

Montana Society of Engineers

A state society of the National Society of Professional Engineers



Founded 1887

President's Message:

With Gratitude

Sandra Anderson, PE, President

"As we go into the next millennium we have to contemplate how we can ensure a strong organization for the Professional Engineers of Montana. An organization that keeps its members informed and involved on the issues directly related to practicing engineering in the state of Montana." - Paul Druyvestein, PE, MSE President, November 1999

"Many of us belong to other professional engineering groups...The major difference between these groups and MSE is that we are not a technical society. We are a group representing all of the engineering professions in the state of Montana. One of our strengths is our ability to represent smaller groups of engineers in terms of the profession as a whole." - Tom Heineke, PE, MSE President, November 2001

After attending the state MATHCOUNT competition: "By the end of the day I was both exhausted and inspired...More importantly, however, I was very impressed with the intelligence, energy, and maturity of the kids involved...So, in the spirit of competition I would like to issue a challenge: I challenge each of you to get involved. Your involvement can be at the local or state level. I guarantee that you will come away from this experience with the same feeling that I have.:" - Bill Buxton, PE, MSE President, March 2003

These three statements are just a small sample from the many Montana PE's who have been committed to advancing the engineering profession, and have demonstrated that commitment through service to the Montana Society of Engineers. I am very grateful for the thousands of hours of volunteer work that have gone into making MSE successful and keeping it the voice of our members to the Legislature and the licensing board. As the oldest state PE organization in the nation, we have a proud tradition to uphold. Member involvement at the state and local level is necessary to continue this legacy and ensure that MSE is both MEANINGFUL and USEFUL, and I am honored to play a part in it.

ARE YOU GRATEFUL TOO?

Then now may be the time to consider a larger role in MSE. State elections are still several months away, but it's not too soon start thinking about becoming a member of the Board. If you would like to know more about board activities and responsibilities, please give me a call at 868-0090 or e-mail me at sandra_andersondavid@hotmail.com.

It's an exciting time to be an engineer. Please join us in our mission to enhance and advance the engineering profession and, as the state statute says, "to safeguard life, health, and property and to promote the public welfare." Let your voice be heard!

OUR VERY BEST WISHES GO OUT TO YOU FOR A PEACEFUL AND PROSPEROUS 2007.

MSE TIDBITS:

STILL SEEKING A CHAMPION - Young website seeks knight in shining armor! www.mtengineers.org is up and running. Now we need a volunteer to champion the cause and help make it THE engineering web site for Montana. Day-to-day maintenance and content updates are contracted to JLH Enterprises (Jennifer Harrison). We're looking for someone to help us with new ideas for education, outreach, links, advertising, and any other way to make the site useful, fun, and informative. PLEASE contact Connie Dempster or any board member today!

KALISPELL MEETING NEWS - Tom Abel Reported: We had our November meeting of the MSE Kalispell engineers club. We set an attendance record, 11 people attending representing 10 different companies. The discussion was varied and interesting. Tom Heineke gave an update on the Engineering Board. One engineer in attendance, Bob Hafferman, was a member of the engineering board for 20 years. I think we are off and running. For information on future meeting, contact Tom at tom@abelengineeringinc.com.

December, 2006

These three statements are just a small sample from the many Montana PE's who have been committed to advancing the engineering profession, and have demonstrated that commitment through service to the Montana Society of Engineers.

Inside This Issue

| | |
|--|----------|
| <i>Stray Thoughts.....</i> | <i>2</i> |
| <i>CES Opportunities.....</i> | <i>3</i> |
| <i>What All Schools Should Post.....</i> | <i>3</i> |
| <i>MathCounts Update.....</i> | <i>4</i> |
| <i>News from the Capital City.....</i> | <i>5</i> |
| <i>More MSE Tidbits</i> | <i>5</i> |
| <i>McGraw-Hill 2007 Construction</i> | |
| <i>Outlook</i> | <i>6</i> |
| <i>2005-2006 State Officers.....</i> | <i>6</i> |

Stray Thoughts

By Jeff Ruffner, President-Elect

Mullen Trail

This is for those of you who missed Bill Weikel's presentation on the Mullen Trail at the Joint Engineering Conference. Bill had on a beaver hat, vest, and baggy pants to make it appear he was from the era of early surveyors. One of the interesting things he explained was how the Mullen party (and most of the early explorers) knew where they were. For those who already know this, skip forward. For me this was total fascination, especially after playing around with a GPS for the last few years. To find the latitude, they simply took a night shot of the North Star. This works because the North Star is directly above the North Pole in line with the axis of rotation of the earth. It never appears to us to move as the night progresses. The early explorers sighted the horizon with their sextant with one eye and sighted the North Star with the other using the moveable telescope on the sextant which was visible thru a system of mirrors to the other eye while looking horizontal at the horizon. This sounds really simple until you pick up a sextant and try it.

While visiting a marine junk store in Seattle recently I picked up a used sextant and started to look at things in the store. The first thing I noticed is you can concentrate with one eye, but what you were sighting with the other eye was quickly lost. You would have to look pretty closely at the stars to stay focused on the North Star, and then the horizon would be out of whack. Concentrate on the horizon, and whoops, where did that star go? Add to this any kind of motion from being at sea, and the task seems next to impossible. If I were using this instrument on a boat on Flathead Lake, I could probably pinpoint my latitude somewhere between St. Ignatius and Polebridge.

To find the longitude the Mullen had an even more interesting method. They used a clock!! The earth rotates 360 degrees per day and a day has 24 hours. The earth rotates 15 degrees per hour. When they left St. Louis, they noted the time when the sun was directly overhead. To determine when the sun was directly overhead they again used the sextant. As soon as the sun came up in the morning they shot the sun, noted the time, and left the sextant on that angle that was measured. They waited all day and shot the sun again when it was going down and noted the time. They calculated the total time between shots, divided the time in half and added that number to the time of the first shot in the morning. That would be when the sun was directly overhead. Remember they are still

looking at the horizon and shooting directly into the sun. There are sun shades on the sextant for this purpose. One would have to pick a location where the horizon is visible (not high mountains or buildings nearby) both where the sun comes up and where the sun goes down. When they traveled to the new location, say Missoula, they would again shoot the sun in the morning and afternoon noting the times again. Since they did not correct for time zones like we do when we travel, the sun would come up later and go down later than in St. Louis. The sun's high point would occur later also. The difference in time then can be converted to degrees of rotation of the earth. The number of degrees of rotation is added to the known longitude of St. Louis, and they knew where they were relative to St. Louis.

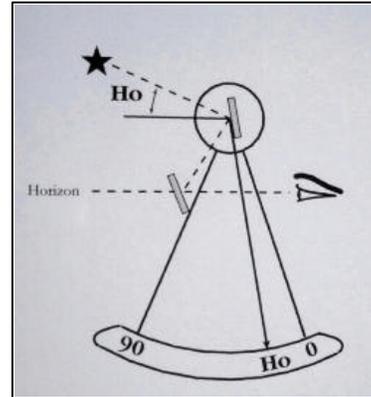


Now think about that process. If one were lost in the Flathead Valley in late November, you might be lost until February when you can see the sun again. We are surrounded by mountains which makes it difficult to shoot a horizon. I was going to try to check the latitude of Kalispell using my David White transit level. Using a transit level would be easier than using a sextant because once it is level; all you have to do is find the North Star. We have not seen stars for a month! I could not try this.

Probably most of you missed the bull session at lunch on Friday at our table at the JEC where Bill and I were having lunch. A retired engineer from Great Falls overheard us talking about the methods of John Mullen. This engineer had worked for the government on the missile silos in Great Falls. He told us how they sighted in the missile silos. They shot the North Star at night to find the latitude, and they used a watch (purchased at a local hardware store) to determine the longitude.

Early English explorers setting out to explore the oceans used very accurate time pieces. One of the most famous time pieces was a Tates precision clock made by the Tates Manufacturing Company in London. One order of clocks left the factory with a manufacturing defect and the clocks did not keep accurate time. Those explorers who had the defective clocks never were seen again. That is how the saying came to be "He who has a Tates is lost."

Stampisch question of the month: When you are towing a 4 wheel trailer and a wheel comes off the trailer, why does the trailer wheel pass you?



This is for those of you who missed Bill Weikel's presentation on the Mullen Trail at the Joint Engineering Conference.

CES Opportunities:

ITEM 1:

The National Council of Structural Engineers Associations (NCSEA) invites you to return to New Orleans for a first hand look at the damage to the Big Easy and the progress made toward its restoration. NCSEA's annual Winter Institute will be held at the Omni Hotel and will explore the effects of devastating disasters and coastal concerns on January 26-26, 2007. For more information and registration, visit www.ncsea.com/2007WinterInstitute.htm or call 1-312-649-4600, ext 203. 15 PDH

ITEM 2:

National Expert Witness 16th Annual Conference will be held June 19-22, 2007 in Hyannis, Cape Cod, Massachusetts. This conference has been approved for 14 PDH for engineers. For more information or to register, visit www.SEAK.com.

What All Schools Should Post:

Love him or hate him, he sure hits the nail on the head with the advice Bill Gates recently shared at a public high school. He talks first about how feel-good, politically correct teachings created a generation of kids with no concept of reality and how this concept sets them up for failure in the real world. He then ends with 11 rules to remember as they enter the real world:

- 1) Life is not fair — get used to it!
- 2) The world won't care about your self-esteem. The world will expect you to accomplish something BEFORE you feel good about yourself.
- 3) You will NOT make \$60,000 a year right out of high school. You won't be a vice-president with a car phone until you earn both.
- 4) If you think your teacher is tough, wait till you get a boss.
- 5) Flipping burgers is not beneath your dignity. Your Grandparents has a different word for burger flipping: they called it opportunity.
- 6) If you mess up, it's not your parents' fault, so don't whine about your mistakes, learn from them.
- 7) Before you were born, your parents weren't as boring as they are now. They got that way from paying your bills, cleaning your clothes and listening to you talk about how cool you thought you were. So before you save the rain forest from parasites of your parents' generation, try delousing the closet in your own room.
- 8) Your school may have done away with winners and losers, but life HAS NOT. In some schools, they have abolished failing grades and they'll give you as MANY TIMES as you want to get the right answer. This doesn't bear the slightest resemblance to ANYTHING in real life.
- 9) Life is not divided into semesters. You don't get summers off and very few employers are interested in helping you FIND YOURSELF. Do that on your own time.
- 10) Television is NOT real life. In real life people actually have to leave the coffee shop and go to jobs.
- 11) Be nice to nerds. Chances are you'll end up working for one.

Stray Thoughts - Continued from pg 2

Local MSE Chapter Meetings

One of the benefits of belonging to an organization such as MSE is the chance to meet with other engineers and swap lies and maybe get some new ideas about engineering. We do this on a state level once a year at the Joint Engineer's Conference, but we do not do this locally. Billings and Butte have an engineers clubs that meet monthly, but this is not happening anywhere else that we know of. We have started a small group in Kalispell, where we meet the last Wednesday of each month. Our group is growing and there seems to be a lot of interest in continuing. Ken Phillips is going to revive the group in Helena. All it takes is one guy (or gal) to be the spark plug to get things going and you can have local meetings. Local meetings are important because locally is where engineering work is performed routinely on a daily basis, and our customer's needs are fulfilled to some degree of satisfaction. Issues that arise are probably the same ones that arise in Billings, Missoula, St. Louis or anywhere else in the country. Some problems we encounter are specific to our area, such as the huge influx into the Flathead Valley of California Hummer IIs with chrome spinner wheels and bleached blonde drivers with cell phones attached to their heads. If you want to start a local chapter, the MSE board members can help you get started. It doesn't have to be very formal with a lot of paperwork and structure unless you want all of that.



Local meetings are important because locally is where engineering work is performed routinely on a daily basis, and our customer's needs are fulfilled to some degree of satisfaction.

3



Engineering Services

30 Years of Experience
www.mse-ta.com

MSE is committed to providing excellence and value to our customers. On every project, MSE engineers strive to exceed customer expectations.

For thirty years MSE has been earning the respect of our customers, garnering a reputation synonymous with innovation, professionalism, and customer satisfaction.

With offices across the U.S., MSE is ready to work for you at a moments notice. Experienced licensed engineers, and certified project management professionals ensure our customers' projects are completed on time and within budget.

MSE's Full-Service Engineering

- Mechanical Engineering
- Electrical Engineering
- Civil/Structural Engineering
- Geophysical Engineering
- Chemical/Process Engineering
- Metallurgical Engineering
- Instrumentation & Control Engineering
- Construction Management
- Hydrology
- Cost Estimating
- Environmental Engineering
- Project/Program Management
- Project Scheduling

Mike Mansfield Advanced Technology Center
200 Technology Way • Butte, MT 59701 406-494-7100

MATHCOUNTS Update

By Dan Munson, State MathCounts Coordinator

We are less than 2 months away from our first 2007 MATHCOUNTS chapter competitions. Check out the schedule below to find out when in February your local chapter competition will be held. Then call or e-mail the chapter coordinator and volunteer some time to help out with the competition. We only need a few hours of your time during that day, but it's time well spent. You will see young brainpower in action, and get to see the next generation of engineers at work. You won't regret it! We look forward to hearing from you!

MATHCOUNTS Support:

If you haven't already contributed to the Montana MATHCOUNTS program with a financial donation, please consider it. Montana MATHCOUNTS is a nonprofit organization primarily supported by local engineers and engineering based companies. To keep the quality of the program high, and the middle school registration fees low, we are totally dependent on the generosity of our state sponsors. We trust that you will see the benefit in helping us out. Donations should be sent directly to:

Montana MATHCOUNTS Foundation
P.O. Box 20996
Billings, MT 59104-0996

Thanks for your help and kindness!

MATHCOUNTS Chapter Coordinators and 2007 Competition Dates

Billings Chapter

Friday—February 16, 2007
MSU Billings—Liberal Arts Bldg
Dan Munson, Coordinator
Phone: 406-655-2540
Dan.Munson@northwestern.com

Bozeman Chapter

Tuesday—February 6, 2007
MSU Bozeman—SUB
Jerry Stephens, Coordinator
Phone: 406-994-6113
e-mail: jerrys@ce.montana.edu

Butte Chapter

Tuesday—February 6, 2007
Red Lion Inn Butte
Sandra Anderson, Coordinator
Phone: 406-533-0671
e-mail: sandra_andersondavid@hotmail.com

Eastern Montana Chapter

Wednesday—February 21, 2007
Dawson Community College
Mike Hunter, Coordinator
Phone: 406-377-9433
e-mail: hunter@dawson.edu

Kalispell Chapter

Friday—February 9, 2007
Red Lion Inn Kalispell
Tony Feilzer, Coordinator
Phone: (406) 752-2216
e-mail: tfeilzer@m-m.net

Missoula Chapter

Thursday—February 22, 2007
Ruby's Inn Missoula
Guy Sharp, Coordinator
Phone: 406-273-2461
e-mail: sharpguy@amerion.com

North Central Chapter

Wednesday—February 7, 2007
MSU Great Falls—Heritage Hall
Bill Burkland, Coordinator
Phone: 406-447-5054
e-mail: bill@rpa-hln.com

STATE COMPETITION

Wednesday—March 7, 2007
MSU Bozeman—SUB
Dan Munson, Coordinator
Phone: 406-655-2540
Dan.Munson@northwestern.com

MATHCOUNTS Sample Problem

A department store advertises that all of its CDs are on sale at 35% off their regular price. However, if you use the store's coupon this Saturday, you will get an additional 15% off. Norm and Sara explore different ways this information might be interpreted.

Norm says the purchase price is 35% + 15% = 50% off the original price. Sara disagrees and says the purchase price is 35% off the original price and then 15% off the sale price. The regular price of the CD they plan to buy is \$13.99. Which interpretation of the advertisement leads to the least purchase price? What is the positive difference between Norm's purchase price and Sara's purchase price?

Answer: Norm's interpretation discounts the original price by 50% of the original price, $13.99 - (0.5 \times 13.99) = \7.00 . Sara's interpretation discounts the original price by 35% of the original price to get the sale price and then discounts the sale price by 15% of the sale price, $13.99 - (0.35 \times 13.99) = 9.09$, $9.09 - (0.15 \times 9.09) = \7.73 . Norm's interpretation of the advertisement leads to the least purchase price. The positive difference between the interpretations is $|7.73 - 7.00| = \$0.73$.

Check out the schedule to find out when in February your local chapter competition will be held. Then call or e-mail the chapter coordinator and volunteer some time to help out with the competition.

For Things Engineering, Visit: www.mtengineers.org TODAY!

News from the Capital City

By Kenneth Phillips, PE, Secretary/Treasurer

It's the Holiday Season again, which means Christmas shopping, holiday parties and time with family. For us professionals in State Government every other Christmas is an extra special time, its pre-legislative month. This is the month that we start getting requests for a variety of information and scurry like Santa's elves trying to put together the requested information. How much did we spend doing this? How many projects did we get out to repair that? Also, we are finalizing bills that our respective departments are putting together either for funding or to change or clarify some portion of State Law.

Even though most of us governmental Engineers and Architects will never actually testify before a committee we always have to be ready to provide technical information to our department heads so we must track bills that affect our work. Moreover, as Professional Engineers we should also track bills that may affect our profession. Be they changes in codes or changes in professional services selection criteria you never know what may come up.

The State has a web site called *LAWS* that lets all citizens look up what bills are being presented, the wording of the bills, the committee hearing the bill and meeting times. It also provides a history of each bill showing where it is in the civic process and whether it is passed, tabled or dead. You can search this site to find all bills or do a keyword search for things that may be of interest to you. I use the web site primarily to track bills that involve my job so that I can see when and where a particular hearing is taking place and review any changes to the language of a bill. So I have the *LAWS* site under my "Favorites" in my web browser.

There are two ways to get to the *LAWS* site. Since it is maintained by the Legislative branch you can go to www.mt.gov, click on the *Government* tab, go then down a couple of lines to the *State of Montana Agency listing*, click on *Legislature, Montana State* and then *Bills* and finally you click on *2007 Session*. Or if you are a good typist you can just type in [http://laws.leg.mt.gov/pls/laws07/law0203w\\$.startup](http://laws.leg.mt.gov/pls/laws07/law0203w$.startup) and get right to the page.

Once you have successfully made it to this web page, you are given a variety of choices. The first blank is *Bill Type and number*. Generally unless you are in the "know" you won't know if a bill is a Senate Bill, SB or a House Bill, HB, or a House Resolution, nor will you know the bill number so I recommend that you either key word search or initially go down to the tab called *List ALL Introduced and Unintroduced Bills*, scan the titles and when you

see a particular bill of interest you can click on *read bill* or a variety of other tasks such as see Committee times and its status. I recommend that all of you try and familiarize yourself with this page, not only will it help you become an informed citizen, it is also quite interesting tracking the life of certain bills. Real life is much more exciting than fiction and watching a bill go through session is quite fascinating. Will it pass? Will it get tabled? What has any language changes done to its original intent?

We at the Board of MSE will be discussing what bills we will be tracking at our upcoming meeting in Helena on January 12th, 10:00 AM at the Helena Library. If you get a chance to go to the *LAWS* site before then and see a bill that is a potential concern to our profession, please contact either myself or any of the other Board members and we will discuss your concerns at the meeting. If we do find bills that may affect our profession, we work with a lobbyist to help track and testify at committee meetings. As a private citizen you can testify at any hearings and it is my opinion that private citizen's concerns hold a lot of weight with our elected Representatives and Senators. Also you can contact your representative about your concerns as all members of the House and Senate do get a chance to vote on every bill that makes it to the floor. But the best place to address a bill is in committee as it has fewer members and most of them are more familiar with bills being heard in their respective committees. So this Holiday Season take time for friends, family and to get informed with your State Government. As stated before, please contact any of the Board members if you see something that you feel needs action. Happy pre-Legislative session to all and Merry Christmas to everyone.

MORE MSE TIDBITS:

HELENA CHAPTER OF MSE REVIVAL - It seems that we do have a few folks that are interesting in reviving the Helena Chapter. Because of the Holidays, I have not set up a meeting time nor place. But I hope to announce to all Tri-County MSE members a meeting time perhaps in January. I am looking for a good location to hold the event, so if anyone has a conference room that will hold about a dozen during a noon hour let me know. We already have a couple of presenters interested in giving technical presentations so I hope that we can build a group that will benefit from getting together every other month. I look forward to seeing you there. Contact Ken at kphillips@mt.gov

The State has a web site called LAWS that lets all citizens look up what bills are being presented, the wording of the bills, the committee hearing the bill and meeting times.

It seems that we do have a few folks that are interesting in reviving the Helena Chapter.

McGraw-Hill 2007 Construction Outlook

On October 27, 2006, McGraw-Hill released its 2007 Construction Outlook. The forecast is that the 2007 construction market will be a mix of pluses and minuses, with the net result that the forecast for total construction is \$668 billion, a modest 1% decline.

The forecast will be influenced by the deflation of the single-family market, which boomed from 2000-2005, remaining high until 2006, until it deflated at a faster rate than expected. "Single-family housing has fallen more steeply than what we had anticipated and the correction is taking place faster," states Robert Murray, McGraw-Hill Construction vice president of Economic Affairs & Chief Economist. He continues, stating that the construction industry "no longer has single-family housing to bolster total construction."

Despite this 5% forecasted decrease in single-family housing, the construction industry will have several growth sectors. Specifically, institutional buildings will advance 7% in dollar volume and 4% in square footage. Manufacturing building is expected to rise 14% from a lackluster 2006 performance, and public works construction will grow 5% on top of the 10% increase in 2006 due to highway and bridge construction, as well as environmental projects.

For the complete 2007 Construction Outlook, go to <http://construction.ecnext.com/coms2/analytics>

Manufacturing building is expected to rise 14% from a lackluster 2006 performance, and public works construction will grow 5% on top of the 10% increase in 2006 due to highway and bridge construction, as well as environmental projects.

6

2006-2007 MSE Board

Sandra Anderson, President
sandra_andersondavid@hotmail.com

Jeff Ruffner, President Elect
jruffner@mse-ta.com

Tom Abel, Vice President
tom@abelengineeringinc.com

Kenneth Phillips, Secretary/Treasurer
kphillips@mt.gov

Dan Munson, Immediate Past President
Dan.Munson@northwestern.com

Connie Dempster, Executive Secretary
MSE Office
PO Box 20996
Billings, MT 59014-0996
406-259-7300
mse@assoc-mgt.com

**Deadline for the Next
Issue of this Newsletter is
March 10, 2007**

**Submit articles and advertising to
mse@assoc.mgt.com**



*P. O. Box 20996
Billings, Montana 59104-0996*

| |
|---|
| PRSR STD U.S. POSTAGE PAID BILLINGS, MT PERMIT NO. 88 |
|---|