



RISING WATERS: BATTLING THE RED RIVER TO PROVIDE FLOOD PROTECTION

By Donna Campbell



Photo courtesy of Wanzek Construction

The Red River is one of the few rivers in the United States that flows north into Canada. The basin flood plain lies in a glacial lakebed and is relatively flat with a decreasing slope. Because of the flat basin, the shallow river channel, and the northerly flow, the timing of spring thaw and snowmelt can greatly affect flooding. Snow and ice in the headwaters of the Red River begin to melt first, while areas downstream remain mostly frozen. The different melting schedules can cause ice jams to form when the thawed water rushes toward the still-frozen river in the northern valley. When the conditions are right, the flooding in the Red River Valley can be devastating.

FLOOD PREPARATION

The cities along the Red River know the unpredictability of flooding and have taken steps to control the rising waters from destroying homes and businesses, especially hospitals and other facilities, such as the VA Medical Center (VAMC) in Fargo, North Dakota. Located on Elm Street approximately 150 to 200 yards from the bank of the Red River, the VAMC sought help from the U.S. Army Corps of Engineers from the St. Paul District in Minnesota.

With monetary support from the U.S. Department of Veterans Affairs, Rising Sun Construction was awarded the \$4.27-million contract to construct a new flood protection system alongside the center, including the replacement of both the existing levee and the pump station.

Specializing in underground sewer, water, and storm sewer utility construction, Rising Sun Construction focused on its area of expertise and tackled the pump station and sewer line. Rising Sun subcontracted the construction of the floodwall to Wanzek Construction, a family-owned, heavy and industrial construction company.



PUMPING STORM WATER

Rising Sun's biggest challenge during the construction of the new floodwall centered on removing the stormwater on the inside of the wall once the old pump station was removed. The new sewer line was installed prior to dismantling the pump station. This allowed the use of manual pumps to direct the storm water into the new sewer line while construction continued and the new pump was installed. The new system included two 3,500-gpm (gallon per minute) submersible pumps provided by KSB.

FOR more
INFORMATION



For more information, please call Arnold Jelinek, director of business development for Wanzek Construction, at 701.893.3637, e-mail ajelinek@wanzek.com, or visit www.wanzek.com. To reach Rising Sun Construction, please contact Scott Satermo at 701.237.5203 or e-mail scott@risingsunconst.com.

STABILIZING THE RIVER BANK

Rising Sun rip-rapped the river next to the wall to stabilize the bank and reduce erosion. Various sizes of quarried, angular stone were lined up the river bank, dissipating the energy of the flowing water. The interlocking rock system was an integral part of the overall flood protection system.

THE GREAT WALL

Wanzek Construction tackled the removal of 1,000 feet of sheet piling and 17,000 cubic yards of existing levee. Led by Project Manager Jason Ekblad, the Wanzek crew formed thousands of yards of concrete and set a million pounds of rebar despite the usual weather issues of working in a northern climate. The floodwall was constructed to be 22 feet high by 1,100 feet long. The footings for the wall were constructed to be 30 feet wide and 3 feet thick.

GANG FORM SYSTEM

Wanzek started pouring concrete in August 2007 and finished the wall pours by mid-November of the same year. The crew would leapfrog each pour to stay on schedule. The form system used was a NOE gang form system. Wanzek would tie a section of the wall and pour the concrete—all in the same day.

"We kept 40-foot sections of the form system intact and swung them into place from wall section to wall section," says Ekblad. "This allowed us to be very productive."

The crane of choice for the construction of the floodwall was the 100-ton Link-Belt LS-338. The crawler crane was instrumental in swinging the gang form from section to section to continue the pour. The crane was also used to place the rebar. The project used 6,500 cubic yards of concrete, which was made using a 4,500-psi (pounds per square inch) design mix.

"The Link-Belt crane is a trusty piece of equipment," says Ekblad.

CURING HEAT

For the concrete to cure, a Thawzall™ system was used. The Thawzall™ system consisted of a unit using a boiler system to heat a biodegradable, environmentally safe propylene glycol mixture to a certain temperature. The mixture would circulate through industrial hydronic hoses tied to the forms to administer the heat for the curing process. The forms would also be covered with blankets to

diminish the heat loss and aid in the time the concrete took to cure. This system was extremely advantageous to keep on schedule during the fall and winter months when temperatures could dip below zero.

DEALING WITH GROUND WATER

According to Ekblad, dealing with the ground water proved challenging. The ground water sat 2 inches above the footing. The most effective method to eliminate the seeping ground water was to pour a mud mat or slab. This consisted of a lean concrete mix poured to seal the water from seeping through to the surface. Once the mud slab was poured, a stable surface was created to tie rebar and form, and pour the footings.

MAINTAINING FLOOD PROTECTION

Building the floodwall next to the Red River during the spring thaw meant maintaining flood protection during the construction. This meant that the construction of the wall could only be completed in 360-foot increments. The VA Medical Center remained open

during construction and relied heavily on the quality of work by the Wanzek and Rising Sun crews to keep the flood waters and ground water from the facility.

"Both crews did a fantastic job of handling traffic control of the construction vehicles and minimizing noise," says Peggy Wheelden, director of public relations for the Fargo VA Medical Center. "The patients' quality of care was not diminished by the construction taking place just outside our back door. We are extremely happy that the floodwall is now in place."

FINISHING THE JOB

According to Scott Satermo, president of Rising Sun Construction, as of the end of May, 98 percent of all the work by major subcontractors is complete, and the cap is being put on the wall.

"Being a veteran myself, I am very pleased that Rising Sun and Wanzek could work together to provide flood protection for the VA Medical Center," says Satermo. "Those who have served our country well deserve medical care without the fear of rising water." ♦

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