6/6/07 AIHce Benjamin Franklin Bridge Technical Tour

It was a pleasant morning for a tour of the Delaware River Port Authority’s (DRPA) Benjamin Franklin bridge lead paint/mill-scale removal and repainting project. Connecting Camden, New Jersey with Philadelphia, Pennsylvania, this bridge was constructed in the mid-1920s for a cost of approximately 9 million dollars. Through the years, numerous coats of lead-based paint had built up to a thickness of approximately 50 mills (0.050”) and in 1998, an assessment of the paint condition indicated that the best means of maintaining this structure was to totally remove and replace the existing coating system. The execution of this project required the selected contractor to effectively control numerous risks associated with the project, including the following:

- The removal, containment and disposal of the existing lead-based paint,
- Metal preparation and paint application,
- The monitoring and control of worker as well as environmental lead exposures,
- Scaffolding/platform construction and worker fall protection,
- Regulatory controls and public concern, and
- Adverse weather emergency preparedness.

The project was divided into phases, where the bridge approaches, towers, and center span were considered individual projects. At the current time, the towers, center span and most of the Camden approach have been completely stripped of lead-based paint and subsequently repainted with a urethane protective system. The anticipated cost for this project will be in the neighborhood of 90 million dollars. Following is a compellation of photos that were taken as part of the technical tour with a brief explanation to go along with each photo:

This is where the tour began at the Philadelphia approach. One of the last phases of the project, this approach is in close proximity to residential as well as church areas. The low clearance of the approach girders will require traffic-based consideration when the containment system is installed.
Our tour guide, Dan Adley, explaining the various challenges (i.e., dust/noise/ emission as well as traffic control) that the contractor will face in the Philadelphia approach phase of the process.

A classic example of the existing paint and rust removal cleanup challenge that awaits the contractor on the Philadelphia approach side of the Benjamin Franklin bridge.
This photograph displays the anchorage section of the Philadelphia side which has already been cleaned and repainted. The police jeep as well as periodic patrols of officers on bicycles was an indication of security measures that are currently employed to protect this structure.

The west end of the southern main support cable where it makes a slight downward bend into the Philadelphia anchorage.
An east-facing photo as the tour approached the west tower. The boxed beam as well as the lattice of girders on the left side display the smooth coat of new paint that was progressively tinted to a lighter shade to account for the time that it is taking to complete the successive phases of this project. The vertical support cables could not be abrasive blasted because of the potential that exists to fray and thus weaken the individual strand of wire.
This photograph displays the west tower. It took approximately four months to erect the scaffolding for a tower and one month to perform the paint/mill scale removal and repainting process. Of concern to the DRPA was the amount of wind-loading that the fully enclosed scaffolding structure around the towers presented to the bridge. Therefore specifications were included whereby the contractor had to be able to remove the protective covering of the scaffolding with a certain period of time (approximately two days) in the event of an impending hurricane. This emergency plan did need to be enacted when hurricane Isabella came through in September or 2003.

Dan led a discussion at the center of the bridge to inform the group that the bridge contains 5 million square feet of surface area and that the contractor typically had eight employees operating abrasive blasting guns at any given time. Notice the protective barrier on the right side of the photo which minimizes the potential for people to climb up on the low-hanging main support cable.
Now don’t think that the structure was twisting as what occurred with the Takoma Narrows bridge! Areas where the paint is slightly darker are touch-up spots and it is predicted that within a year or so, they will blend in with the previously applied paint.
This photo displays the anchorage point of south main support cable as the tour exited the main span of the bridge on the New Jersey side. There was a small section of the approach on this end which still needed to be cleaned and repainted, but this area will be taken care of when the final phase of repainting the anchorages is performed.
From the New Jersey side of the bridge facing west, this photo displays the lower-level train tracks which run on the south (as well as north) side of the bridge. While sporadic vehicular lane closures were allowed to facilitate enclosure construction/maintenance activities during the middle of the day, the periodic flow of train traffic (i.e., every fifteen minutes) could not be interrupted at any time.

The final wrap-up session in the DRPA’s headquarters which included (left to right) Dan Adley, Ken Trimmer and V. Pandy.