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Wind tunnels at NASA Langley being removed by FRP

By Debra Valine

A Facilities Reduction Program project to remove wind tunnels and supporting facilities at NASA's Langley Research Center in Hampton, Va., is making history in more ways than one and is saving NASA a lot of money.

Langley officials approached the U.S. Army Engineering and Support Center, Huntsville's FRP program manager about demolishing four wind tunnels and related structures. The FRP helps government agencies eliminate excess facilities and structures to reduce fixed installation costs and achieve energy savings.

Specific facilities being demolished at Langley are the 30-foot x 60-foot full scale wind tunnel, two 8-foot tunnels that are large concrete structures, co-located next to each other, and the 16-foot transonic wind tunnel complex, which includes 10 wind tunnel support facilities. The 16-foot complex also includes an administration building that will remain in place.

Huntsville Center, NASA Langley, the Corps' Norfolk District, Charter Environmental (prime contractor) and Neuber Environmental (subcontractor) are partners on the project.

Work got under way in January on the \$3.75 million project. The project is ahead of schedule and is expected to be complete in October, ahead of the projected completion date of Dec. 31.

"NASA's original estimate for the full scale wind tunnel and the 16-foot wind tunnel was \$8.4 million," said Thad Stripling, Huntsville's FRP program manager. "We will remove those two tunnels as well as the other two with related structures for \$3.75 million – that's less than half the original estimate."

This project is unusual for the FRP since it's a NASA facility rather than a Department of the Army facility and the wind tunnels have historic significance. Several large components of the full scale tunnel and smaller historic artifacts from the full scale and the 8-foot transonic pressure tunnel were salvaged for display at NASA Langley and other locations, including the Smithsonian. Some of the artifacts, such as 35 fan blades from the 16-foot transonic tunnel, are being incorporated into the structural design of new NASA Langley facilities. A full list of salvaged items is available at http://crgis.ndc.nasa.gov/historic/Salvaged_Artifacts.

"This project is very interesting because of its complexity. These wind tunnels are historical structures that were used to test the capabilities of various aircrafts since before World War II," said project manager Mindy Shelton, Huntsville Center's FRP. "Jeff Shea from Charter and Mark Frank from Neuber are working exceptionally well with NASA personnel to execute this extremely complex project on schedule and within budget."

Between closure and demolition, the Full Scale Wind Tunnel was recently used in the Cameron Diaz movie "The Box".

Demolition of a historic structure requires years of planning and preparation, according to Mary Gainer, Langley's historic preservation officer. Memorandums of Agreement with the Virginia Historic Preservation Office and the Advisory Council on Historic Preservation defined mitigation measures to be undertaken by NASA. These

measures included preparation of Historic American Engineering Records, artifact salvage and curation, a public interpretation website and public display on the NASA Langley campus.

During their lifetimes, the wind tunnels were used for aeronautics research. In more recent years the tunnels were used for space applications such as shuttle. Officials at Langley determined the wind tunnels were no longer needed and decided to remove them to reduce maintenance and associated costs.

“Many studies were done to determine the use of these facilities,” said Cheryl Allen, Construction of Facilities program manager. “These tunnels used older technology and didn’t answer today’s aeronautics research questions.”

Allen said she was attending a NASA facilities meeting when she heard Stripling give a talk on his program’s capabilities.

“At the time we were working with a small local contractor who really didn’t have the level of capability that Thad was presenting,” Allen said. “Thad’s numbers were too good. So after the meeting, I cautiously enquired about removing what we had at Langley. Thad had talked about removing traditional structures such as housing, office buildings, etc., but he was excited about the challenge of the wind tunnels. Removing the wind tunnels was not a capability NASA had. But being part of the same government family, through an MOA we were able to tap into the FRP. It’s been a great find.”

Allen said three of the tunnels are on Air Force property that NASA has used on a no cost lease since around 1917. Once the wind tunnels are removed, the property will be returned to the Air Force.

On the NASA side, the area will be used as a parking lot to support the Integrated Engineering Services Facility.

FRP typically averages recycling 70 percent of the materials from a project. This project included steel and other valuable metals from the power systems and concrete, some of which will be kept on-site to be used as backfill.

“This project will be interesting because our recycling numbers will be off the chart due to the steel and concrete,” said Jeff Shea, Charter’s site superintendent. “We’ll probably exceed our recycling goals.”

“The full scale wind tunnel had a lot of transite asbestos that went to an appropriately permitted landfill and wood that went to a commercial waste landfill,” said Skip Schroeder, a NASA project manager. “We looked for ways to recycle the wood, but because of the way the building was to be demolished, this was not feasible. The 16-foot wind tunnel is almost all steel and very valuable from a recycling prospective.”

FRP removed structures at Langley last year, has done work for NASA in the past at the Michoud Assembly Facility in Louisiana, and has a current project at Goddard Space Flight Center in Maryland.

“Working with the Army Corps and the contractors has been a great experience. Last year the FRP took down 20 of our buildings, mostly old office and storage space,” Allen said. “That project went really smoothly. There has been a bit of creative problem solving with this project when unknown issues surfaced, but it is now going well. I’m already working on statements of work for future projects with FRP.”