

KEYNOTE ADDRESS

U.S. SENATOR MIKE ROUNDS



On January 6th, 2015, Senator Marion Michael “Mike” Rounds was sworn into the United States Senate. Senator Rounds serves on four committees: Senate Armed Services; Banking, Housing and Urban Affairs; Veterans’ Affairs; and Environment and Public Works.

Rounds previously served as the 31st governor of South Dakota from 2003 – 2011, easily winning reelection in 2006. From 1991 to 2000, he was elected five times to the South Dakota State Senate. In 1995, his colleagues selected him to serve as Senate Majority Leader, a position that he held for six years. During his time in state government, Rounds was committed to growing the economy, keeping taxes low and strengthening South Dakota families.

A lifelong South Dakotan, Senator Rounds was born in Huron, the eldest of 11 siblings. He earned a bachelor’s degree in political science from South Dakota State University. In the private sector, Rounds built a successful insurance and real estate business with offices throughout the state. He and his wife, Jean, currently reside in Fort Pierre. They are the proud parents of four grown children and 10 grandchildren.

PRESENTATION AND SPEAKER INFORMATION

Ethics in Engineering—Parts 1 and 2

Focusing on engineering ethics and doing the right thing, Tom’s sessions will discuss how engineers approach ethical situations, how different people approach ethical questions differently and why they make the decisions they do based on varying stages of moral development and ethical behavior.

Tom C. Roberts, PE, FNSPE, FASEE

Assistant Dean Emeritus

College of Engineering, Kansas State University

Past-President, National Society of Professional Engineers

Tom Roberts is Past-President of NSPE which represents more than 31,000 professional engineers and those on the path to licensure. NSPE stands today as the only national organization committed to addressing the professional concerns of licensed PEs across all disciplines.



Tom has more than 40 years of experience in planning, organizational development and leadership training programs. He worked for Black & Veatch for 16 years (including 11 years in human resources) and was responsible for engineering recruitment and leadership development at Kansas State University for 21 years. He formed Upward Consulting in 1989 and has presented seminars on ethics, systems thinking and professional development to a wide variety of national audiences.

Tom’s responsibilities at both Black & Veatch and K-State included promotion of engineering licensure to practicing professionals, teachers, students and parents while mentoring high school students to make effective career choices. He has taught ethics to practicing professionals and engineering students for 30+ years.

As a 40-year member of NSPE, Mr. Roberts has held, and continues to hold, numerous volunteer leadership positions to include membership on the Board of Directors, Executive Committee, and Legislative & Government Affairs Committee. He is a past chair of NSPE’s Professional Engineers in Higher Education and in 2010 was named a NSPE Fellow.

Tom holds BS and MS degrees in Nuclear Engineering from K-State and has been a licensed professional engineer since 1976. Tom is married to Karen, who recently retired after 40 years of teaching and education administration. They have two sons, Greg and Chad.

Keystone Wye Rehabilitation

Steve's presentation will provide an overview of the results of the recent NBI inspection and rehabilitation recommendations for the Keystone Wye Interchange near Keystone, SD.



Steve Johnson, PE
SD Department of Transportation

Serving as the SDDOT Chief Bridge Engineer for the last three years, Steve has taken on the role of managing the SDDOT Office of Bridge Design, leading a team of 35 professionals, to provide a safe and efficient transportation system.

The team maintains approximately 1800 bridges on the State system and provides assistance to local government agencies to ensure public safety. Steve's role as Chief Bridge Engineer tops off over 35 years of bridge management, maintenance and design experience with the SDDOT Office of Bridge Design. Steve's Bachelor of Science degree is from the South Dakota School of Mines and Technology.

Sioux Falls Outfall Interceptor Sewer Replacement

This session will showcase the design and construction considerations involved in the replacement of the Sioux Falls 66 inch outfall sewer. Dan's presentation will discuss tunneling issues, unforeseen site conditions, levee crossings and route selection.

Daniel Graber, PE
HDR Engineering

Dan has worked for HDR Engineering for 36 years. He is based in HDR's Sioux Falls office and is currently a Project Manager for Water/Wastewater projects. Dan is a graduate of South Dakota State University with a BS and MS in Civil Engineering.



The Role of Engineers as Patent Examiners

Mark and David will review what a patent examiner does for their job on a day to day basis, as well as the role of an engineer in the patent process and the diversity of skill sets among patent examiners. Their presentation will also provide a brief overview of the United States Patent and Trademark Office and a 'day in the life' of a patent examiner.

Mark Radtke
Rocky Mountain U.S. Patent and Trademark Office



Mark joined the USPTO in 2005 after graduating from Boston University with a B.S. in Computer Systems Engineering and an M.S. in Electrical Engineering. He examined patent applications related to databases, file management and data structures until 2012, when he was promoted to Quality Assurance Specialist for Technology Center 2400 (networking, multiplexing, cable TV and computer security). In 2011, he led a team that built a new intranet web server system for the office. He spent the winter of 2015 detailed as a Resource Supervisory Patent Examiner to the Midwest Regional Office in Detroit, and then moved to Denver where he trained two classes of new examiners before accepting a permanent position. He briefly supervised Art Unit 2145 (graphical user interfaces) and was promoted to Assistant Regional Director in early 2017, where he works with the Regional Director to carry out the strategic direction of the Under Secretary of Commerce for Intellectual Property and Director of the USPTO.

David Le
Rocky Mountain U.S. Patent and Trademark Office

David brings an Electrical Engineering degree from the University of Oklahoma and a Juris Doctor from Oklahoma City University to his role as Acting Regional Outreach Officer, Primary Patent Examiner with the U.S. Patent and Trademark Office. David has 10 years of experience with the USPTO where his primary responsibilities include coordinating and planning events that promote the education of intellectual property.

Sioux Falls Parallel Force Main Project

Mike's presentation will share an in-depth description of the City of Sioux Falls' Parallel Force Main Project.



Mike Johnson, PE
HDR Engineering

Mike has served 13 years as a Water/Wastewater Engineer with HDR Engineering and is located in their Sioux Falls office. His BS in Civil and Environmental Engineering and MS in Environmental Engineering, both from

South Dakota State University, and his years with HDR provide him with the knowledge he uses daily in designing water and wastewater facilities. Mike is a member of the South Dakota Water and Wastewater Association, the Water Environment Association and the American Waterworks Association.

The Big Sioux River Flood Information System

The Big Sioux River Flood Information System (BSRFIS) is the result of a combined effort between state and local governments, and private industry, to create a product that can be used to predict the impact of flood events in the Big Sioux River Basin. New hydrologic and hydraulic models that more accurately reflect the hydrology of the Big Sioux River Basin are the foundation of the BSRFIS. Using model information and LiDAR, thousands of inundation maps have been created and stored in a map library for retrieval on demand by users of the BSRFIS.

Tim Cowman

SD Department of Environment & Natural Resources—Geological Survey Program



Tim is the Director of the State Geological Survey and as State Geologist is responsible for coordination of geology and hydrology studies statewide. He is a member of the State Flood Task Force that is working to improve understanding of the hydrology and hydraulics of the Big Sioux River Basin and project manager for the new flood information system that has been developed for the Big Sioux River Basin. Tim has been with the DENR Geological Survey Program for 34 years and holds a Master's Degree in Natural Sciences and Geochemistry from the University of South Dakota. Tim is a member of the American Institute of Professional Geologists and the National Ground Water Association.

Pierre Water Treatment Plant

The Pierre water treatment plant will treat Missouri River water using ultrafiltration. Dr. DeBoer will discuss source water characteristics, water treatment plant characteristics, ultrafiltration membrane options and project implementation.

Delvin DeBoer, PhD, PE
AE2S



Many of you know Dr. DeBoer as a Professor of Civil Engineering at South Dakota State University, teaching engineering students from 1981 to 2012. After leaving SDSU, Delvin joined AE2S as a project manager involved in water treatment plant operations and optimization, distribution system water quality studies and water supply system planning and design. Delvin received his BSCE and MS in Engineering from SDSU and his PhD in Environmental Engineering from Iowa State University. He is a member of the American Society of Civil Engineers, the American Water Works Association and the Water Environment Federation.

Big Sioux River TMDL Updates

The Big Sioux River reaches, within and directly above the City of Sioux Falls, are impaired for sediment and bacteria. The 2012 Total Maximum Daily Loads (TMDLs) addressing sediment and bacteria for the four impaired reaches were updated to represent the growth occurring in and near the city. Cindie's presentation will summarize methods used to update the TMDLs and results from the update.



Cindie McCutcheon
RESPEC

Cindie has spent the last nine years as a Water Resources Engineer for RESPEC, with the primary responsibilities of HSPF Modeling, Total Maximum Daily Load Assessments and Watershed Restoration and Protection projects. She holds a MS in Civil Engineering, specializing in Environmental Engineering, from the South Dakota School of Mines and Technology.

SDSU Raven Precision Agriculture Center

Leap and Shawn's session will provide insights into the design efforts for the new Raven Precision Agriculture Center, a state-of-the-art building that will feature what "collaboration" looks like when two dissimilar departments of Plant Science and Agriculture Engineering join forces. The end product is a first of its kind major of Precision Agriculture.

Leap Chear, AIA

EAPC Architects Engineers

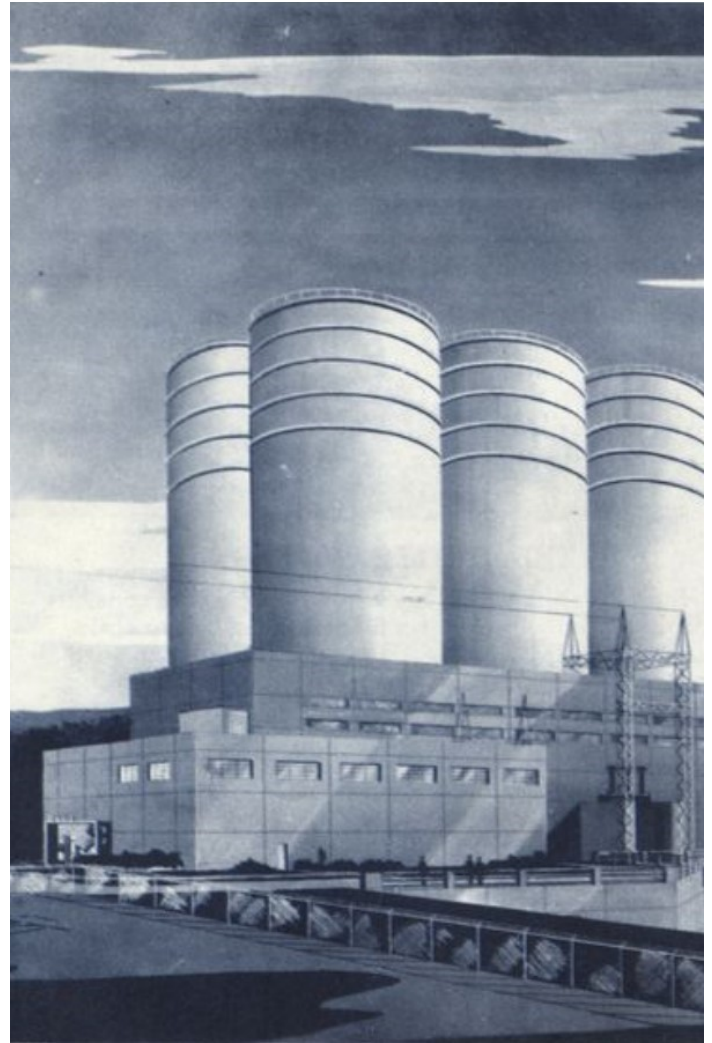
With over 20 years of experience, Leap has managed, communicated and delivered many complex projects for various clients at the University level, covering all facets of architectural practice. In 2015, EAPC opened a branch office in Sioux Falls, where Leap was promoted to build, lead and manage its day to day operations, including complete project oversight for design, team communication and adherence to project schedule. Leap is a LEED Accredited Professional and certified member of the American Institute of Architects (AIA) and National Council of Architectural Registration Board. He has been recognized by the state of North Dakota AIA and Prairie Business Magazine for outstanding leadership in advancing the architecture profession and community involvement. As a co-founder of the United States Green Building Council North Dakota Chapter, Leap displayed his passion for sustainable initiatives through Board leadership as Treasurer and chaired multiple Committees, representing the North Dakota Chapter on a regional level. Recently, Leap served on the South Dakota AIA Board as a Director. Leap earned his Bachelor of Architecture from North Dakota State University.



Shawn Crowley, AIA

EAPC Architects Engineers

As a Project Manager, Shawn is responsible for managing project design, schedule and budget. This includes working with clients to establish project needs and expectations, coordinating with consultants, performing quality control, estimating and handling various other needs. In addition, he is closely involved with the marketing efforts in the Sioux Falls office. Shawn was awarded the Young Architect of the Year by the North Dakota AIA in 2013 for his drive to grow in the profession and support his community. He brings over 13 years of experience and has been involved with all aspects of design with various project types. He has a passion for Higher Education design and strives to improve the overall experience of every student, staff and visitor on each campus. Shawn holds a Master of Architecture from North Dakota State University and is a member of the American Institute of Architects and the National Council of Architectural Registration Board.



US Army Corps of Engineers

Oahe Dam Tour

The Oahe Dam, one of the largest earth-rolled dams in the world, was authorized by the Flood Control Act of 1944. Started in 1948, it was producing hydroelectric power by 1962, when it was dedicated by President John F. Kennedy.

The artist's rendition of the Powerhouse, above, was used on the program for the dedication ceremony.

The Oahe Dam is one of the six Missouri River mainstem dams that provides hydropower generation, irrigation, flood control, navigation and recreation. Lake Oahe, formed by the dam, stretches over 230 miles north to near Bismarck, North Dakota.

Please bring your drivers license or other official identification with you on the tour, but leave your bags and purses at the conference center. The tour includes walking and climbing stairs. Comfortable shoes are recommended.

Pierre Regional Airport - FAA Airport Improvement Program and Recent Projects

During his session, Rod will provide a brief overview of the Federal Aviation Administration criteria for airport construction projects funded through the Airport Improvement Program and the recent redevelopment projects at the Pierre Regional Airport.

Rod Senn, PE
KLJ



Rod has served as the KLJ Office Manager for their Rapid City office since 2001 and will be completing his 35th year with KLJ this summer. He is currently involved with the Aviation sector of KLJ, assisting airports in western South Dakota and southwestern North Dakota. Prior to relocating to Rapid City, Rod was located in the KLJ offices in Dickinson and Minot, North Dakota, working on a wide variety of projects, including aviation, municipal and transportation related projects. Rod received his Bachelor of Science from North Dakota State University. Rod is active in the American Council of Engineering Companies of South Dakota and is the current President of the organization.

LIDAR Data in Civil Engineering

Derek's session will primarily cover the uses of readily available and free LIDAR data. The presentation will include sites to obtain the data, areas available, accuracies of the LIDAR data and some of the software used to work with the data. During the session, Derek will also discuss the uses for the data once obtained, including preliminary engineering, hydrology and hydraulics, and grading work.



Derek McTighe, PE/LS
Brosz Engineering, Inc.

Derek has worked for Brosz Engineering for 23 year and is Vice President of the firm. For the last eight years, he has ben the Office Manager of the Brosz Pierre office, running day to day operations of the office and serving as Survey Manager and Client Manager. Derek is active in the American Council of Engineering Companies of South Dakota and currently serves as ACEC's representative on the Design Professionals Coalition. He is also a member of the South Dakota Association of General Contractors Associate Division. Derek received his Bachelor of Science in Civil Engineering from South Dakota State University.

High Friction Surface Treatment on Horizontal Curves in the Black Hills

Andy's presentation will give a summary of a 2017 project that applied High Friction Surface Treatment at 17 locations in the Black Hills, mainly on horizontal curves. It will summarize how the locations were selected, the process of applying HFST and the safety benefit of the project.



Andy Vandel
SD Department of Transportation

Andy has been the Highway Safety Engineer for the SDDOT for the past five years. His primary responsibilities include administering the Highway Safety Improvement Plan. Andy has worked for the SDDOT for a total of 17 years and received his Bachelor of Science in Civil Engineering from South Dakota State University.

Missouri River Cruise aboard The Sunset



The story of how The Sunset made it to South Dakota is truly an epic one. Now that she is here, the experience on the Missouri River and the view of the area from this true paddlewheeler is unforgettable!

Conference attendees participating in the Missouri River Cruise may walk to the boarding area from the Ramkota. You will see The Sunset on the shore of the Missouri, between the car and railroad bridges. Boarding starts at 6 pm, with The Sunset embarking at 6:15 pm and returning around 8:15 pm. Light appetizers are included with the cruise and a cash bar will be available. Please contact a member of the Conference Planning Committee if you need additional assistance.

3D Printing Technology

During Ryan's session, we will look at the basics of 3D printing, specifically Fused Deposition Modeling as one of the most popular 3D printing techniques. Ryan will share information on fused deposition modeling and how it differs from other printing technology. The session will highlight the engineering items that are considered when designing a part for 3D printing.

Ryan Koontz, PhD

South Dakota School of Mines and Technology

As a manufacturing specialist at SD Mines, Ryan works with undergraduate students in the areas of design thinking, design for manufacturability and student development. Ryan has been with SD Mines for 17 years, after receiving his B.S., M.S. and PhD all at the SD Mines.



Engineering in a Deployed Environment

Todd's presentation includes an overview of Air Force deployed engineering tasks along with infrastructure challenges in a deployed environment. The information provided will be based on his most recent six-month deployment in support of Operation INHERENT RESOLVE at an undisclosed location. During this tour, Todd was involved with maintenance and repair, construction projects and supporting facilities.

Todd J. Mergen, PE

HDR Engineering
and South Dakota Air National Guard

Although Todd is a Construction Manager with HDR Engineering, he also has the unique perspective of serving as an Operations Officer with the South Dakota Air National Guard (SDANG). Todd's session will share some of the challenges and distinct opportunities encountered while deployed. Todd received his degree in Civil Engineering from South Dakota State University. Thank you for your service, Todd!



Where STEM and Social Sciences Integrate

Kimberly will lead off this presentation with an overview of the CAMP program, explaining the integrated engineering education taught at SD Mines — how educators not only work with the students on all their technical designs, but also heavily concentrate on student development and the teaming and leadership aspects it takes to be a professional engineer. The students, Fernando and Hannah, are the co-leads of the Hardrocker Human Powered Vehicle and will talk about their experience building the vehicle in the environment of a teaming and leadership center.

Kimberly Osberg and

Students Fernando Vazques and Hannah Moen

South Dakota School of Mines and Technology
Center of Excellence for Advanced Manufacturing and Production (CAMP)

As the Associate Director of CAMP and Director of Operations for CAMP, Kimberly leads 11 engineering team officers through a teaming and leadership curriculum. She meets with students once a week to study Covey's 7 Habits of Highly Effective People, The Student EQ Edge, Kegan's Mastering Leadership and various other authors and theorists. Kimberly also administers the EQi2.0 (emotional intelligence inventory) to students and debriefs them to help them come up with a plan of action. In addition, she helps advise the 11 teams, develops and maintains the program's budget, as well as 46 other foundation and team budgets. Kimberly also facilitates and leads a wide array of meetings, hires and supervises work study students, assess students and evaluates the program, does research, aids in preparing proposals, prepares marketing materials, meets with industry leaders, and organizes and leads community events.

Visit the

South Dakota Engineering Society
website at SDES.org

for upcoming information
on the

South Dakota Engineering Society
Fall Professional Development Conference
hosted by the



BLACK HILLS CHAPTER
SOUTH DAKOTA
ENGINEERING SOCIETY

Drones in Engineering

Nathan's presentation will cover a few of the basics of how drones can add value to engineering workflows and will very briefly go through the requirements for using a Unmanned Aircraft System commercially. The session will debunk some common misconceptions and explain the benefits that drones or Unmanned Aircraft Systems (UAS) can bring to engineers, especially focusing on the Civil Engineering aspects of UAS.

Nathan Nielson, PLS

Banner Associates, Inc.

As Banner's Survey Department Head, Nathan manages all aspects of the surveying and GIS departments at Banner. He also performs field and office work on many of Banner's projects, from construction staking and topo surveys to boundary work and drafting. In addition, Nathan is one of four licensed UAS pilots and leads and manages the UAS pilots' activities. Nathan has been with Banner for 11 years and Survey Department Head for the last 8 years. Nathan obtained his Associate in Applied Science degree in Civil Engineering Technology from Southeast Technical Institute and has been working in the industry since 2001. Nathan is very active in the South Dakota Society of Professional Land Surveyors, currently serving on the Board as Past President, and the National Society of Professional Surveyors.



Update on the Pierre Solar Project

A one Megawatt solar energy facility was constructed at the Pierre Regional Airport in 2016. The project was a joint effort by the City of Pierre, Geronimo Energy and Missouri River Energy Services. The Pierre Solar Project was the first renewable energy project for MRES and was the largest solar facility in South Dakota. Brad's presentation will review construction of the facility and provide an update on how the project has performed.

Brad Palmer

City of Pierre

As Utilities Director for the City of Pierre, Brad is responsible for oversight of all City utilities including the Electric, Water, Waste Water and Street Departments. He has been the Director for the last 11 years. Prior to working for the City, Brad held various positions in both the public and private sectors in the areas of civil, environmental and geotechnical engineering. Brad and his wife, Gidget, have raised four children in the Pierre community. He received his Bachelor of Science in Petroleum Engineering from the Montana School of Mines in Butte, Montana.

Connected Bicycles

Jonathan's session will share the story of Quarq — from start-up to global business — and discuss the future of cycling, with information on smart components and connected bikes.



D. Jonathan Huft SRAM LLC / Quarq

Jonathan is an Electrical Engineer with Quarq, with the primary responsibilities of electrical circuit design, testing and automation for manufacturing, and programming. Prior to his eight years with Quarq, Jonathan was an electrical test engineer at SpaceX. He received his BS and MS in Electrical Engineering at the South Dakota School of Mines and Technology.

Impacts of Electric, Connected & Automated Vehicles

Dave's presentation will describe the rapid transition to electric, connected and automated vehicles and the prospects for adoption of the new technologies.



Dave Huft SD Department of Transportation

As Research Program Manager for the SD Department of Transportation, Dave manages the SDDOT's multi-disciplinary research program and leads the SDDOT's intelligent transportation systems activity and its transition to Transportation System Management and Operations. In addition to his tasks at the SDDOT, Dave serves on numerous committees of the National Academies' Transportation Research Board and the American Association of State Highway & Transportation Officials related to research, innovation, intelligent transportation systems and transportation system operations. He obtained his Bachelor of Science in Physics from Michigan State University.