Special Enforcement Program Excavation Unit

Excavation & Underpinning Practices

Timothy D. Lynch, P.E.

February 19, 2008

Field Checklist for DOB Inspectors

Listed below is schematic checklist

- ☐ Check for CORRECT contractors sign
- ☐ Check for permits posted in conspicuous place
- ☐ Check DOT Street Closure Permits
- ☐ Check for valid set of stamped and sealed drawings
- ☐ Check for work contrary to plans
- ☐ Check for notifying DOB (Rule 52)
- ☐ Check to provide 8’ fence
- ☐ Check for work without permit
- ☐ Check for excavation below 5’ from curb per Rule 52
- ☐ Check for excavations between 5’ and 10’ – Access out of site? Ladder
- ☐ Check for sheeting shoring bracing along street side and rear garden
- ☐ Check for undermining of one story rear extensions – VERY DANGEROUS
- ☐ Failure to Protect Adjoining Structure
- ☐ Check for defective underpinning
- ☐ Check for damage to adjacent buildings
- ☐ Neighbor gets DOB : Circumstances Beyond Control
- ☐ Check for Failure to Safeguard Public and Property
- ☐ Check for shear cut / undermining of adjacent property

NYC Department of Buildings
280 Broadway, New York, NY 10007

Patricia J. Lancaster, FAIA, Commissioner

Special Enforcement Program
Excavation Unit
280 Broadway
New York, NY 10007

Property Address: _____ Boro: _____ Date of Inspection:_____
Inspector: _____Badge #:_____

THE FOLLOWING INFORMATION PERTAINS TO THE STOP WORK ORDER ISSUED AT THIS SITE BY THE SEP EXCAVATION UNIT. ALL CONSTRUCTION SITES WILL RECEIVE A STOP WORK ORDER FROM THIS UNIT IF ANY OF THE FOLLOWING CONDITIONS EXIST:

1. No protection at sides of excavation carried to depth of five (5) feet or greater
2. Inadequate details for support of excavation ("SOE") or foundation work: underpinning, sheeting/shoring/bracing, piling, etc.
3. No TR-1 statements of responsibility on file in BIS for required controlled work
4. No controlled inspector on site during controlled work, as required; or, if present, inadequate controlled inspections are being performed as evidenced by substandard work and lack of conformance to the plans and construction documents
5. No approved plans at the site for SOE and foundation work
6. Performing any construction work not in substantial conformance to approved plans and construction documents
7. Any unsafe condition that endangers workers, public, or adjoining property and structures

The job may be referred to our Engineering Unit if one or more of the above items apply to the site. If referred, an audit will be performed that will include a review of the plans/construction documents, of controlled inspection filings (TR1s), of controlled inspection field logs, and any other applicable documents relating to the site. The engineering audit must be completed and job "released" from Engineering Unit prior to the rescind of the Stop Work Order.

☐ **IF BOX IS CHECKED THE SITE IS BEING REFERRED TO ENGINEERING UNIT**

To expedite the Engineering audit process, please provide the following:

- Copies of DOB approved and perforated architectural, structural, underpinning, shoring drawings; sections and details for all foundations, cellar up to ground floor for the New Building
- Surveyor's site plan and boring logs
- Copies of the DOB approved and perforated TR-1s for all structural, underpinning, shoring, and foundation work, including borings
- Elevations of the adjacent property line structures with their sub-grade layout

For information regarding the Stop Work Order, please call:
Chief Inspector Miguel Padin, Excavation Inspection Unit at (718) 802-4594
Or
Chief Engineer Tim Lynch, PE, Excavation Engineering Unit, at (212) 566-3398
Or
Structural Engineer Delia Shumway, PE, Excavation Engineering Unit, at (212) 566-3529

Checklist for Engineering Audit of U/P and SSB design documents

Underpinning:

- ☐ Plot plan showing all adjoining properties and building heights (number of stories, cellar, etc.)
- ☐ The material of adjoining foundation should be indicated (rubble stone, reinforced concrete, CMU, etc)
- ☐ Plan view showing location of all underpinning
- ☐ Sections through underpinning showing both sides of lot line (existing foundation and NB foundation), one section for each condition
- ☐ Sections showing the actual elevation of bottom of NB footing (or bottom of general excavation) and bottom of adjoining footings, allowing us to establish the height of the pins themselves
- ☐ Details showing box pits, including timber dimensions
- ☐ Details showing steel reinforcement of concrete pins, if required. Usually provided on multi-lift underpinning
- ☐ Details showing pin dimensions
- ☐ Elevation showing sequence of pin excavation. Minimum distance between simultaneous pin excavation must be shown and sequencing notes provided
- ☐ If required, bracing of pin must be shown in plan and elevation
- ☐ Dry pack and steel wedging detail must be shown
- ☐ All elements must be dimensioned (rebar, tie backs, lagging boards, structural steel, etc).
- ☐ Sections must be provided showing isolated column footings or chimney locations within wall (these require special underpinning techniques and may require direct shoring of structural member before underpinning).
- ☐ Multi-ring underpinning must be clearly indicated. Bracing of upper pins during installation of lower pins should be shown, along with dry pack, wedging, or doweling details (horizontal and vertical) between sections.
- ☐ Bond breaker shown in sections between adjacent building foundation/underpinning and NB foundation wall.

Sheeting, Shoring, Bracing:

- ☐ Plot plan must show location of all shoring, dimensioned from property line, including spacing
- ☐ Sections and elevations must show elevation of toe of sheeting or soldier pile and elevation of top of grade being supported
- ☐ Dimensions indicating what length of pile out of the ground, and length embedded. Piles that are less than 1:1.5 will require calculations backing up design.
- ☐ All steel must be dimensioned (raker, whaler, soldier, sheeting, plates, connections, etc).
- ☐ Footing block must be show in plan and section, if required. Connection to footing block must be shown

Excavation Unit Violation Guide

Violations Issued To Professionals

27-157 & DOB Berger Memorandum dated 12/05/86 ("Inadequate Plans")
Architectural/structural plans are not adequate in that plans are not complete and of sufficient clarity to indicate entire nature and extent of proposed excavation, foundation, shoring, underpinning work.

Remedy: Provide revised plans.

27-132 / 27-724 / 27-195
Designated controlled inspector has not adequately performed his inspection duties relating to underpinning, sheeting, shoring, bracing, sheet piling, etc. Note, controlled inspections are only required when underpinning/sheeting/shoring/bracing/sheetpiling are performed at a depth 10 feet or greater from grade, otherwise, the superintendent of construction (semi-controlled inspector) is responsible for this item.

Remedy: Stop all work except to make safe. Notify designated controlled inspector. Provide inspection report by licensed professional engineer or architect for all work subject to controlled inspection heretofore performed.

27-132 / 27-724
Failure to file TR-1 Form (controlled inspector statement of responsibility) prior to the commencement of controlled underpinning, sheeting, shoring, bracing, sheet piling, etc.

Remedy: Stop all work except to make site safe. File TR-1 Form.

27-596
Inadequate structural design in that design computations do not demonstrate conformance with the applicable standards noted in articles four through twelve of subchapter ten of NYC Building Code.

Remedy: Stop all work. Re-design structure to bring it into compliance with articles four through twelve of subchapter ten of NYC Building Code.

List of sources for historic research on existing buildings

ONLINE:

1. **DOB Buildings Information System (BIS)**
   http://www.nyc.gov/html/dob/html/bis/bis.shtml
   Review addresses for NB site and adjacent lots for all certificates of occupancy. This is useful if the NB site under development is vacant, the applicant or developer can review all the addresses on the vacant lot to determine if buildings existed on site previously. Most likely, vacant lots had buildings previously. The C of O's frequently indicate whether basements and cellars existed. This can be useful to determine schematic sub-grade structures, old foundation walls etc.

2. **New York City Open Accessible Space Information System Cooperative (OASIS)**
   http://www.oasisnyc.net/oasismap.htm
   This site maps properties with lot lines, block and lot boundaries and building footprints shown, which is helpful in identifying lot line construction. It will also help identify Landmarked buildings, building Owners, and historic information.

3. **New York Public Library** (Small fee for replication of drawings)
   Sanborn Maps
   Check NYC Public Library 42nd St, Room 119, Cartography Room. Request tax lot maps of NB site at 20 years intervals going back to 1880 to determine series of previous buildings on site. This has to be drawn on vacant lot as reference data.

4. **NYC Department of Buildings Archives** (Min. of 2 days, small fee for dwg. replication)
   Check NYC Dept of Buildings archives for NB site and adjacent construction. DOB records can have old architectural drawings of adjacent construction and old buildings on NB site.

5. **New York Historical Society** (Same day. Small fee for replication of drawings)
   Check NY Historical Society archives for NB site and adjacent buildings. Historical archives can have old architectural drawings of these buildings.

6. **Professional Plan Finder** (Minimum two weeks. Not inexpensive)
   Professional plan finders may locate hard to find building plans when regular sources do not produce results.

FIELD EXPLORATION:

1. **Site Probes** (Minimum two weeks. Not inexpensive.)
   Locate test pits in NB site, center and along property lines. Test pits, in conjunction with interpretation of site from desk research, can assist with concealed conditions.

2. **Site Surveys of Adjacent Buildings**
   With the cooperation of neighboring buildings, walk the properties, most particularly, condition and depth of basements and cellars.

The City of New York

DEPARTMENT OF BUILDINGS

EXECUTIVE OFFICES
60 HUDSON STREET, NEW YORK, NY 10013

CHARLES M. SMITH, Jr., R.A., Commissioner

December 5, 1986

GEORGE E. BERGER, P.E.
Assistant Commissioner
Building Construction

TO: BOROUGH SUPERINTENDENTS

FROM: George E. Berger, P.E.
Assistant Commissioner

SUBJECT: Pre-Survey of Existing Adjoining Foundations and Protection of Adjoining Property (C26-110.2(6)(7) and C26.71.0)

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NOTE: This memorandum supplements Directive #10 of 1969.

Effective immediately, all new building and alternation plans which include new foundations shall contain the following information:

1) A description of existing foundations on the same or adjacent lots which will be affected by the proposed work. The description shall include the elevation, condition, and construction of the foundations.

2) The plot plan shall include the location of all new and existing foundations, (on the same or adjacent lots) affected by the proposed construction. The plans shall also contain a sectional view through the existing and proposed foundations.

For the purposes of the above, existing foundations which are within 4'-0" of the proposed footing shall be presumed to be affected by the construction. Beyond that distance, applicants shall determine if adjacent foundations are affected, based upon the depth of the proposed footings.

If this data determines that underpinning, sheeting or bracing is necessary, details for such work must be submitted prior to approval of any phase of the application. Details must be specifically designed for the site and conditions encountered; standard details, if used, must be appropriately modified and dimensioned.

The controlled inspection amendments (Form 10F) for the above items must be filed for all applications which contain such details, and must be submitted prior to the approval of any application for a partial permit, e.g. excavation work or foundations.

George E. Berger, P.E.
Assistant Commissioner

GEB:rmr

cc: Executive Staff
Professional Engineering
& Architects' Societies

New York Association of
Consulting Engineers
Ms. R. Joan Faherty, C.A.E.
Executive Director