

President's Message: Flood Control System Proves Its Worth . . . Again

Dear friends -

Well, the Red River of the North had another high flood year and again, it was almost a non-event for most of the Grand Forks and East Grand Forks populations. Of course, city officials keep a close eye on the situation and Public Works employees and engineering staff have tasks that must be completed (closing off roads, closing some bridges, monitoring pump stations, etc.), but the days of massive sandbag operations are well behind us.

We are all thankful for our massive flood control system, built after the 1997 flood devastated our two communities, but its value can really be seen when you look at the chart at the right, which shows the 10 highest flood events in our cities' history. *Four* of them occurred well after the '97 flood and after our protection project was substantially complete. It is difficult to compute how much money we would have spent in sandbagging operations and how

exhausted our citizens would have been after fighting major floods for that many years in a row. It's hard to imagine life without these levees and diversions.

It's going to be hard to imagine life without our irrepressible Marilyn Bren, as well, but we will have to prepare ourselves for it. Marilyn has been our Office Manager

10 Highest Crests of the Red River of the North at GF/EGF

- (1) 54.35 ft on 04/22/1997
- (2) 50.20 ft on 04/10/1897
- (3) 49.87 ft on 04/14/2011
- (4) 49.33 ft on 04/01/2009
- (5) 48.81 ft on 04/26/1979
- (6) 48.00 ft on 04/18/1882
- (7) 47.93 ft on 04/06/2006
- (8) 46.09 ft on 03/20/2010
- (9) 45.93 ft on 04/21/1996
- (10) 45.73 ft on 04/11/1978

since 1988 and has been incredibly valuable as an employee as well as being a true friend. She will be retiring this May and adjourning to her lake cabin, where she will help us out occasionally with some bookkeeping duties long-distance. We will miss her cheerful face around our office, but we wish her the best as she starts this new phase of her life.



We will be holding an **Open House** in Marilyn's honor on **Wednesday, May 18** from **3 to 6 pm** at our FS Engineering offices (1600 Central Avenue NE in East Grand Forks). Please feel free to stop by and celebrate her retirement with us.

- Greg Boppre, President

Civil Talk

Issue 17 - Spring 2011

Safe Routes to School Project Under Construction in 2011

Three years after submitting its application for a Safe Routes to School project, the City of East Grand Forks will finally see the extension of sidewalk to Central Middle School that it has been wanting.

The City's 2008 application was approved in June of 2009. There were only 25 Safe Route projects approved that year, out of 105 applicants. FS Engineering was asked to design the project and complete the plans and specs for bidding. The EGF project was first bid in 2010, however, bids came in almost \$80,000 higher than anticipated.

"The initial rough estimate in the grant application didn't take into account the additional work needed"

Continued on Page 2

The red line on the aerial photo at the right shows the proposed Safe Routes to School sidewalk project that will connect Central Middle School to the sidewalks along 13th Avenue South and north along Bygland Road.



FS Now Offers Cross-Connection Contamination Prevention

Water distribution systems are usually designed to flow in one direction - clean water runs from the water treatment plant to your faucet. However, there are numerous cases across the United States where water starts to flow *backwards* in a distribution system - sometimes carrying



contaminants back into the clean water supply. These instances can be the result of backsiphonage, backpressure, or cross-connection contamination. In one instance, a

farmer in Louisiana was diluting herbicides in a tank (he had his garden hose submerged in the tank as it filled with water). Unbeknownst to him, the water main that serviced his area was accidentally cut by a construction crew. This caused an immediate drop in water pressure and the garden hose began pulling herbicide-tainted water backwards into the distribution system. Other users reported nausea, stomach burns and pains, profuse sweating, and other symptoms after drinking the tainted water.

In the most famous case of backflow, ninety players and coaches of a college football team mysteriously

Continued on page 3



FS Engineering
1600 Central Avenue NE
East Grand Forks, MN 56721-0385

Phone: 218-773-1185
Toll-Free: 1-800-450-1185
Fax: 218-773-3348
Email: fsmail@fs-mn.com

Direct Lines:

- Greg Boppre: 773-5627
- Brad Bail: 773-5621
- Steve Emery: 773-5626
- Jaroslav Solc: 773-5631
- Tom Stenseth: 773-5623
- Randy Iverson: 773-5624
- Mark Anderson: 773-5629
- Marilyn Bren: 773-5622
- Kellie Rygg: 773-5620
- Pat Krug: 773-5625
- Travis Suedel: 773-5628

www.fs-mn.com

Inside this issue:

Behind the Scenes: Pat Krug's Mission Trip to Costa Rica	2
Brad Bail Judges Bridge Competition	3
President's Message: Surviving Another Flood and Marilyn Retires!	4

Safe Routes . . . Continued from page 1

at the Hartsville Coulee crossing at Bygland Road," explained Jaroslav Solc, FS Engineering's Design Engineer. "There are pretty steep slopes there and we had to extend the culvert and include a lot of fill to accommodate the sidewalk, which added cost to the contractor's bids."

Because the numbers were so much higher than the Safe Routes to School grant that the city had been awarded, East Grand Forks city officials asked FS Engineering if they could figure out a way to bring the project down in cost.

Solc contacted the Safe Routes to School State Coordinator and proposed a slightly

more narrow shoulder along the Hartsville Coulee crossing to allow the sidewalk without requiring such extensive work to the culvert.

"Our Engineering Technician Mark Anderson actually did a lot of work figuring out the grading across the coulee to make sure we had enough room to fit the sidewalk without extending the culvert," noted Solc.

The Safe Routes State Coordinator agreed with the new design, the plans were approved by MnDOT and the project was bid again in the spring of 2011.

This time, bids were much closer to the grant award amount and Higher Ground, a new contractor in East Grand Forks, was awarded the project for its bid of about \$171,000.

"He has from June 6 until August 19 to complete the work," noted Solc, "since we want the project done in time for the start of school in the fall."

FS Engineering is also working on a Safe Routes to School project for the City of Warroad. That smaller project will be bid in May and should be under construction this summer as well. ♦

Behind the Scenes at FS: Pat Krug's Trip to Costa Rica

If FS Engineering's Survey Manager Pat Krug looks happier than usual, it's because he has recently returned from his 7th Mission Trip - this one to Costa Rica. Traveling with eight other members of the Cottonwood Community Church, Krug spent 8 days in the town of Guapiles, Costa Rica in March. The group did a variety of service projects while in the area.

"First, we worked on a home for a family that is quite poor and couldn't afford to do maintenance on their house," Krug reports. "We fixed things up, painted the home because it had never been painted, cleaned up the yard so the kids could play in it, and helped them put up a fence."

The next day the group visited an orphanage that had 12 children - six

infants and six kids under the age of five. The children came from drug addicted parents who couldn't care for them anymore. "They were well cared for

and well fed," said Krug, "but the staff wouldn't let us hold them because then they get used to it and want to be held more and there isn't enough staff to hold them. We did get to hold and feed the babies, though," he says with a smile.

Because there had been construction near the playground, the children hadn't been outside to play for 2 to 3 weeks because the staff was worried they would get hurt. So Krug's group took the children to the playground and supervised them while they played.

The group also went on a tour of a banana plantation, pineapple fields, and a farm with cows to better understand the culture of the area.

And although seven mission trips seems unusual, it's definitely not the last one. In fact, Krug has been asked to head up all Central American Missions for Cottonwood Community Church and he looks forward to



Above: Pat Krug (far right back row) and members of the Cottonwood Community church stand with the Costa Rican farmer and his family outside their newly painted home. Below: The house before the project started. Far left: Pat enjoys the beach on the group's one day off.



going on many more. "Mission trips are the most spiritually-fulfilling thing I've ever done," he explains. ♦

Bail Serves As Judge in Steel Bridge Competition

FS Engineering's own Brad Bail served as a judge for the 2011 Student Steel Bridge Competition, held at the University of North Dakota on March 18-19.

Student teams from nine universities across the Midwest participated in the competition, which was held in the Hyslop Sports Center. Students displayed their bridge plans and posters and then competed for first place by putting their bridge together piece by piece as quickly as possible. "That was our role as judges," explained Bail, "to watch them as they assembled the bridge and dock points if they made mistakes." For example, lines on the floor represented where water and earth would be in a real bridge construction project and team members had to know where they could step. "And if they drop anything during the process, they lose points as well, since there are supposedly barges in the water and other contractors around," notes Bail. The bridges were

then loaded with weights to determine their structural integrity.

The mission of the ASCE-AISC Student Steel Bridge Competition is to supplement the education of civil engineering students with a comprehensive, student-driven project experience from conception and design through fabrication, erection, and testing. The competition increases awareness of real-world engineering issues such as special constraints, material properties, strength, serviceability, fabrication and erection processes, safety, esthetics and cost. The team from Lakehead University in Thunder Bay, Ontario, Canada won the competition, assembling their bridge in only 6 minutes and 56 seconds.

"They didn't have this when I was in college," remembers Bail. "We made concrete canoes and toboggans, but this is a lot more fun!" ♦



Above: The UND team stands with their completed bridge. Below: One of the other teams loads their constructed bridge with weights.



Cross-Contamination . . . Continued from page 1

came down with Hepatitis A at the same time. It took nine months for officials to determine that firefighters battling a severe blaze in a nearby town lowered the water pressure at the practice field so much that contaminated water was able to seep into the water system through the field's irrigation system.

In fact, there have been so many instances of illness and sometimes death from cross-connection contamination, backsiphonage, and backpressure backflow, that the EPA has concluded these represent a significant public health risk. States are responsible for the enforcement of EPA standards regarding safe drinking water and this includes the supervision of public water supply systems.

In order to protect their residents' water supply, many states and communities have adopted cross-connection control

programs. These administer and enforce guidelines to protect the water supply in both the city's main distribution system and within buildings. There are two key components of a cross-connection prevention program:

- 1.) educating the public and water users about these risks and their role in preventing them, and
- 2.) having knowledgeable inspectors review the water distribution system in your community and install appropriate devices, where necessary, to prevent back flow and protect the integrity of the system.

Training employees and administering a cross-connection program can be a big expense for many communities. Fortunately, FS Engineering now offers this service to its clients.

"It became apparent that this was a growing concern in our communities," explained Greg Boppre, FS Engineering's President, "especially in agricultural areas where there is a significant danger of hazardous chemicals getting back into the water supply."

FS Engineering now has two professional civil engineers on staff that are trained in cross-connection contamination prevention and have extensive experience in designing safe water distribution systems.

"We can work with communities and tailor a program based on their needs," noted Boppre. "Whether that be just an evaluation of the water distribution system, a public information campaign for your users, or identifying and handling the biggest threats to the system's integrity. It really depends on what the community wants and needs." ♦

