WJE

3407 Forbes Avenue Apartments

Pre-Construction Survey and Vibration Monitoring | Pittsburgh, PA

CLIENT

Rycon Construction

BACKGROUND

Demolition was planned for multiple structures within the footprint of a new apartment building. Two buildings adjacent to the new structure were to remain— an existing apartment building to the west and an office building to the east. The new apartment building is to be supported on drilled caissons. Various parties had expressed concern regarding potential construction-related vibrations affecting the adjacent properties that may result from drilling or demolition activities during construction.

The construction team wished to document the condition of the existing buildings surrounding the construction site that could be subjected to vibrations or earth movement. WJE was engaged to perform a pre-construction survey and vibration monitoring of the existing structures during construction of the new apartment building.

SOLUTION

WJE performed a visual survey of two adjacent buildings to remain and adjoining pavement surfaces before construction began. The survey was performed from grade level and included documenting current deterioration and distress—such as cracks, spalls, and deteriorated mortar joints—through field notes and photographs. The results were consolidated into a preconstruction survey report.

WJE installed four seismographs to continuously collect vibration data. All equipment was installed in the basement levels of the buildings to monitor ambient vibrations prior to construction and vibrations during construction of the building.

The seismographs were programmed to capture waveform events if the vibration amplitudes exceeded a peak particle velocity greater than eighty percent of the specified project limit for the particular monitoring location. Vibration monitoring reports were issued on a weekly basis and summarized the vibration amplitudes and associated frequencies measured throughout the week in the form of peak particle velocity vs. frequency plots, as well as peak amplitude histogram plots for each monitor location.

WJE | ENGINEERS
ARCHITECTS
MATERIALS SCIENTISTS