

# **GRIGG & DAVIS ENGINEERS, P.C.**

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March 12, 2010

Community Board 8 Land Use Committee  
Charles Moerdler, Chairman  
5676 Riverdale Avenue, Suite 100  
Bronx, NY 10471-2194

Re: Pre-Construction Surveys for existing Buildings and Retaining Wall, Periodic Monitoring of Retaining Wall Stability during construction, and Post-Construction Surveys for existing Buildings along Cannon Place – Bronx, NY

Dear Mr. Moerdler:

The Fort Independence Park Neighborhood Association has retained Grigg & Davis Engineers, P.C. to provide them with Professional Engineer's recommendations for the protection of their private property and the dry-laid rubble stone retaining wall along the west side of Cannon Place during the proposed construction of a new Building between Cannon Place and Fort Independence Street.

On March 5, 2010 I visited the Site and observed the following:

1. The retaining wall is on the west side of Cannon Place and is constructed of rubble stone without mortar (dry-laid). The height of the retaining wall varies and has a maximum height of approximately 20'-0". The top of the retaining wall is approximately 7'-0" away from the west curb of Cannon Place. See Photograph 1. The face of the retaining wall has several areas where the rubble stone has shifted outward and is bowing. An approximately 20'-0" long section of the retaining wall has been replaced with a poured concrete retaining wall. See Photographs 2 and 3. The construction joints at each end of the poured concrete section of retaining wall indicate that the retaining wall has continued to move since the poured concrete section was installed. Photograph 4 is the southern construction joint and Photograph 5 is the northern construction joint.
2. The concrete sidewalk at the south end of the retaining wall is in very poor condition due to settlement. See Photograph 6. This settlement is being caused by the loss of the fine soil particles through the retaining wall due to ground water movement. In Photograph 2 the light brown color on the face of the retaining wall is the fine soil particles being washed out.

The concrete sidewalk at the middle of the retaining wall has also settled and is uneven. See Photograph 7. This movement is the result of the retaining wall shifting which allows the soil behind the retaining wall to settle as the volume of soil redistributes itself.

The concrete sidewalk at the north end of the retaining wall has negligible settlement. See Photograph 1.

3. One section of concrete curb along the west side of Cannon Place at the middle of the retaining wall has shifted west approximately 2". See Photograph 8. This movement is the result of the retaining wall shifting and the volume of soil behind the retaining wall redistributing itself.
4. A section of the asphalt pavement adjacent to the shifted concrete curb is breaking up. See Photograph 9. This breaking up is the result of the retaining wall shifting and the volume of soil behind the retaining wall redistributing itself.
5. The Site of the proposed new Building is the side of a hill with a rock outcrop along Fort Independence Street.

A dry-laid rubble stone retaining wall is inherently unstable given that the stones are not mortared together to create a monolithic wall. A dry-laid rubble stone wall is also very susceptible to movement caused by freeze-thaw cycles as the water within the joints repeatedly expands with each freeze cycle and pushes the individual stones. A dry-laid rubble stone wall is also very susceptible to movement caused by vibration given that the stones are not bonded together with mortar.

The dry-laid rubble stone wall on the west side of Cannon Place is continuously shifting as indicated by the conditions discussed above. Given that some type of rock excavation will be required to install the foundation of the proposed new Building the probability of damage to the adjacent private property and the dry-laid rubble stone retaining wall caused by vibrations during construction is very high. In order to protect the Public and Private Property Owners from the loss that would occur should another section of this retaining wall fail the City of New York needs to implement the following safeguards.

- A. Prior to construction beginning the location of the surface of the retaining wall needs to be surveyed at 10' intervals along the entire length of retaining wall.
- B. Also prior to construction beginning all existing Buildings adjacent to the retaining wall shall have a Pre-Construction survey performed to thoroughly document the existing conditions.
- C. While the foundation of the proposed new Building is being constructed, including excavation, the location of the surface of the retaining wall needs to be monitored on a weekly basis. If the retaining wall begins to shift the construction shall be halted until the retaining wall is stabilized. When construction restarts the retaining wall monitoring shall recommence. This cycle shall be repeated as many times as required.

- D. After all the foundation work is completed, including backfilling, the frequency of the retaining wall monitoring shall be reduced to every other week. If the retaining wall begins to shift the construction shall be halted until the retaining wall is stabilized. When construction restarts the retaining wall monitoring shall recommence. This cycle shall be repeated as many times as required.
- E. No construction equipment or construction materials delivery trucks shall be allowed to drive by the retaining wall on Cannon Place.
- F. After construction is completed and before the Certificate of Occupancy for the new Building is released all existing Buildings that had a Pre-Construction survey shall be resurveyed. If no damage is found the Building Owner shall sign a Release Form provided by the General Contractor. If new damage is found it shall be repaired by the General Contractor at no cost to the Building Owner. All repair work shall have a one year warrantee. Upon completion of the repair work the Building Owner shall sign a Release Form provided by the Contractor. After all the Release Forms are presented to the Building Dept. the Certificate of Occupancy for the new Building shall be released.

If you have any questions please give me a call at 914-725-5095.

Regards,

*Bond E. Davis III, PE*

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Cc: Fort Independence Park Neighborhood Association  
c/o: Kristin Hart  
3488 Cannon Place  
Bronx, NY 10463



Photograph 1



Photograph 2



Photograph 3



Photograph 4



Photograph 5



Photograph 6



Photograph 7



Photograph 8



Photograph 9