



PROJECT PROFILE

# Whitehead Residence at FDR Drive

Vibration Monitoring and Mitigation Study | New York, NY



**CLIENT**

New York State Department of Transportation

**BACKGROUND**

FDR Drive is a two-level below-ground expressway alongside the East River in Manhattan. FDR Drive is covered by a twenty-seven-inch-thick concrete slab "green" roof between Fifty-sixth and Sixty-third Streets. It supports public parks, landscaped grounds, and residential structures. The Whitehead residence is located in this area.

Following rehabilitative services to FDR Drive, Mr. Whitehead, a resident of the area, complained of disturbing vibrations at his home. WJE had previously performed vibration measurements before and after retrofits were installed that were intended to mitigate traffic vibrations. Those measurements indicated that the mitigation efforts were successful in reducing the vibrations in 2007. Thus, the New York State Department of Transportation again retained WJE to perform post vibration analysis at the Whitehead residence.

**SOLUTION**

The newly rehabilitated FDR Drive involved relocation of certain steel framing and elimination of concrete encasement, such that the structure weight was reduced by 50 percent. Vibration magnitudes were 0.01 to 0.02 ips prior to reconstruction. After the roadway was reopened to traffic, vibration levels were measured and were then in the range of 0.05 to 0.07 ips, about four times greater than before.

A continuous vibration monitor program was specified for the Whitehead residence to monitor ambient vibrations. WJE completed all field measurements and analyses and recommended mitigation strategies to alleviate objectionable vibrations from the Whitehead residence as well as other residences nearby.

