

# Foundations



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A foundation is the element that anchors a structure and transfers loads from the structure to the ground. Foundations are generally categorized as either shallow or deep, and the design of foundation elements is dependent on geotechnical characteristics of the site. Foundations are required for new buildings and enlargements of existing structures and may be required for renovations and/or alterations. Underpinning, shoring, and related earthwork are often part of foundation work. *(See related [Project Guidelines](#) and [Code Notes](#)).*

## New York City Administrative Code and Building Code

The NYC Administrative Code (AC) governs the permit approval process, construction documents required to be submitted and special inspections for foundation work. The NYC Building Code (BC) outlines design requirements and special inspections required for foundation work, including shallow foundations, deep foundations, support of excavation and shoring

*The [Code Notes](#) series has been developed to provide a general overview of the NYC Department of Buildings (DOB) project requirements for the construction industry. The information in this document is only a summary and overview and is not intended to substitute for the full text and meaning of any law, rule or regulation. Users may also consult with a registered design professional for more specific guidance on Construction Codes requirements, other regulatory laws and rules, and technical site-specific requirements.*

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## ADMINISTRATIVE

### DOB Forms

- [PW1](#)-
  - Verify scope of work – Earthwork only (FO/EA) or part of new building application (NB) or alteration type 1 (A1)
  - Applicant’s Statement of Compliance or Exemption from NYCECC (Section 10) must be properly checked as “in compliance” or “exempt” for work that complies with 1-RCNY 5000-1 (e)(2)
- [TR1](#)- Statement of Responsibility
- [TR2](#)- Concrete Pouring, Sampling and Compression Test Cylinders
- [TR3](#)- Concrete Design Mix
- [TR4](#)- Soil Inspection (Soil boring test and report)
- [TR5](#)- Pile Driving
- [TR5H](#)- Helical Pile Installation
- [TR8](#)- Statement of Responsibility for Energy Code Progress Inspections
- [PW3](#)- Cost Affidavit

### Technical Documents (where applicable)

- [ACP5 Form](#)- Asbestos Assessment Report
- [ACP7 Form](#)- Asbestos Inspection Report
- [TPP1](#)- Tenant Protection Plan

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## Related Information

- Owner's responsibility – AC [28-301.1](#)
- Complete Site Safety Package (CSSP) – AC [28-110](#)
- Safety Registration Number is required for individuals or organizations placing 2,000 cubic yards or more of concrete in connection with excavation, foundation or superstructure work – AC [28-401.3](#), AC [28-420](#)
- Partial Approval for foundation work can be issued prior to having the entire application approved in accordance with AC [28-104.2.5](#) for phased or partial approval. When filing Doc-01 for the architectural work, e.g. zoning, life safety, the applicant may select 'Foundation Drawings' under the 'Drawings Submitted' category. Complete PW1 form indicating 'Other Foundation' for Work Types (Section 6D) and 'OT- Other' for Plans/Construction Documents Submitted—Section 7 of PW1
  - SOE/underpinning should be filed and incorporated into the underlying work application. A variance is required for work filed outside of the main application.
- Demolition drawings of existing structures to be removed (partial via ALT or full via DM), if applicable
- Proposed construction drawing with dimensioned and detailed architectural, structural and mechanical, electrical and plumbing services (MEP) if needed – AC [28-104](#)
- Submittal documents for foundations and earthwork, including support of excavation drawings – AC [28-105.2.1](#)

## BIS Required Items

- Check current Department memos and service notices
- All required work types have been filed – Support of Excavation (SOE)/ Excavation/ Foundation

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## ZONING

The Zoning Resolution (ZR) does not govern the construction of foundations; however, certain districts have requirements based on the location a building foundation or have limits on the extent of work permitted:

- Certification of cross access connections – **ZR 36-592**
- Compliance for Public or Urban Plazas – **ZR 37-78**

### Special Natural Area District

- Site alteration and zoning lot cut and fill modification of topography – **ZR 105-021**
- Grading controls of steep slopes, operating construction equipment, removing vegetation, accessory parking near foundations – **ZR 105-34, 105-35**
- Exposed earth near foundations – **ZR 105-36**

### Special South Richmond Development District

- Modifying topography of a zoning lot not within a designated open space – **ZR 107-21**

### Special Hudson Yards District

- Special District permits – **ZR 93-35**

### Special West Chelsea District

- Special Regulations for Developments and Enlargements Above, Beneath or Adjacent to the High Line – **ZR 98-11**

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## MULTIPLE DWELLING LAW

- Paragraph 300, Permits

## BUILDING CODE

- Foundation and earthwork permits, including proof of notice to adjoining owners and evidence that the property is free from any legal encumbrances – BC [105.5](#)
- Notice to the department of commencement of foundation and earthwork as required by Section [3304.3.1](#) – BC [105.5.1](#)
- Foundation plans, including underpinning & stability/support of existing/adjacent buildings, depth of adjacent foundations, soil characteristics and capacities required for design, borings or test pits, and insulation details – BC [107.7.1](#)
- Earthwork plans – BC [107.8](#)
- Footing and foundation inspection – BC [110.3.1](#)
- Geotechnical investigations – BC [1802](#)
- Shallow Foundations – BC [1805](#)
- Deep Foundations – BC [1808](#)
- Driven Piles – BC [1809](#)
- Cast-in-Place Concrete Piles – BC [1810](#)
- Composite Piles – BC [1811](#)
- Helical Piles – BC [1812](#)
- Excavation, grading and fill – BC [1803](#), [3304](#)
- Underpinning & stability/support of existing/adjacent buildings, including pre-construction report and monitoring – BC [1814](#)
- Waterproofing & damp proofing – BC [1807](#)
- Retaining structures – BC [1806](#)

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- Notification prior to the start of soil or foundation work, including the Department, adjoining property owners, the Dept. of Environmental Protection, New York State Dept. of Environmental Conservation, NYC Transit Authority, Metropolitan Transit Authority or Port Authority of New York and New Jersey, and the NYC Fire Department – BC [3304.3](#)
- Site Safety, including pre-construction survey, monitoring and monitoring plan – BC [3305](#), [3309](#)
- Design of concrete formwork, including foundations – BC [3305.3.2](#)
- Removal of foundations and slabs after demolition – BC [3306.10](#)
- Soil lateral loads – BC [1610](#)
- Live loads, specifically sidewalks and vehicular driveways – BC [1607.1](#), Item 32
- Loads such as wind, seismic & flood – BC [1604](#), [1609](#), [1611](#), [1612](#), [1613](#)
- Peer Review – BC [1617](#)
- Structural Tests and Special Inspections, including subsurface conditions and investigations – BC [1704.7](#), BC [1704.8](#), BC [1704.9](#)
- Special Inspection for structural stability, including excavations, underpinning and raising and moving of building – BC [1704.1](#), BC [1704.20.2](#), BC [1704.20.3](#), and BC [1704.20.5](#)
- Special Inspection program, including monitoring – BC [1704.20.6](#) through BC [1704.20.10](#)
- Soils and Foundations – BC [Chapter 18](#)
- Concrete – BC [Chapter 19](#)
- Steel – BC [Chapter 22](#)
- For work in the special flood hazard area and documentation – Appendix G, BC [G104.3](#), Item 6
- V-zone certification and construction standards – BC [G104.5.2](#), Item 1 and BC [G304.2](#)

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## ENERGY CODE

- Protection of exposed foundation insulation – ECC 303.2.1, ECC C303.2.1
- Foundation insulation as part of slabs on grade – ECC 402.2.8, ECC C402.2.6
- Foundation insulation as part of basement walls – ECC 402.2.7
- Air barrier and insulation inspection at junction of foundation and sill plate – ECC Table 402.4.2

## APPLICABLE BULLETINS, DIRECTIVES, PPNS, MEMOS

- [OTCR/Buildings Bulletin 2014-020](#): Acceptance criteria for the use of helical pile foundation systems in accordance with NYC Construction Codes
- [Buildings Bulletin 2009-011](#): Existing structures used to support the weight of concrete during placement and the inspection procedures and requirements for such concrete placement
- [Technical Policy and Procedure Notices #10/88](#): Procedures for the Avoidance of Damage to Historic Structures

## OTHER AGENCY APPROVALS

- MTA/Port Authority of New York and New Jersey: Approval required for work within 200' of transit infrastructure