



DEPARTMENT OF BUILDINGS

EXECUTIVE OFFICES
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TECHNICAL
POLICY AND PROCEDURE NOTICE # 10/88

TO: Borough Superintendents

FROM: Irving Polsky, P.E., Executive Engineer *JP*

DATE: June 6, 1988

SUBJECT: Procedures for the Avoidance of Damage to Historic Structures Resulting from Adjacent Construction When Subject to Controlled Inspection by Section 27-724 and for Any Existing Structure Designated by the Commissioner.

BACKGROUND: Approval of the Landmarks Preservation Commission is required before any changes may be made to protected features of any individually designated landmark or properties within historic districts. A listing of these was furnished to each Borough. Building Code Section 27-166 (C26-112.4) serves to protect historic structures by requiring that all lots, buildings and service facilities adjacent to foundation and earthwork areas shall be protected and supported in accordance with the requirements of Building Construction Subchapter 7 (Article) and Building Code Subchapters 11 and 19 (Article). The intent of these procedures is to supplement the latter and require a monitoring program to reduce the likelihood of construction damages to adjacent historic structures and to detect at an early stage the beginnings of damage so that construction procedures can be changed.

It is also intended that these procedures shall be used to safeguard any existing structure in accordance with Section 27-127 (C26-105.1) if deemed necessary by the Commissioner.

DEFINITION: ADJACENT HISTORIC STRUCTURE. A structure which is a designated New York City Landmark or located within an historic district, or listed on the National Register of Historic Places and is contiguous to or within a lateral distance of ninety feet from a lot under development or alteration.

SUPPLEMENTARY PROCEDURES: The architect or engineer designated for Controlled Inspection of Construction Required for or Affecting the Support of Adjacent Properties or Buildings required by Section 27-724 (C26-1112.6) shall institute a monitoring program for adjacent historic structures and for any existing structure designated by the Commissioner. The following supplementary procedures shall be considered and adhered to:

1.0. Subsurface conditions and effects that might influence performance of structures.

Subsurface Conditions	Effect that Might Influence Performance of Structures
1.1. Large obstructions in the fill	Vibrations during excavating and pile driving operations
1.2. Shallow water table	Drawdown of water table and loss of ground during excavation operations
1.3. Previous layers within and under the hardpan stratum	Loss of ground during excavation operations
1.4. Dense nature of hardpan	Vibrations during excavating and pile driving operations
1.5. Boulders	Vibrations during pile driving and/or blasting operations
1.6. Bedrock	Vibrations during pile driving and/or blasting operations

2.0. Construction vehicular traffic and construction equipment movement which might increase existent vibration levels.

3.0. Establishment of a peak particle velocity design criteria during the driving of sheeting or blasting operations.

3.1. The maximum permissible peak particle velocity shall be 0.5 in./sec. (13mm/sec.) with no distance criterion.

3.2. The maximum permissible peak velocity shall be reduced if movements or cracking is detected.

3.3. Maintaining accurate records, including the location of the blast, total explosive weight in the blast, maximum explosive weight per delay (or the explosive weight in each blast hole and the designation of the delay cap used in each hole).

4.0. Establishment of criteria for any temporary retaining wall structure.

4.1. The maximum permissible horizontal and vertical movement of the temporary retaining wall system shall be designed in accordance with generally accepted engineering practice.

5.0. Establishment of movement criteria for the historic building.

5.1. The maximum permissible vertical and horizontal movement shall be $\frac{1}{2}$ in. (6mm.).

6.0. Establishment of criteria for ground water.

6.1. The lowest water level shall be determined by periodic ground **water** monitoring at observation wells, seasonably adjusted **and** designated as the "low datum" prior to the start of excavation operations.

6.2. Limitation on water drawdown shall be considered in the criteria for the retaining system.

7.0. Establishment of a monitoring program.

8.1. A licensed surveyor shall be retained to monitor movements and tilting of the historic buildings and the temporary retaining system.

8.1.1. Settlements of the street and of selected points on the ground are to be monitored.

8.1.2. Survey measurements shall be made a minimum of two times per week.

8.1.3. Optical survey readings shall be taken to an accuracy of ± 0.01 ft. (3mm.).

8.2. "Telltals" shall be installed across existing cracks and in other sensitive areas to permit changes in crack width to be measured.

8.2.1. A micrometer sensitive to 0.001 in. (0.003mm.) shall be used to monitor crack widths at least once a day.

8.3. Water levels in observation wells are to be monitored at least twice a day for the period that active dewatering is in progress.

8.4. Requirements for seismographic test data. -

8.4.1. Obtain seismographic test data showing the vibration transmission characteristics of the area around the blasting site.

8.4.2. Vibrations from the driving of sheet piles, from excavating and blasting, shall be monitored with a portable seismograph placed adjacent to or within the historic structure closest to the vibration source.

8.5. Requirements for photographs. -

8.5.1. Photographs of the affected historic buildings of sufficient clarity to view the "telltals" shall be taken weekly during construction.

8.5.2. The photographs shall be identified on the back with the building address, direction, date, time and photographer.

9.0. Controlled Inspection Report. -

9.1. Records of the monitoring program shall be retained.

9.2. Controlled inspection reports as to the monitoring program shall be submitted to the department per amendment on B Form 10E within thirty days of completion of the excavation.

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9.2.1. The report shall include a set of photographs taken pursuant to Item 8.8.

REFERENCES: "The Avoidance of Damage to Historic Structures Resulting from Adjacent Construction", Melvin I. Esrig and Andrew J. Ciancia, American Society of Civil Engineers, Preprint 81-052; "Effects of Blasting Vibrations on Buildings and People", John F. Wiss, P.E., Civil Engineering-ASCE - July 1968.

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