

## Warning Signs

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If any of these issues are encountered an engineer or architect should be notified:

- Overexcavated pits that are greater than 4'-0" wide.
- New cracks open up in adjacent building wall. Doors or windows are jamming.
- Sides of excavations are falling in. (No sheeting/shoring)

## Recommendations/Suggestions

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- Hire a contractor who has experience with underpinning.
- Ask contractor for references of similar underpinning work.
- If contractor cannot provide references, they should not be performing this complex/dangerous job.
- Check with home owners insurance company to verify coverage for foundation related problems.
- Preconstruction survey to document condition of all adjacent properties.
- In an emergency dial 311 to report an unsafe uncondition.
- Perform test pits in order to determine condition and depth of existing foundation.
- References.

The Avoidance of Damage to Historic Structures Resulting from Adjacent Construction: M. Esrig and A.Ciancia ASCE NY NY May 1981

The Philosophy of Underpinning: Clive Richardson. [www.buildingconservation.com](http://www.buildingconservation.com)

NYCDOB TPPN 10/88: Procedures for Avoidance of Damage to Historic Structures wjen Subject to Controlled Inspection 27-724... I.Polsky June 1988.



AN UNDERPINNING HELPER  
FOR  
PRIVATE HOME OWNERS  
&  
THEIR CONTRACTOR

## Introduction

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Lack of proper underpinning is the leading cause of construction problems in New York City. Most often the effects of improper underpinning and excavation are sustained by the adjoining buildings that settle excessively, crack and in extreme cases, it causes partial or total collapse. As a result, public safety is jeopardized. Other consequences include DoB violations, costly business interruption, displacement of families, corrective work and litigation.

**Many of these incidents are preventable.**

The purpose of this pamphlet is to raise public awareness about underpinning, in an attempt to minimize the occurrence of accidents. The pamphlet addresses the need for underpinning, identifies problematic conditions, and provides information about additional resources. Specific situations will require the guidance of qualified engineers or architects.

This publication was prepared by NYC Department of Buildings (DoB), with assistance from The Structural Engineers Association of New York (SEAoNY).



## Definitions

**Excavation** - the removal of earth or the hole resulting from such removal.

**Foundation wall** - wall at the bottom of a building that separates the cellar(s) from the soil outside.

**Footing** - usually a concrete strip or pad that spreads and transmits weight or load from a wall, column or post, directly to the soil below.

**Underpinning** - to provide new support beneath a column or wall, without removing the structure above, in order to enhance its load carrying capacity or to create additional space in newly excavated cellar.

**Shoring/Sheeting/Bracing** - heavy timber or structural steel used for the temporary support of excavation or formwork.

**Ground water** - water in the soil below the level of standing water.

**Water table** - the top surface of ground water.

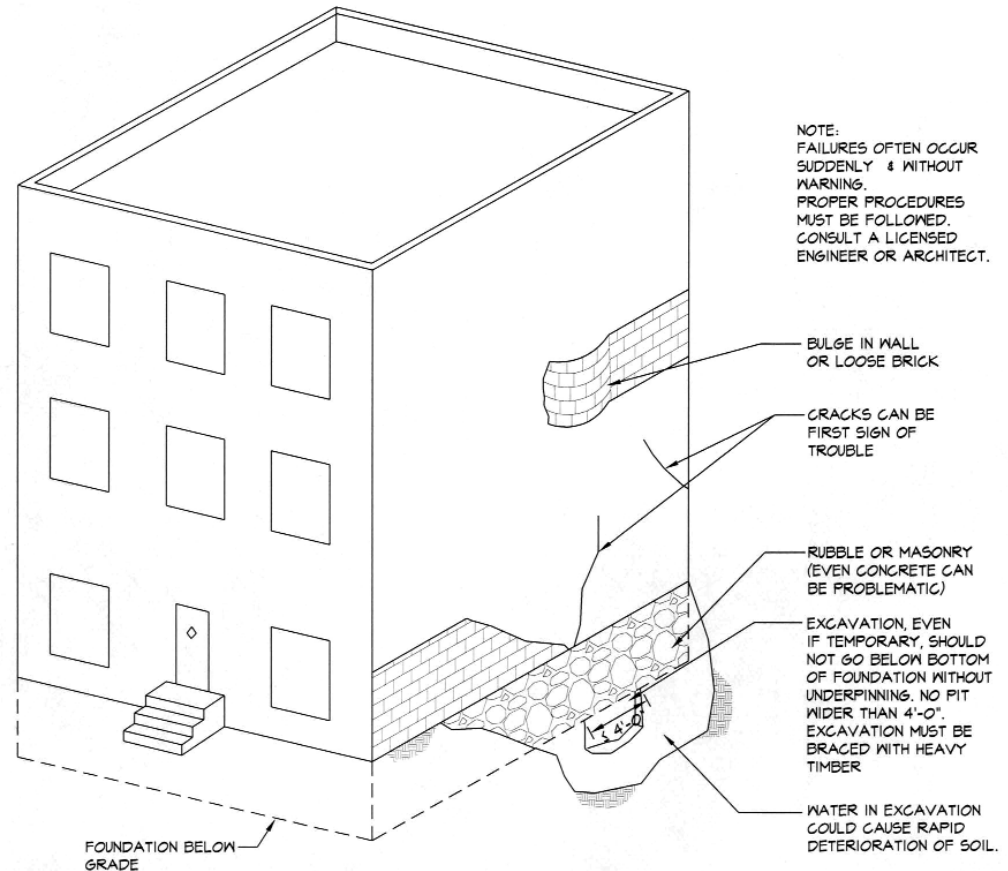
**Controlled Inspections** - inspections mandated by DoB for items that directly impact life safety.

**Test Pit** - a hole dug to investigate the soil or other conditions hidden under the grade.

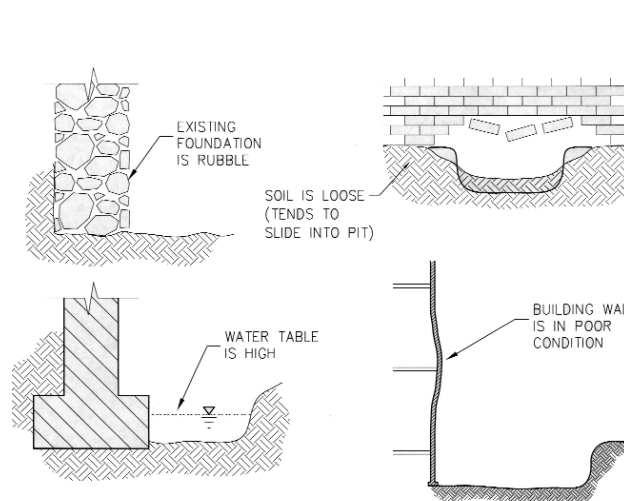
## Important NYC Code Requirements

- Underpinning plans need to be prepared by an architect or engineer. (§27-724)
- Controlled inspections must be performed by, or under the supervision of, a licensed architect or engineer. (§27-132(a))
- The sides of all excavations five feet or greater in depth shall be protected by shoring, bracing or sheeting. (§27-1032(a))
- “Call before you dig”, in order to locate underground utilities. 1-800-272-4480
- NYC Code Webpage: [http://www.nyc.gov/html/dob/html/reference/code\\_printed.shtml](http://www.nyc.gov/html/dob/html/reference/code_printed.shtml)

## Underpinning Issues



## Problematic Conditions



## Underpinning Process

