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PLAINS TALK

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Connecting Old and New: Thunder Basin High School

Strategic Direction Report: Drafting to Modeling

Modeling a Vision: CarsforSale.com Headquarters

westplainsengineering.com

*Autodesk® Revit® rendering
of the Northwest Rural Public
Power District Rush Creek
Substation in western Nebraska.*

NEXT ISSUE

'Tis the season for retrospection. In our next issue, we'll review 2017 – interesting projects, company milestones, personal achievements – and look forward to what 2018 has in store for WPE.

MECHANICAL ELECTRICAL PLUMBING POWER

AN ENGINEERING SOLUTION CENTER

IN THIS EDITION...

The art of drafting is an essential part of not only engineering design – but of the construction industry as a whole. So as buildings themselves become increasingly filled with complex information and responsive design, so must the drawings that represent them.

In this edition, we'll look into the tools drafting professionals use to tackle this issue – namely the industry standard Autodesk® Revit® program. Far from the basic 2D visual created in AutoCAD® or other similar software, Revit delivers a Building Information Model (BIM) that shows how systems influence and react to one another in a virtual world. Check out the Strategic Direction Report on page 5 for more about how it works – then read through a few of our first-hand Project Profile experiences. Need more info? We have more than a dozen drafting team members across three states – we'd be happy to stop by.

This 23,000 square foot facility included classrooms, full scale vehicle bays and repair shops perfectly suited to tech ed instruction.

Welcome New Team Members



Darla Bromwich
Administrative Assistant
Rapid City



Steve Comer
Accounting & HR Manager
Rapid City



Jon Kennedy, P.E., LEED AP
Electrical Engineer
Sioux Falls



The Northwest Iowa Community College Applied Technology Building earned the 2017 AIA-Iowa Excellence in Energy Efficient Design Award. The facility, which WPE developed with architects FEH Design, achieved a 76 percent annual kBTU savings.



2017 AIA-Iowa Excellence in Energy Efficient Design Award Winner

Weidner Presents at Hawkeye on Safety 2017

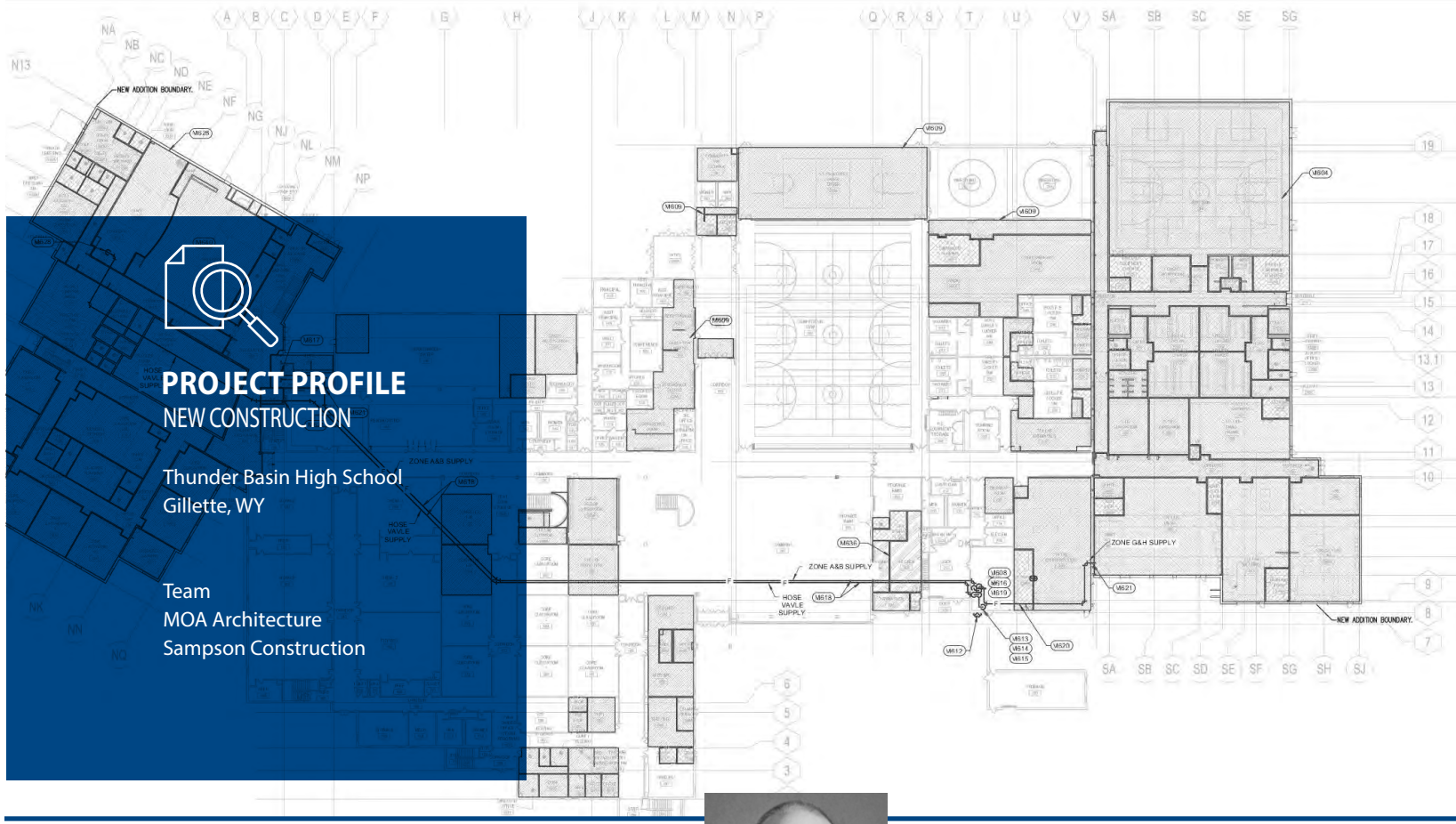
Electrical Specialties Manager Todd Weidner, P.E. was recently a session presenter during the annual Hawkeye on Safety Conference on Sept. 20 in Coralville, IA.

Weidner educated attendees on the importance of electrical assessments in the workplace – particularly arc flash analysis and mitigation techniques.

The conference is coordinated by the Heartland Center for Occupational Health & Safety in partnership with the University of Iowa Facilities Management department. Attendees receive

life-saving health and safety information applicable to all industries, but with a special emphasis on facilities management and the building trades.

Weidner is a 1988 graduate of the University of Iowa and currently serves clients throughout the region from our Sioux Falls office. A 20+ year professional electrical engineer, he also recently became a Certified Electrical Safety Compliance Professional – allowing him to not only calculate electrical risks, but also train workers on how to avoid them.



PROJECT PROFILE NEW CONSTRUCTION

Thunder Basin High School
Gillette, WY

Team
MOA Architecture
Sampson Construction



Jeff Eidsness is an Electrical Engineer and Casper Office Manager. He has been with West Plains more than 20 years and has completed dozens of projects in the state of Wyoming under the supervision of the Wyoming School Facilities Department.
jeff.eidsness@westplainsengineering.com

The Campbell County School District in northeast Wyoming serves nearly 9,000 students across 23 schools – but until recently, that only included a single public high school.

Campbell County High School was previously divided into a north and south campus, which divided students geographically, but still meant they were under one administration, one curriculum and one student body. When the time came to discuss an addition and renovation to accommodate growth, the community took a bold step forward and split the school in two. Construction on the renamed Thunder Basin High School, formerly the south campus, began in the winter of 2015 and the Bolts moved into their new home this past August.

The \$27 million project involved both a 16,000 square foot renovation, as well as a nearly 95,000 square foot addition to the original campus. The addition included a new gymnasium, performing arts theater, tech ed classrooms and a host of other multi-purpose spaces to optimize the student experience. Meanwhile, the mechanical and electrical systems were upgraded throughout the old spaces and tied into the new – creating a seamless, efficient delivery.

This process is anything but simple. Not only were the large, multi-purposes spaces a challenge, but whenever old and new buildings are connected, there is a tremendous amount of planning, coordination and engineering design involved.



Ribbon cutting for the new Thunder Basin High School on September 12, 2017.



Strategic Direction Report

DRAFTING TO MODELING



Dewey Larson has more than 25 years of experience in drafting and design in the A/E/C industry. He has worked for both architecture and engineering firms in the Sioux Falls area, and has been with West Plains Engineering since 2009.
dewayne.larson@westplainsengineering.com



Harlan Osterloo is an Electrical Design Engineer who is celebrating 25 years with West Plains Engineering in 2017. As one of the firm's most tenured team members, Harlan has witnessed and experienced the evolution of CAD throughout his career.
harlan.osterloo@westplainsengineering.com



Dustin Torguson is a draftsman and plumbing designer in our Sioux Falls office. He has been with West Plains Engineering since 2013.
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DESIGNING FOR REAL LIFE

The practice of drafting and design is anything but a modern concept. We know, based on fossilized plans dating back to 2000 B.C., that this subtle art form has played a major role in construction for thousands of years. But like most tools, drafting has evolved to an incredible degree since that time – from a labor intensive manual skill to the computerized, data-filled program it is today.

But even with computer-aided drafting (CAD) programs in use since the 1950s, the profession still operated largely in an isolated two-dimensional world until quite recently. Designs were created using basic geometric shapes to represent building systems in spatial relation to one another. The problem is that buildings are not made up of static components. Each system is filled with dynamic information and variables capable of either complementing or discouraging other elements of the structure.

What the industry needed was a tool that not only represented – but also reacted.

Autodesk® Revit® Software

One key answer to designing for a dynamic world has been a program called Autodesk® Revit® – Building Information Modeling (BIM) software – or CAD on steroids if you will. By utilizing BIM tools, the Revit software is able to leverage

dynamic information in intelligent models — allowing complex building systems to be accurately designed and documented. Each intelligent model created with Revit software represents an entire project and is stored in a single or multiple models. This means changes made in one part of the model are automatically propagated to other parts, thus enhancing the workflow for users. What's more, Revit software is able to model not only how a building and its systems look, but how they function both independently and in reaction to one another.

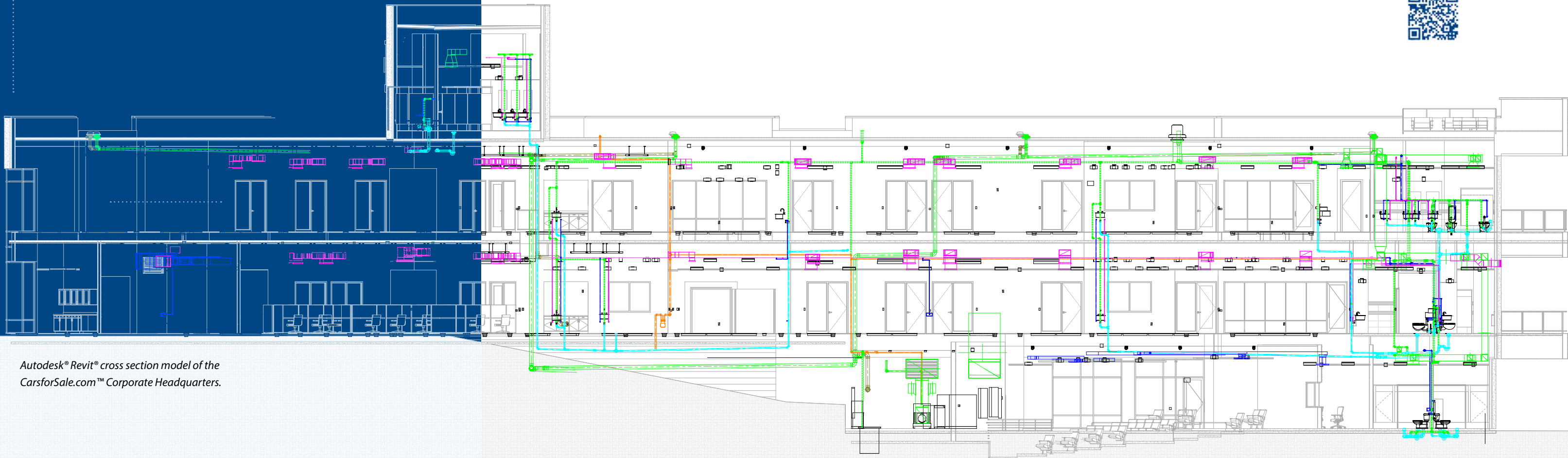
In this Strategic Direction Report, we'll delve deeper into understanding how this software was developed, its impact on the design process and what we see as the future of drafting. We'll also talk about the traditional AutoCAD® software, which is still widely used in the industry, as compared to Revit – and how the two can be used together to create the best possible end product. Finally, we'll give real life project examples where the use of the Revit platform has helped solve issues, avoid problems and deliver better service to clients and owners.

Download the Full Strategic Direction Report

Visit www.westplainsengineering.com/SDR or click on the QR code below to download the FREE full white paper reviewing the evolution of drafting to modeling.



Autodesk® Revit® cross section model of the
CarsforSale.com™ Corporate Headquarters.





PROJECT PROFILE

NEW CONSTRUCTION

CarsforSale.com Headquarters
Sioux Falls, SD

Team
Lloyd Companies
VanDeWalle Architects

Team Spotlight

HARLAN OSTERLOO



Title: Electrical Designer
Years with WPE: 25 years
Home Team: Harlan and his wife Kristie have two children, Morgan (20) and Samuel (16).

When Harlan Osterloo started at West Plains Engineering on June 8, 1992, the price of gas was just \$1.13 per gallon, George Bush (the first one) was President and rollerblades were just hitting the streets. Here at WPE, we were just a two-office operation with fewer than 20 employees and a handful of clients.

In the 25 years since, West Plains (and the world around us) has changed considerably – but Harlan has been a constant leader. An electrical designer, he’s been involved in nearly 500 projects during his career, from supporting designs on small lighting upgrades to leading multi-million dollar new construction (ahem...the CarsforSale.com building!) Harlan has been particularly involved in our firm’s adoption and use of the Autodesk Revit® program. As someone who began his career drawing designs by hand, he has continued to grow and evolve his skills in modeling technology to better serve his colleagues and clients.

Harlan has some pretty impressive tenure at home too. He and his wife Kristie have been married 25 years, and the couple has two children – Morgan and Sam.



Harlan Osterloo is an Electrical Designer who has been with West Plains in the Sioux Falls office for 25 years and was a key leader on the CarsforSale.com project. For more information on Harlan, check out the Team Profile on Page 7. harlan.osterloo@westplainsengineering.com

ALL-IN-ONE DESIGN

Over the past 30 years, our team has designed mechanical and electrical systems for all types of spaces – offices, theaters, sports complexes, recreation centers, banks, etc. But seldom before have we designed all of those things in one building.

In 2017, our team provided complete MEP support for the new 104,00 square foot, four-story headquarters for CarsForSale.com in Sioux Falls, S.D. This remarkably unique complex includes not only office space, but also a full size theater, indoor putting green with oscillating floor, a full-scale bank vault door and even a custom-made slide.

Naturally, creative spaces require creative systems. Mechanically, we utilized an UFAD (underfloor air distribution) system that was designed to be variable volume. Due to the large amounts of outside air required for the auditorium occupants, the air to air energy recovery utilized normally

wasted space relief air to precondition incoming outside air in order to reduce heating and cooling utility costs.

Electrically, distribution of 480/277 volt and 208/120 volt panels were located on each floor to provide power to all of the systems needed for each floor.

Modeling A Vision

The owner for this building clearly had a very creative, specific vision for his company home. He was involved from day one, so a key benefit to using the Autodesk® Revit® platform was the ability to show him a realistic model of his vision brought to life. He could see his building – inside and out – before shovels ever hit dirt. Additionally, with the team-wide use of the program, the engineers, drafters, architects and contractors were able to collaborate more effectively to deliver this bold new addition to the Sioux Falls landscape.



Full-scale corporate theater

Staff area (with T-Rex replica)

Working bank vault door



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2017 WPE DESIGN CONFERENCE

Harlan Osterloo (right) receives his recognition for 25 years of service from Marty Christensen (left) and Mark Grebner (middle).



Our annual company outing took place Sept. 27-29 in Pierre, SD. Check out more photos and video by visiting our website.



The Sunset Riverboat



Nick Carr and John Huntley board The Sunset.



Thank you to the wonderful people at The Clubhouse & RedRossa Italian Grille for hosting us!



The "Design Competition" pits great minds against one another in an epic engineering battle.