Project Problems Created by the Gronauer Lock

Jon A. Studler, P.E.
Project Engineer
Fort Wayne District
Indiana Department of Transportation

The lock was discovered late Tuesday, on June 4, 1991. On Wednesday all work on US 24 east of SR 469 bridge was suspended. The contractor was already running behind schedule on US 24. With the discovery of the lock there was no way that he could recover.

On the following Thursday, Ball State University archeologists arrived to see if there were any remains of the lock keeper's house. At this time they did not investigate the lock.

In Figure 1, the location of the lock keeper's house and the lock with respect to the new proposed pavement is shown. The old pavement was two 11 foot lanes that followed the center line shown.

As can be seen, it was very questionable, what could be constructed east of SR 469 bridge. Not only was US 24 affected, work on the northeast ramp and loop was in question.

It was the middle of July before Ball State excavated any test holes at the lock site.

Being a project engineer I still have trouble realizing that 10 or 12 archeologists excavating one cubic yard of soil in a day, is considered a good day of work.

Val Straumin, FHWA, Dennis Kuckler, INDOT Operations, and Jim Juricic, INDOT progress development kept things moving throughout this ordeal.

Everything concerning the lock had to be cleared through several different agencies of the National Park Service. At the project, the delays seemed long and endless.

But looking back, these guys did one heck of a job coordinating the archeologists, the different state and federal agencies, and making sure that all the bases were covered.

By the end of August 1991, we knew that clearance for construction at the lock keeper's house site would be forthcoming. The disposition of the lock was still undetermined.

An investigation was begun to determine what could be salvaged of the construction on US 24 east of SR 469.

The top drawing in Figure 2 shows the planned traffic control for Phase I of the contract.

The contractor was running behind schedule. Fortunately, the temporary run around was only constructed to station 60 + 00, just east of the SR 469 bridge.

If the run-around would have been completely constructed, the remains of the lock keeper's house would have been buried under the temporary widening.

In addition, most of the cost of the temporary widening east of SR 469 would have been wasted.
This is shown in the middle drawing of Figure 2, which indicates the location of the lock.

At the end of July, clearance was granted to extend the east bound pavement to station 67 + 60. The contractor elected to construct the concrete eastbound lanes only to station 59 + 25. This work was completed by the middle of August, 1991.

A temporary cross-over was constructed between this pavement and the old existing US 24, between stations 59 + 25 and 66 + 70. Traffic was switched. The traffic pattern remained like this until spring of 1992.

By the end of September, the area restricted around the lock, was reduced to south of US 24, 100 feet east of the lock, 50 feet west of the lock, and the limited access right-of-way on the south. Behind the limited access right-of-way on the south, there was additional temporary right-of-way for the relocation of the canal ditch.

This area was also cleared for construction and was used as a haul road. This allowed the construction of a temporary widening, shown on the bottom of Figure 2.

In front of the lock, the existing 4 foot shoulder on the south side of US 24 was incorporated in the run-around. This additional width was needed to construct the west bound pavement. Special permission had to be granted.

At this time everybody realized that the west bound pavement had to be constructed and traffic switched, before excavation of the north wall of the lock could begin.

A temporary barrier wall with 4 foot high screening on top was placed along the south shoulder of US 24 in front of the lock. This provided a wall of protection, separating the archeologists from the traffic.

The US 24 west bound lanes were then constructed. The northeast ramp and loop was connected to US 24. In several locations, the rumble strips had to be eliminated from the west bound shoulders.

Traffic was switched to west bound lanes on September 8, 1992. The old pavement and temporary widening was removed.

The inside concrete shoulders and the future left lane at Harper Road was completed in the first week of October. The concrete plant was removed from the project.

The lock was not completely exhumed until the middle of November. Construction of the eastbound pavement east of station 59 + 25 was eliminated from the project. This was approximately 1/8 of the concrete pavement awarded in the contract.

US 24 will remain a two-way highway on the west bound lanes until a new contract is let. This contract modification was conceived and designed completely on the project, along with the corresponding change orders.

Not only was the pavement and run-around designed, but the following items had to be addressed:

- Sub-surface drainage and outlets had to be modified;
- Roadway lighting south of US 24 at the lock was eliminated;
- Several pipe structures were modified;
- Construction signing and temporary stripping had to be modified;
- Semi-permanent stripping on US 24 west bound lanes was designed, allowing for a left turn lane at the southwest ramp;
- Sheet signs had been ordered for US 24 as a divided highway. These had to be adjusted for a two-way road;
- The delineator layout on US 24 had to be modified;
- Snow plowable markers were eliminated on US 24;
- A panel sign had to be relocated on temporary wooden posts;
- Locations of rumble strips in the shoulders had to be laid out;
• Harper Road (the county road next to the lock) had to be designed with a temporary connection to US 24;
• Embankment quantities (common, borrow, and “b” borrow) had to be recalculated; and
• Materials ordered by the contractors that could not be used had to be paid for.

Due to the traffic count and US 24 being a two-way road, a traffic signal was added to the contract at the northeast ramp and loop. With the help of the district traffic engineer, this signal was substantially designed on the project.

The contractors filed claims on the lock for lost work and damages. Fortunately, the district construction engineer handled these. That was one headache he won’t forget for a while. Quantities for the change orders had to be completed at the project.

Several change orders created items that dealt strictly with the lock or the archaeological recovery. Some of these items were:
• Barrier wall;
• Screening;
• Pumps;
• Heavy equipment hours to expedite excavation and removal of waste piles;
• Visqueen;
• Special common excavation prices for removing of “b” borrow;
• Mobilization to backfill exhumed Gronauer Lock;
• Special “b” price to backfill exhumed lock; and
• Contour grading in the exhumed lock area.

In conclusion, over 40 meetings were attended by the project engineer or project personnel — either on the project, locally, or in Indianapolis. This does not include telephone conversations.

Due to the lock, 17 change orders were generated, creating 56 new items, adjustments to 48 other items, and an estimated $390,000 increase to the contract.

This does not include the costs of the archeologists, time and wages of local, state, and federal personnel, or the additional cost of completing the east bound pavement.
USR 24 TRAFFIC CONTROL

PLANNED PHASE I TRAFFIC CONTROL
BUILD TEMPORARY RUN AROUND ON NORTH SIDE OF US 24 AND CONSTRUCT US 24 EB LANES

WORK IN PROGRESS ON JUNE 4, 1991

SPECIAL PHASE NEEDED TO CONSTRUCT WB LANES