modeling for conflict coordination between building systems; components; structural framing; and even site work.

Click below to access our BIM video:

BIM VIDEO

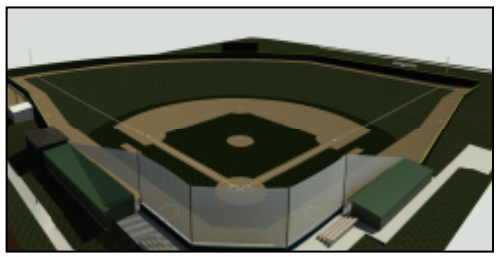
New Field For Copper Hills Baseball



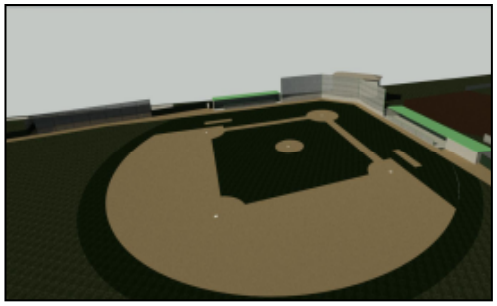
Rendering of Copper Hills New Baseball Field

"Hey batter, batter" will have a new ring to it coming in the 2019 baseball season at Copper Hills High School. Work is currently under way for a complete overhaul of the current baseball field.

Recently **McNeil Engineering's Consulting Department** was asked by our **Survey department** to help create some conceptual images of a renovated baseball diamond at Copper Hills High School. Many of the high schools which compete with Copper Hills have recently upgraded their facilities and some of the parents of Copper Hills High wanted to help give their students a competitive edge by upgrading their own facility. The survey department flew a drone over the sight to gather data and provide to the Consulting Department a point cloud to use for modeling. We were able to use the point cloud information and create a surface that mirrored the existing terrain. From there, we modeled several proposed structures and facilities that could be used to give the athletes better circumstances for practice, training and play. We modeled a new netting system behind home plate to meet current baseball standards. We showed how the infield could be finished to combine artificial turf, baseball "dirt" and natural sod. We created a "batter's eye" and rendered it so that the parents could see what that would look like from the batter's perspective. We even showed how they could utilize the site to build a multi-sport facility to give all of the high school athletes a building that could be used for year-round training.



Bird's Eye View From Behind Backstop



Bird's Eye View from Outfield

The parents were able to take our images and studies to obtain approval from the school and access to funds. The parents were then able to get in touch with contractors to get bids for the work and make arrangements for getting the work done during the off season. Next year when the baseball team takes the field, they will have a much improved environment to help them reach the success they hope to achieve. And we can proudly say we were a part of that experience.

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Man Made Earthquake

Mexico's winning goal over Germany in the 35th minute of their World Cup game Sunday, had everyone jumping for joy...literally!

Soccer fans celebrating in Mexico City

The seismic monitoring network in Mexico wrote in a Twitter post, **"The #sismo detected in Mexico City originated artificially. Possibly by massive jumps during the Goal of the selection of # Mexico in the world. At least two sensors inside the City detected it at 11:32."**

That's a lot of people jumping at the same time to create an artificial seismic event.

ANNOUNCMENT

The Cache Valley Office has moved…
New Address:
130 S. Main, Suite 210
Logan, UT 84321
Phone:
435-213-3660

We want to **welcome Greg Ostermiller** as the newest engineer in the Logan, UT office. He has been helping as an intern for the past year in the structural department and has recently graduated from Utah State University.

Employee Anniversaries this Quarter		
Employee	**Date Started**	**Years of Service**
Rodney Davis	8/1/1983	35
Brian Warner	8/4/2003	15
Robert Poirier	8/2/2004	14
Ted Didas	9/6/2005	13
Dennis Kent Withers	7/9/2012	6
Henry Fox	8/11/2014	4
Aarika Burling	07/18/16	2

Twenty Two Bridges in Fourteen Days...

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What's it like being a structural engineer? Sometimes you have to spend your days in the middle of no where and sometimes you are in a 100 year old attic. Either way you are inspecting something to assess the structural integrity. Matthew Roblez, Manager of our Structural Engineering Department spent fourteen business days inspecting twenty two bridges maintained by the Department of Natural Resources Wildlife Division. Several of these bridges were built back in the 1930's.

The purpose of these inspections was to evaluate the current conditions as well as determine the structural integrity and prioritize repairs for the bridges. These twenty two bridges are located mostly in wildlife/waterfowl management areas throughout the state. They range in location from Salt Creek Waterfowl Management Area in the north to Nash Wash Road and Hatt's Ranch in Southern Utah.

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surveying & mapping, photogrammetry, precision agriculture, etc.

How does McNeil Engineering use drones? **McNeil Engineering's Survey Department** purchased their first drone about three years ago. It was a simple quadcopter with a GoPro camera that was used to provide an additional perspective to clients of their surveyed location. That drone had to be piloted by a person with a remote control.

Recently the Survey Department purchased a more sophisticated drone that a flight plan is pre-programmed. The flight plan is programed into an iPad and downloaded to the device. Once the flight plan is loaded the drone takes off, flies the pre-programmed flight plan and once the pre-programmed flight plan is complete the drone lands at the same location it took off from.

You may be saying to yourself that's cool, but, how can the drone help me? To get you thinking about some possibilities here are some project types that the drone will really helps: Asset management, volumetric surveys, ALTA/NSPS Land Title Surveys and construction management.

Check out our **YouTube drone video**… click the box below to access the video.

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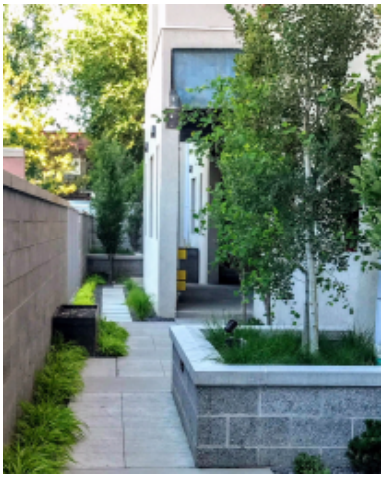
The Bodhi Apartment Project - TOD District (transit oriented development district)

In 2017, Salt Lake County Housing Authority partnered with Vecino Group to create "Bodhi", a new 5-Story, multifamily, mixed-income apartment community in the urban-core of Salt Lake City. This Transit-Oriented Development (TOD) mixes land use near transit to expand transportation options and provides people with choices about living near transit and encourages balance of existing neighborhoods. Situated just blocks from downtown and near two TRAX stops – and the Frontrunner station – Bodhi provides residents with affordable housing and easy access to the greater SLC area.

Bodhi Apartments

The name Bodhi, is derived from the Eastern philosophical term "Bodhisattva"- meaning enlightenment - and the building was designed in a style intended to inspire and create optimistic energy for the residents. In addition, the bottom level of Bodhi houses Utah Community Action, their holistic community services include education, nutrition, and crisis assistance all within close reach for the Bodhi residents.

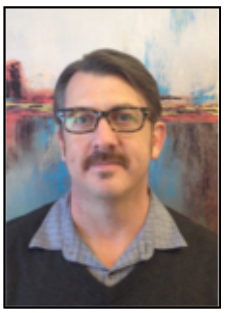
The McNeil Landscape Architecture team, guided by principal Landscape Architect Scott Schoonover, designed the landscape and site architecture of Bodhi as a place that people can appreciate, be proud of, feel relaxed and call home. The team designed everything outside the building, including all site design – meditating/seating areas, walkways, outdoor dining/ BBQ areas, block walls and fencing – planting design and irrigation design. Our team created the concept for the interior linear spaces, pocket parks and alcoves. This was challenging due to the small site and restricted space available, approximately 0.68 acres or 4,996 square feet, and 5 feet wide respectively around the building. To accomplish the desired outcome the



Bodhi Apartments Landscape

McNeil landscape team included precast concrete stepping stones, Corten steel planters, raised planting beds with block seat walls and decorative metal fencing. Our design team worked closely with the electrical engineering team to integrate outdoor lighting including up lights, path lights and security lighting. They created a contemporary modern final design that contains simple mass plantings with water-wise appealing plants for visual interest and easy maintenance.

The McNeil Landscape Architecture team shaped Bodhi into a true neighborhood with their exterior site design that produces relaxing and inviting walkways and intimate spaces for people to meet and congregate. The xeric, and artistically pleasing, water-wise plants form an inspiring environment with attractive details and alcoves that bring beauty and comfort to its residents.



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