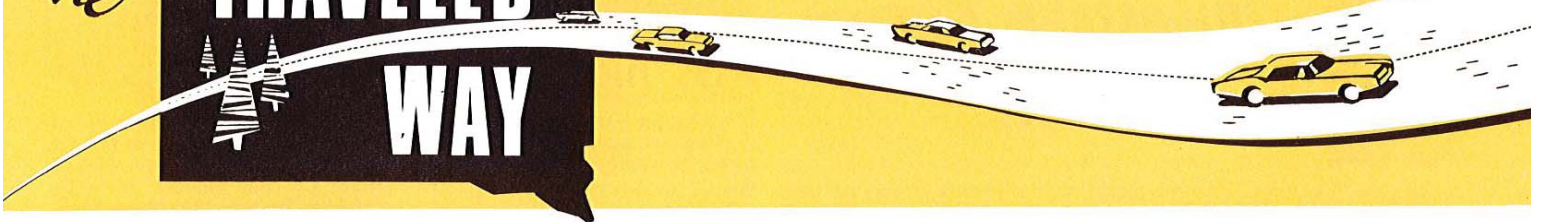
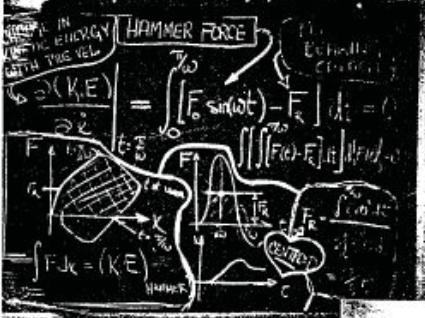
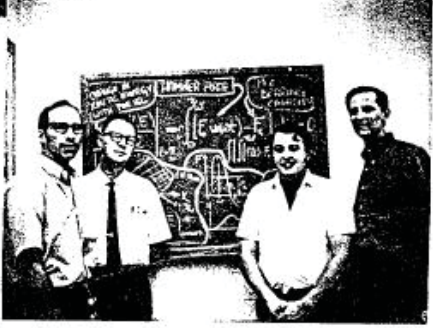


the

# TRAVELED WAY



**South Dakota Department of Highways**  
**Certificate of Achievement**  
 Awarded to  
**FOUNDATIONS & GEOLOGY SECTION**  
 For Demonstrating Proficiency  
 as Designated by Attached Seals

*Claus C. Kuehl* TRAINING DIRECTOR      *Ken Krause* HIGHWAY ENGINEER

**Certificate No. 00099**

LtoR: Vernon Bump, Ken Anderson, Paul Gnirk, Ken Krause

## 21 Years Ago

by Mike Carlson, Rapid City Area Engineer

This past month as I sat at my desk working, I could hear a lot of chatter coming over my two-way radio located over my shoulder. The crews in northwest South Dakota had been out for several days in a row even though the view from my window said it was a bright sunny day. It reminded me of the winter we had in '95/'96.

The first clue was at a meeting the Office of Emergency Management holds every year in Rapid City. At that meeting the National Weather Service predicts what type of winter we will have based on the ocean temperatures in the Pacific Ocean west of South America. This ocean temperature gives us an indication if we are experiencing an "El Nino" or "La Nina," and Susan Sanders from the National Weather Service stated that the atmospheric conditions are similar to '95/'96. During the '95/'96 winter we experienced several early snowstorms preceded by colder than normal temperatures and wind. For weeks our plow drivers had to go out daily to open up blocked roads and each night the winds would blow the snow back onto the highways

creating even larger drifts. The conditions became so severe that the National Guard was called out to help. We began operating 24 hours a day in an attempt to keep the roads open. Several snow blowers from Nebraska were mobilized to assist and calls were sent to highway contractors to use their loaders and dozers to push the snow back. For approximately three weeks during the worst of the weather the department helped the local ranchers feed and water their cattle.

The winter of '95/'96 can be considered our low water mark in terms of equipment and technology. That next spring the department was given additional budget authority to purchase several new plow trucks and a few truck mounted and loader mounted snow blowers. The use of liquid de-icers has become widespread and we now use straight salt as well as abrasive depending on the conditions. The department has constructed miles of wooden snow fence in locations prone to drifting. Our ditches act as snow storage but once they fill up the snow drifts onto the highway.

As our operators plow the snow back it creates a snow ridge, followed by even greater drifting due to the unrelenting winds. After several days the drifts will become several feet deep. By building the snow fence it helps keep the ditch clear of snow and reduces drifting. The department,



along with several other states, has developed the Maintenance Decision Support Systems, or MDSS. MDSS provides forecasts for specific portions of highways and based on the forecasts, current weather conditions and the geometrics of the highway recommends what treatment option or options the plow driver could economically perform to remove the snow and ice from the highway. Finally, the department has installed numerous cameras throughout the state in strategic locations to monitor weather conditions.

All of these changes in

the past 21 years have allowed the department to respond more quickly, remove snow and ice more efficiently and achieve bare roads faster than ever before. Back in 1995 the highways were snowpacked for weeks at a time or until the temperature rose significantly above

freezing. In 1995 the snow arrived earlier than this year and stayed longer, but I wonder how much more effective our operators would have been if they had all the new technology and equipment. Conversely, I wonder how much worse our roads would be this year if nothing had changed. These are questions we will not be able to answer but I am confident and that the changes that have occurred have made the department better. And as the department continues "**Going Beyond Good**" I wonder what is waiting for us in the future?!?

Photo from Dean VanDeWiele



## **Mentoring Corner**

### **Upcoming Events:**

Mentoring Program Registration Opens – March 24, 2017

Watch for an email from Secretary Bergquist in late March

*by Alison Sfreddo*

January was National Mentoring Month. And as anyone who has participated in a Mentoring Program can tell you, the productive and positive outcomes from a strong partnership can be extraordinary for the mentee and equally as beneficial to the organization. The gains and successes that mentees enjoy when they make the commitment to mentoring are immeasurable. The following are just a few of the many benefits of mentoring:

**Career Rejuvenator.** What better way to revitalize a career and talents than to be guided by an experienced and respected professional. By establishing a solid mentoring relationship, mentees not only expand their networks but they also increase their visibility throughout the organization and are better able to showcase their talents and achievements.

**Climate Gage.** One of the least anticipated benefits to mentoring are the new perspectives gained from the mentoring relationship. When mentees are mentored by a sage professional, they can begin to see the issues and concerns that are experienced at a higher level as well as how their own work fits into the entire mission of the organization.

**Stress Reducer.** Believe it or not, having a mentor can be a great stress reducer for a mentee. By having a confidant, mentees have a safe environment and sounding board for their questions, concerns and ideas.

They also can become privy to some of the issues and influences that may be impacting the organization. This sharing can allow the mentee to see what they have the power to change or improve, thereby giving them an avenue to brainstorm about how they can increase their own efficiency and morale.

**Loyalty Builder.** By engaging in a productive and guiding professional relationship with a mentor, junior employees can build a loyal support base. This also enhances their professional image as it signals to management that the mentee is committed to their own career progression within the organization.

**Confidence Booster.** Investing in one's personal and professional growth is the best way to increase self-confidence. Learning a new skill and knowing why their work matters allows mentees to gain their own sense of internal satisfaction and fulfillment.

**Legacy Creator.** Mentees who pay it forward as a mentor later on can effectively establish a legacy within the organization. Just by connecting, engaging and assisting another through their personal and professional growth can yield riches beyond a paycheck or a promotion. Mentors are often credited for another's success! In addition, there is no better feeling than the rush of knowing you made a difference in another person's life!

*Reprinted with permission from The Training Connection Newsletter*

## **Thank You!**

Don Kessler is a truck driver that works for Servall and part of his normal route takes him as far west as Gillette. He stopped in last week to voice his appreciation at how well our roads are maintained in the winter. He stated that he always breathes a sigh of relief when he crosses the state line coming back into South Dakota because he knows our plow operators have been out and the roads will be in good shape. Greg and Bob, please extend his appreciation to your crews. And also I want to thank them for doing such an outstanding job. - Mike Carlson, RC Area Engineer

## **Congratulations**

Lorraine Waller, Operations Support Secretary, was given the Medical Assist Award from the Pierre Police Department on Feb. 23, 2017. Lorraine works part-time as a communications officer for the Pierre PD.

## GIS: The Way We Were

By Terry Erickson, GIS coordinator

No, I am not making reference to a cheesy 1973 romance movie starring Barbra Streisand and Robert Redford, but this is a love/hate story nonetheless. I started work in State Government in 1978 as a Graphic Designer with the Planning Information Bureau. Some of my responsibilities included creating mylar (a special type of stretched plastic film) separations for land use / land cover classifications from aerial imagery. These separations were then used to create 4 or 5 color maps for public distribution. This is the story of how that process took place.

Before I venture into the actual process, we should talk about how our dependence on technology has diminished our tolerance for patience. Let me give you an example: how many of us have cursed our computer, printer or a software when it takes “like forever” to open or respond? I am talking seconds or possibly minutes. We have it so easy today; slap something together, select a few options, set the number of prints and push the easy button. This is not intended to be a sob story, poor me, like the title or the movie with the same name implies, but more a narrative on how far we have come through the years. I will be the first to admit that when I started, there had been significant advancements in the tools needed for color map making. Anyone remember this? The dial at



the top was used to set the thickness of the line. Remember the love / hate comment – I’ll let you guess where this falls in this relationship.

The first step in the creation

of a multi-color map was to create the camera ready artwork for each color. These were known as color separations. The separations were created on film or clear acetate. Acetate had characteristics which made it desirable for this type of work including glasslike clarity, good dimensional stability (would not stretch), and a smooth surface which accepted inks very well. After all the separations had been created representing the colors on the map, they were handed off to the offset printing

experts at Central Duplicating. During my early years with the DOT, I became such a regular customer for Central Dup that they decided to hand over some of the tasks to me. Lucky me.

Each separation was then photographed and the positive and plates were made for the offset press. A mask was applied to each positive and the areas that were to receive the ink were cut out. This reduced the amount of “white noise” when the plate was created. Each separation was given a registration point (crosshair) which remained visible throughout the entire process. The registration point aligned each color, or the color before it, to the base map for the offset printer.



Masking Material



Metal (Aluminum Anodized) Plate

Continued on page 5

GIS: continued from page 4

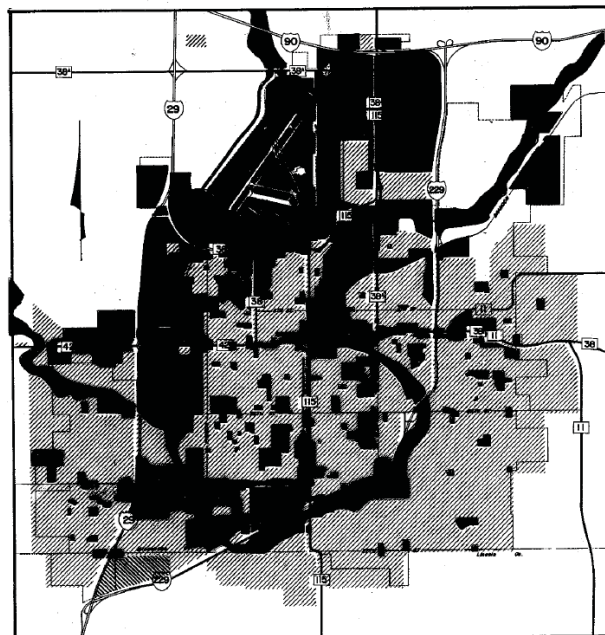
The aluminum plate was chemically treated to react to photo-effective UV rays, which in turn caused decomposition of the light sensitive layer. In laymen terms, the non-translucent, blackened sections of the films became the inked layers on the plate.



A Single Head Offset Press

The negative-plate process had to be completed for each color to be used on the map or graphic. Once printing began, multiple copies of the base map (black) were created and then the press was cleaned and set up for the next color. For example, if the request called for 500 copies of a map, 1000 were made just to make sure that, after all the colors were applied, you were left with 500 with a decent registration.

A good offset printer could roll through three or four colors per day depending on the total number of prints needed. They were masters of their craft and most treated every project as a work of art.



### SIoux FALLS AREA LAND USE

SYMBOL	LAND USE TYPE
	RESIDENTIAL
	COMMERCIAL SERVICE
	INDUSTRIAL
	PUBLIC / SEMIPUBLIC
	PARKS + RECREATION
	AGRICULTURE
	PLANNED INDUSTRIAL AREA



PREPARED BY:  
SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION  
OFFICE OF PLANNING AND PROGRAMMING  
TRANSPORTATION BUILDING  
PIERRE, SOUTH DAKOTA 57501  
(605 - 773 - 3155)

Sample artwork for a 5 color graphic (with cross-hatch)



## TRAC: Pierre Riggs High School

By Ann Campbell, Training Coordinator

For the second consecutive year Kelly Brandt, Pierre Riggs High School teacher, incorporated the TRAC Bridge Builder module in his classroom. Brandt was the first teacher in South Dakota to implement TRAC as a pilot program in his Physics and AP Physics courses 2016. Last year there were approximately 30 students involved with the program and 51 participants this year.

This semester's unit began with students in all three classes being oriented to bridge building concepts through a presentation delivered by DOT Office of Bridge Design Engineers Hadley Eisenbeisz and Cody Lorenz. Their presentation included information on the history of bridges, types of bridges and design concepts. For those students that listened closely, this conceptual information would prove helpful as they designed and constructed their own bridge.

Students were then were tasked with designing a bridge using the Model Smart 3D software, provided through the TRAC Program. The software program allows the students to define the bridge geometry, choose the material properties and apply different loading situations. After designing the bridge, a computational analysis can be performed that shows the students how their structure failed under the given load state. Cody Lorenz went back to the classroom for the first design day and was available as a 'technical expert' to help the students if they had questions with what they working on.

Students were then allowed to choose their own teams of 3-4 people. Each team reviewed the designs and selected the best design for their construction. All teams were given one week to complete the construction with a specific amount of supplies. Class time was provided, but many of the teams opted to put in 'overtime' and worked in the evening or on the weekend. Throughout the process teams had to work through real-life issues that all work teams face; personality dynamics, balancing other priorities and working with those less motivated.

In some cases, teams quickly identified roles based on individual strengths and divided work based on skill sets.

The bridge testing event was done during one joint session for all three classes. There were 14 bridges presented and competing. Prior to the testing DOT engineers evaluated the structures and rated the teams based on aesthetics. The four DOT staff that helped with the critique were Brad Norrid (Winner Engineering Supervisor), Steve Johnson (Chief Bridge Engineer), Lorenz and Eisenbeisz. Some of the considerations given were if the structure appeared sound, if material connection points aligned,

if there were clean cuts made to the wood, and if there appeared to be time and effort put into the construction. They also looked at the level of creativity used in the design.

Then the real fun started when teams presented their bridges for strength testing. Each team applied the sand weight to their structure until the bridge completely broke. For some teams, it did not take long for the bridge to either explode or slowly bend apart. The least amount a bridge held was 20lbs. The winning team's bridge was able to hold 66.52 lbs.



Winning team: Chloe R., Sec. Darin Bergquist, Bailey S., Kala W., Gov. Dugaard, Kelly Brandt, Cody Lorenz (Bridge office), Zane Z., and Ann Campbell (Training)

Gov. Dugaard made a surprise appearance for the event and participated in the entire program from the front row. His appearance added an element of excitement for the students as they had the honor of displaying and testing their bridges in front of South Dakota's Governor. Aside from earning an 'A' for their grade, the winning team had the added privilege of taking a photo with the Governor.

This year's TRAC program was a success as I heard the numbers of students involved were up from last year. Having been given the opportunity to be involved, several questions ran through my head such as "Do I really know enough about my job to do a presentation on it," "How do I present it to teenagers," and "Would they honestly even care that much?" As I put together my presentation, I realized that yes, yes I do know enough about my job to do a brief presentation on it, yes I can present it effectively to teenagers (after all, I was in high school not all that long ago and their teacher briefly wondered if I was a new student the first time I came in and sat down!), and yes most do care, especially if I present it to them in such a way that shows that I care about it. With that I found I really enjoyed sharing with them about my job and helping them with their balsa bridge project. They are bright kids, and it was good to engage with them and to hopefully inspire them and get them excited about science and engineering. It is something I would defiantly do again. – Cody Lorenz, Structural Engineer- Office of Bridge Design



Pierre area engineers (left to right) Debra Overbay, Laurie Schultz, Tammy Williams, Karen Bartell, and Kathy Rodgers witness Governor Janklow signing an Executive Proclamation designating Feb. 19-25, 1984 as Engineers Week.

We just wanted to say thanks to the plow drivers up here on I29 near exit 157. (As I sit here watching them diligently trying to clear the glare ice off the bridge and roadways). It's our first winter here on the farm and just appreciate how dedicated they are. We regularly commute to Brookings so a clean road surface is such a blessing. - Jenna Lundgren, Blue Dasher Farm

## Longevity / Retirements

Jan Talley	40	Finance
Todd Hanson	30	Webster
Calvin Esche	25	Clear Lake
Vernon Bormann	25	Mitchell Region
James Steichen	20	Mitchell Region
Donald Boyd	20	Mission



John Keyes, right, ROW, celebrates 15 years with Joel Gengler.



Keith TerMeer retired on Feb. 23 after more than 30 years with the DOT as an Equipment Technician.



## New Employees

Van Everdingen, Anthony	Equipment Technician	Mitchell	02/01/2017	New Hire
Motschenbacher, Gaven	Engineer I	Pierre	02/09/2017	New Hire
Saukel, Patricia	Exempt Clerical	Pierre	02/09/2017	Promotion (DSS)
Thorman, Tige	Journey Transp. Tech.	Aberdeen	02/09/2017	New Hire
Richards, Brad	Transportation Specialist I	Pierre	02/09/2017	New Hire
Collins, Chet	Highway Maint. Worker	Isabel	02/09/2017	New Hire
Mraz, Montana	Materials Laboratory Tech.	Pierre	02/09/2017	Promotion
Trent, Charles	Fabrication Technician	Pierre	02/09/2017	New Hire
Wiehoff, Thomas	Highway Maint. Worker	Pierre	02/13/2017	New Hire
Green, Tyler	Highway Maint. Worker	Hayes	02/13/2017	New Hire
Schriever, Jay	Highway Maint. Worker	Woonsocket	02/13/2017	New Hire
McKeever, Kyle	Project Transp. Technician	Pierre	02/13/2017	New Hire
Lee, Patrick	Project Transp. Technician	Pierre	02/13/2017	New Hire
Westra, James	Equipment Technician	Sioux Falls	02/24/2017	New Hire

## Future DOT Employees!



Jen and Aric Hovelson are the proud parents of Everleigh Grace Hovelson. DOB: Feb. 2, 2017  
 Weight: 5lbs 14 oz.  
 Length: 18 ¾ in.  
 Aric is a highway maintenance worker for Pierre area shop 355.



Michael and Julie welcomed Alexander Michael Benson into this world on Feb 22, 2017 at 2:51p.m.

Jerri Williams, Right of Way in Pierre, is the proud grandma for the 7th time to Emmy Lou Trebesch. DOB: Feb. 6, 2017  
 Weight: 8 lb. 7 oz.  
 Parents: Justin and Erica Trebesch (son & daughter-in-law)



Weight: 5 lbs. 15 oz.  
 Length: 18-1/4 inches

Michael is an Equipment Tech in Mitchell.



Scot and Jackie Dunlavy are the proud first-time parents to Josephine Anna. DOB: Jan. 20, 2017  
 Weight: 6 lb. 12 oz.  
 Length: 19-1/4 inches  
 Scot is a technician in the Pierre region shop.

## Condolences

**Kelly Watkins** mother passed away Saturday Jan. 28th. Kelly is a Lead Maintenance Worker on the Pierre Region Traffic Crew.

**Lisa Sayegh's** grandmother, Jeannine A Buck, passed away Feb. 3, 2017. Lisa is a Region Operations Technician, for Aberdeen Materials.

**Tom Newell's** father, John "Jack" Newell, passed away on Feb. 1, 2017. Tom is the Outdoor Advertising Specialist in the Operations Support Office.