January 05, 2015

Tour of Chicago Fastener

By Vern Mesler

"There, turn right," Patrick Turcotte said, pointing ahead to a large sign: *Walnut Lane, Industrial Business Park*. Walnut Lane runs between a large plowed field and one-storey industrial buildings. We were looking for Chicago Fastener, having left Lansing, Michigan, early on a Thursday morning to make the three and half hour drive to Mokena, Illinois, to meet with Cherry Vujevich (voy-a-vich), president of the company. Turcotte, a Lansing Community College colleague of mine, and I had arranged to tour the plant and film the manufacturing of rivets that were being used in the Longfellow Bridge rehabilitation project in Boston, Massachusetts.

Walnut Lane was paved but rutted, and it required careful navigation. Several small industrial plants were located along one side of the road. Expecting to see a prominent sign for the Chicago Fastener office, I drove past the simple white door that was the company's office. Stopping at a building nearby with a prominent business sign, I asked the receptionist for directions. She led us outside and pointed down the road toward the white door: Chicago Fastener.

Above the white door there was indeed a sign, and it led us to the office lobby. A large Christmas tree sat near the entrance, and Christmas lights framed a small sliding glass receptionist window. Beside the door leading to an office was a handwritten sign: "Watch for the kitten!" The word "kitten" had been crossed out and replaced with "cat." Within a few minutes the receptionist's window opened and we were asked if we could be helped. "We're here to meet Cherry." The sliding glass widow closed and soon the door opened and Vujevich led us into the main office. "You're early," she said. I'm always ten or fifteen minutes early for any meeting or appointment and didn't think too much about being slightly early. I noticed the office staff smiling, and Vujevich said "You must have forgotten about the time change, the crew is about ready to go to lunch." Time change, now we're an hour and fifteen minutes early. Vujevich and her office staff were very sympathetic, and Vujevich was willing to accommodate us Michigan folks unaware of Illinois time. But we decided to take a break to find a coffee shop and explore the village of Mokena, and then return on Illinois time.

When we returned to Chicago Fastener, Vujevich led us to her office and along the way the "cat" extended a welcome. Trade papers, books and prints were stacked on mismatched office furniture surrounding Vujevich's desk, and atop the desk nestled among her papers were examples of Chicago Fastener's main product: bolts. Vujevich gave us a brief history of the company that she and her husband started, and which she took over as president several years ago while her husband pursued other business interests.

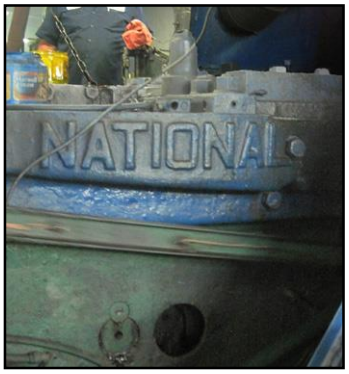
Vujevich was very accommodating in providing information, especially the research she did in preparing for the work of making rivets for the Longfellow Bridge project. The American Society for Testing and Materials (ASTM) standard specification for rivets, A502 Gr 2, was selected for the Longfellow Bridge shop- driven rivets. My objective for visiting Chicago Fastener was to see the rivets made and find out what was involved in producing the rivets. These rivets are not stocked items, and few bolt and rivet manufacturers are going to produce them without a large quantity order. It's estimated that the Longfellow Bridge rehabilitation project will require 150,000 rivets. Chicago Fastener manufactures the rivets from steel coils rolled and processed by Charter Steel to the required AISI 1524 specifications. *"Charter Steel's state-of-the-art processing plants clean, coat, anneal and draw steel to a customer's specifications."*

It was time to tour the shop, and from behind a door at the far end of the lobby could be heard the rhythmic sound of machines forming cold steel into bolt and rivet shapes. A machine larger than a Ford F250 pickup truck pulls ¾" round stock from a coil, shears the stock into segments, and through a progression of dies shapes the rivets, the machine working with the rhythmic motion of an old pocket watch flywheel. Rivets hot from being cold-forged drop from a conveyer belt into a sampling container which sits atop a large steel gondola. After the press operator inspects a sample of rivets from the container for defects, and if he finds none, he dumps the sampling container of rivets into the steel gondola.









Across the side of the machine in large letters raised in relief was the word NATIONAL. When I asked about the machine, the press operator told me it was built in Tiffin, Ohio, around 1946. National Machinery is celebrating 140 years in business, except for a brief closure in 2002, renamed at that time National Machinery LLC. The company continues to build machinery and is currently hiring. On Saturday, January 10th, 8 – 11 am, National Machinery LLC will host an on-site Career Expo for a number of shop positions.

One final process is required for the Longfellow Bridge rivets before they are shipped to two fabricators on the east coast, Atlantic Bridge & Engineering and Cianbro Fabrication & Coating Corp: stress relieving. Chicago Fastener ships the rivets to South Holland Metal Finishing Co. Inc. for this final process. Stress relieving as defined in the FHWA publication *Steel Bridge Design Handbook: Bridge Steels and Their Mechanical Properties (Publication No. FHWA-IF-12-052 - Vol. 1 November 2012):* "Stress relieving involves heating to temperatures between 1,000 and 1,700°F, holding at that temperature for sufficient time to allow relaxation of stress, followed by very slow cooling. This process is not intended to alter microstructure or mechanical properties." Not intended to alter microstructure or mechanical properties, this is important to remember when comparing stress relieving with annealing. Annealing is a heat treatment whose purpose is to alter the physical or mechanical properties or to produce a defined structure.

We finished our shop tour, and Vujevich provided us with plenty of documentation related to the manufacturing of the Longfellow Bridge rivets. I appreciate her willingness to take time out of her schedule to accommodate us. Vujevich will be presenting at the 2015 Iron & Steel Preservation workshop on March 9th, and we look forward to her presentation. I'm not sure if the "cat" bid us farewell, but I'm sure that being a friendly cat it probably didn't miss an opportunity to do so.

Vern Mesler Cherry Vujevich Patrick Turcotte