Understanding Excavation
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Nidal AbiSaab, P.E.
- Graduate of: LAU, JHU
- Grew up in an old stone house
- Enjoy old cars.
- Restoration committee: former church of the pilgrims (Maronite cathedral) in Brooklyn heights.
- Recently restored two artist cottages in Westport, CT.
- Involved with numerous Landmark projects in the city.
Understanding Excavation

The process involved in lowering a cellar or expanding a rear yard

Understanding Excavation

YOURs / Someone else's
Excavation Process

- **Investigation**: What’s under there?
- **Design**: Support of Excavation (SOE)
- **Construction**: Effects of Excavation
- How to protect your building

**INVESTIGATION**
Available Data

- Trace Map - War Office, London
- RA Consultants Project

- Google Earth
THE INVESTIGATION is documented in a geotechnical report that contains collected data and DESIGN recommendations.
DESIGN
Lowering Cellar or Expanding Rear Yard

• Includes desires of the Client and opinions of Architects, Structural Engineers, and Geotechnical Engineers (i.e., how deep, how wide, location of elevator pits, what methods)

• Includes considerations of water elevation, impact on historic buildings, impact on local utilities, etc.

• Neighboring agreements may or may not be finalized in the early stages

• Peer reviews by neighbors’ Professional Engineers often occur in later stages of the project

DESIGN
ENGINEERING OPTIONS

• Underpinning

• Segmental Retaining Wall

• Soil Slope

• Rock Excavation

• Rock Bolting

• Rigid Wall (secant, tangent pile)

• Do Nothing or
DESIGN UNDERPINNING

A B C D E
DESIGN
SEGMENTAL RETAINING WALL

DESIGN
SOIL SLOPE

Step away

Existing footing

Stable soil slope
DESIGN
ROCK EXCAVATION

Saw cut
Line drill

DESIGN
ENGINEERING OPTIONS

- Rigid Wall (secant or tangent pile)
CONSTRUCTION

• Supporting existing buildings: Cross-Lot Bracing, Rakers, Tension Ties, Berms, etc. as determined by Structural Stability Engineer and/or requested by neighbor’s peer review.

• Excavating soil

• Excavating rock

• Waterproofing

• Building formwork and pouring concrete

CONSTRUCTION
Potential Effects of Excavation

• Supporting existing buildings: Cross-Lot Bracing, Rakers, Tension Ties, Berms, etc. as determined by Structural Stability Engineer and/or requested by neighbor’s peer review.
CONSTRUCTION
Potential Effects of Excavation
Excavating Soil or Rock

Movement

Vibration

CONSTRUCTION
Potential Effects of Excavation

Waterproofing
CONSTRUCTION
Potential Effects of Excavation

Building formwork & pouring concrete

Undesired
Desired
Potential to gain space at low construction cost
How to Protect Your Building

• Attorney representation combined with Engineer Peer Review

• Be open to negotiation: Expect some damage and ensure funds to repair are in place. Option to allow work may allow more oversight on your part. Plan on lowering your own slab.

• Familiarize yourself with applicable building code text pertaining to vibration monitoring, optical monitoring, pre-construction condition assessments

How to Protect Your Building

PEER REVIEW

• Hire A LAWYER!

• Lawyer reaches out to Structural and/or Geotechnical Engineer that performs peer review of neighboring construction

• In Landmarked Districts, certain letters of participation are required from neighbors before construction proceeds.
How to Protect Your Building

If you choose not to participate, you may lose leverage down the road

How to Protect Your Building

If you participate, know the facts and negotiate
How to Protect Your Building

Negotiate

- Demand real-time vibration monitoring
- Demand notification of monitoring events (otherwise the data will be collected but not shared amongst neighbors)
- Demand access to job site for your consultants
- Fees for attorney and engineering peer review as well as for damage
- May or may not allow underpinning/tiebacks. Allowing those items may give you more oversight potential and may allow you to collect more repair fees/legal fees

If all else fails

Call the DOB