



Memorandum

U.S. Department of
Transportation

Office of the Secretary
of Transportation
Office of Inspector General

Subject: **ACTION:** Management Advisory on
Dulles Corridor Metrorail Project
Safety Concerns

Date: October 22, 2009

From: Joseph W. Comé 
Assistant Inspector General for
Surface and Maritime Program Audits

Reply to
Attn. of: JA-40

To: Federal Transit Administrator

A potentially serious safety issue regarding the adequacy of foundations at a segment of the Dulles Corridor Metrorail Project (Dulles Project) remains unresolved nearly a year after we first brought it to the Federal Transit Administration's (FTA) attention.¹ The Dulles Project involves a \$900 million Federal funding commitment and financial support through the American Recovery and Reinvestment Act (ARRA); and we previously reported on the need for FTA to provide vigilant oversight of this challenging, high-profile transit project.² In September 2008, a credible source contacted us asserting that the project sponsor had not conducted sufficient testing on eleven pier foundations and underlying steel piles that were built 30 years ago and will support a portion of the project's new guiderail. After a review of the source's information by our senior engineer advisor, we generated a Hotline complaint to FTA in November 2008. In a June 2009 response to the complaint, FTA reported that the issue had been resolved and asked us to close the Hotline case. However, our investigation of FTA's response found that it was incomplete and a subsequent review by FTA's own project oversight consultant concluded that additional testing of the 30-year old structures is still needed before the project's safety can be certified.

This safety concern, combined with the additional scrutiny required for projects receiving ARRA funding, has prompted us to plan an audit of FTA's oversight of the Dulles Project. Both the President and Congress called on Federal agencies to ensure

¹ OIG Hotline Number 09IH-A35-I-000, November 13, 2008.

² OIG Report Number MH-2007-060, "Baseline Report on Major Project Monitoring of the Dulles Corridor Metrorail Project," July 27, 2007. Our reports can be found on our website: www.oig.dot.gov.

unprecedented transparency, provide enhanced oversight, and prevent imprudent investments of ARRA funds. Accordingly, in advance of finalizing our Dulles Project audit plan, we are issuing this advisory to ensure that FTA promptly addresses our specific safety concern and provides effective oversight. Our conclusions can be found at the end of this advisory.

BACKGROUND

In July 2007, we reported on risk indicators that warranted FTA's close monitoring of the Dulles Project, including the project sponsor's, Metropolitan Washington Airports Authority (MWAA), lack of experience in transit construction. We stressed the need for vigilant oversight to prevent the cost increases, schedule delays, and construction quality problems that we had observed on other projects with similar risk indicators.

In September 2008, we became aware of assertions that insufficient safety testing was done on eleven 30-year old foundations and piles. Further, we learned that MWAA and its contractor, Dulles Transit Partners (DTP—a partnership of Bechtel Infrastructure, Inc. and Washington Group International—now URS Corporation), plan to use these existing foundations and underlying piles to support elevated track that will span part of Interstate 66 and merge with existing Metrorail track in the direction of East Falls Church Station.

In order to certify the safety of using the existing foundations for the new project, it is necessary to confirm the foundations' capacity to bear the required loads and verify their physical integrity. Critical elements necessary to evaluate the safety of the foundations include:

- “as-built” drawings to confirm the exact location and as-built configuration of the foundation structures, such as piles and their concrete caps, and determine how the load is distributed among these structures;
- original pile-driving records from when the foundation piles were driven into the ground, or subsequent pile load tests to confirm the load-bearing capacity; and
- knowledge of the physical condition of the site and the existing foundations to assess whether any damage has occurred over time that could reduce their service life.

In the absence of as-built drawings and other historical data, it is prudent to conduct comprehensive pile load testing and physical observation and measurements.

On November 13, 2008, our Hotline office requested that FTA respond to the assertions of insufficient testing. Specifically, we requested that FTA provide

(1) verification of the plan to use existing pile foundations and actions FTA was taking to ensure the safety of this approach; (2) information on the level of knowledge FTA's project management oversight consultant (PMOC) had of this approach and whether the PMOC opined on its safety; (3) confirmation that MWAA believed this approach would be safe; and (4) confirmation that the Washington Metropolitan Area Transit Authority (WMATA), the eventual operator of the transit extension,³ was aware of this approach and in agreement that it would be safe.

RESULTS OF OUR REVIEW OF FTA'S RESPONSE TO THE HOTLINE COMPLAINT

FTA's June 2009 response to our Hotline complaint was incomplete and inconsistent with subsequent information that FTA provided to us. FTA's response concluded that DTP had conducted adequate physical investigations and verification of the foundations' locations. Relying on assurances from MWAA and DTP, FTA's response provided an inventory of existing pier foundations; planned piles work at each location; the results of physical investigations on three of the existing foundations, and their condition; and the location of the piles as depicted in what FTA's response referred to as "as-built" plans. FTA further stated that DTP's visual inspections of the three foundations did not find any corrosion in the piles, and verified the location of all other piles by test pits. FTA recommended closing the Hotline case with no further action required.

Because FTA did not completely respond to our requests on whether other parties were aware of the planned use of the existing foundations and whether they agreed with the safety of this approach, we requested additional information. On September 16, 2009, FTA provided us with additional documentation including the following:

- A September 14, 2009, PMOC "spot report" on the safety issues involved with the eleven foundations. FTA's PMOC determined that it could not confirm the load capacity of the piles without as-built plans and pile driving data. Further, the PMOC concluded that two 2008 load tests were insufficient to confirm the capacity of all the piles and "due diligence" required that pile data analysis testing (PDA) be performed at all locations—not at six locations as the project's contractor proposed. The PMOC also recommended physical corrosion measurements at five specific locations.
- A February 2009 report by a consultant on corrosion and stray current measurements at three foundation locations. The report shows that, although the steel loss experienced over 30 years has not compromised the integrity of the

³ Upon completion of the project, MWAA will turn it over to WMATA. The project will then be operated as part of WMATA's larger Metrorail system.

piles, possible high stray currents from nearby existing Metrorail tracks could corrode the piles and affect their service life, leading to the need for greater maintenance over time. WMATA's eventual acceptance of the existing foundations is contingent on compliance with the design criteria, particularly a demonstration that the foundations meet WMATA's 100-year service life requirement for new structures.

Overall, our review of this engineering documentation showed that the information was inconsistent with FTA's June 2009 response. As a result, FTA and its PMOC did not have assurance that sufficient testing had occurred at the time FTA asked us to close the Hotline complaint. For example, according to the September 2009 documentation, there are no as-built drawings for the existing foundations, as FTA and the project sponsor initially stated.

In conclusion, we agree with the PMOC's recommendation for additional testing and measurements. The lack of as-built plans and pile driving records, and the fact that only two pile load tests were done, underscore the need for additional testing to confirm the location and load capacity of all the foundations that the contractor plans to use in the Dulles Project. Also, implementing the PMOC's recommendations is necessary to resolve WMATA's concerns about the service life of the foundations.

Further, we are concerned that the PMOC appeared to focus attention on these issues only after we raised questions about FTA's response to the Hotline complaint. We are also aware that FTA recently informed MWAA of the PMOC's recommendations and requested a response as to how the safety concerns will be addressed. However, given the seriousness of the issues raised in this management advisory and to mitigate any potential safety risks, FTA should conduct a review of its PMOC's performance to assess whether it is ensuring adequate oversight coverage of the project. FTA should also develop a plan outlining how FTA will ensure that sufficient testing of the existing foundations will take place before additional construction is undertaken at the locations in question. Finally, FTA should outline any additional steps FTA plans to take to enhance future oversight of the Dulles Project.

We request a written response detailing any actions FTA plans to take with regard to this potential safety issue within 4 weeks of the date of this memorandum. We will consider actions taken as a result of this management advisory as part of our planned audit of FTA's Dulles Project oversight, including cost, schedule, project management, financing, safety, and interagency coordination issues. We will contact your audit liaison before we begin our audit.

If you have any questions concerning this memorandum, please call me at (202) 366-5630.

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