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**Planning for Safety:
Common Errors & Omissions
in Site Safety, Support of
Excavation & Demolition Plan**

**John Chiusano, RA
Geoff Eisele, P.E.**

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Buildings

American Institute of Architects Continuing Education System

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.



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Course Description

The course will concentrate on common errors and omissions that are observed with DOB plan reviews and audits for Site Safety, Demolition, and Support of Excavation submissions. The course will focus on the Code requirements and necessary detail required for these design documents as well as the common errors and omissions noted by reviewers and what is expected to be provided by design professionals.

References to the applicable Building Code sections will be provided. The course will also explain how the code requirements and design documents relate to construction safety with multiple project types and examples being provided. The course will also correlate between design documents and field construction.

The course will be 1hr 15min long with the first hour being a PowerPoint presentation followed by 15 minutes of questions and answers.



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Learning Objectives

1. Participants will become familiar with the Administrative and Building Code sections that are applicable to design documents and the necessary information required to be provided on the documents per these sections.
2. Participants will learn what the department's expectations and requirements are, and how to apply and incorporate these requirements into Demolition, Site Safety and Support of Excavation documents.
3. Participants will learn how to develop more detailed design documents that will correspond to safer building construction.
4. Participants will learn how to identify potential hazards and unsafe construction practices through examples of both acceptable and unacceptable construction practices and photos.



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Top 10 Demolition Plan Objections

1. Filing application under the incorrect address or BIN
2. Missing or incorrect information on the required forms
3. Missing fence
4. Missing side walk shed
5. Failure to provide adequate safety zone
6. Missing adjoining property protection
7. Missing or incomplete building section
8. Missing or incomplete demolition sequence
9. Failure to correctly identify the building construction elements
10. Failure to provide adequate details for removal of building structure



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Top 10 Demolition Plan Objections

1. Filing Site Safety plan under the AKA address not filed at address
2. Filling out the log in cover sheet incorrectly
3. Box 9C not marked 'yes' for Site Safety and or missing the Site Safety required item
4. Missing supporting application numbers and scope
5. Missing fence
6. Missing side walk shed
7. Missing adjoining property protection
8. Missing egress
9. Missing or incomplete plans/elevations
10. Missing required crane and equipment information



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How to File a Full Demolition Plan

- File application in the Borough and pay all required fees
- Bring the folder to the BEST Squad (log in cover sheet)
- Review conducted by the BEST Squad
- If approved then pre-demo is scheduled and conducted
- If approved the permit is pulled
- 24 hour notice call (212)-393-2550
- Demo work starts
- When demo work is completed the contractor calls for sign off
- BEST conducts sign off inspection
- Sign off is entered into BIS



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Finding Your Correct Address

NYC Department of Buildings
Property Browse by Boro/Block/Lot

Page: 1 of 1

Browsing QUEENS Block 7187 Lot 7

TAX LOT	ADDRESS	HOUSE NUM RANGE	FOIL	LANDMARK	OBSOLETE	BIN
7	75-02 177 STREET	75-02 - 75-02				4154550
7	75-02 GARAGE 177 STREET	75-02GAR - 75-02GAR				4561262



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Pre-Filing Using eFiling

Job Info	Work Types	Considerations	Bldg Info	Comments	Validate
Job Location Applicant Filing Rep Owner Owner Statements Job Desc Special Programs					
FILING AT: QNS - 75-02 177TH ST			ALTERATION 2 - INIT		
User Ref ID : 75-02_177			DOB Reference Number : T00001384333		
Job Location (show help for this section)					
Please enter the following information about the Location where the work will take place.					
*Borough	*House Number	*Street Name			
Queens	75-02	177TH STREET			
*Block	Lot	*BIN	*CB No.		
07187	00007	4154550	408		
Property Profile Overview					
75-02 GAR 177 STREET		QUEENS 11366	BIN# 4561262		
177 STREET	75-02 GARAGE - 75-02 GARA	Health Area : 2130	Tax Block	: 7187	
		Census Tract : 1339	Tax Lot	: 7	
		Community Board : 408	Condo	: NO	
		Buildings on Lot : 2	Vacant	: NO	
Job Info Work Types Considerations Bldg Info Comments					
Job Location Applicant Filing Rep Owner Owner Statements Job Desc Special Programs					
FILING AT: QNS - 75-02 GAR 177TH ST			A		
User Ref ID : T01384333			DOB Reference Nu		
Job Location (show help for this section)					
Please enter the following information about the Location where the work will take place.					
*Borough	*House Number	*Street Name			
Queens	75-02 GAR	177TH STREET			
*Block	Lot	*BIN	*CB No.		
07187	00007	4561262	408		
Apartment/Condo Number					

Customer Input

DOB WEBSITE

Suggested Input

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Understanding Key Demolition Terms

- (BC) Section 3302 – Definitions
- What Is Demolition?
 - **Full Demolition** – the dismantling, razing, or removal of all of a building or structure, **including all operations incidental thereto.**
 - **Partial Demolition** – the dismantling, razing, or removal of structural members, floors, interior bearing walls, and/or exterior walls or portions thereof, including all operations incidental thereto.



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Understanding Key Demolition Terms

What is the difference between handheld equipment and mechanical equipment?

Handheld Device (Demolition)

Equipment, mechanical or non-mechanical, utilized to physically demolish a building or structure, or elements of a building or structure, that is held, lifted, moved, and operated by a single person. A handheld device shall also include any item accessory to such equipment, including but not limited to a compressor, regardless if such accessory item is held, lifted, moved, and operated by a single person. A handheld device does not include remote controlled equipment.



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Understanding Key Demolition Terms



Examples: Handheld
Devices for Demolition

Understanding Key Demolition Terms

What is the difference between handheld equipment and mechanical equipment?

Mechanical Demolition Equipment

Mechanically driven or powered equipment that is utilized to physically demolish a building or structure, or elements of a building or structure, either within or exterior to the building or structure, or that is utilized to move debris or material within the building or structure. Mechanical demolition equipment shall not include mechanically driven or powered equipment that is utilized to move debris or material outside of the building or structure.



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Understanding Key Demolition Terms



**Examples: Interior
Mechanical Demolition**



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Understanding Key Demolition Terms



**Examples: Exterior
Mechanical Demolition**



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Where to Find Demo Requirements

BC Section 3306: Demolition

- BC 3306.1 – Scope
- BC 3306.2 – Protection of Pedestrians and Adjoining Properties
 - BC 3306.2.1 – Safety Zones
- BC 3306.3 – Notification
 - BC 3306.3.1 – The permit holder shall notify the department via phone or electronically at least 24 hours, but no more than 48 hours prior to the commencement of such work



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Where to Find Demo Requirements

- **BC 3306.3.2** – Notification of adjoining property owners. Adjoining property owners shall be notified of upcoming demolition operations in writing not less than 10 days prior to the scheduled starting date of the demolition....
- **BC 3306.4** – Mechanical Demolition
- **BC 3306.5** – Submittal Documents for Demolition



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Where to Find Demo Requirements

Exceptions: Section 3306.5 shall not apply to:

- Demolitions performed as emergency work...
- The full demolition of a detached one, two, or three-family dwelling...
- The removal, with mechanical demolition equipment, of foundations and landscaping elements...
- The full demolition of a fully detached building that is three stories or fewer and with a floor area of 5,000 square feet (464.5 m²) or less per story...
- Partial demolition operations accomplished without any mechanical demolition equipment, other than handheld devices, provided such work is a minor alteration or ordinary repair



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Where to Find Demo Requirements

- **BC 3306.5.1 – Required documents**
 - Identification of the structure
 - Identification of all mechanical equipment other than hand held
 - Means and methods
 - Scope of proposed mechanical equipment work and/or hand work
 - Positioning of equipment
 - Calculations: loads imposed
- **BC 3306.5.1.1 – Submittal documents for full or partial demolition using mechanical equipment other than handheld**



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Where to Find Demo Requirements

- **BC 3306.5.2** – Maintenance of submittal documents.
- **BC 3306.5.3** – Filing requirements
- **BC 3306.6** – Special Inspections
- **BC 3306.7** – Demolition of weakened structures.



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Where to Find Demo Requirements

A statement must be provided on the cover page of the plans stating that the condition of existing the structure to be demolished has been assessed and whether it has been determined to be **weakened** or not (per BC 3306.7 **Demolition of weakened structures**) AND whether it requires shoring/bracing or remedial work to be installed prior to demolition.

NOTE: This condition assessment should be documented by a report and available upon DOB request.



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Where to Find Demo Requirements

A clear and detailed demolition sequence must be provided in narrative and illustrated in plans. All phases should be designated by a number or letter designation to clearly depict the required sequence of the work.

Structural stability must be demonstrated through all phases of demolition. A **preparation phase** must be included indicating but not limited to the following: glass removal, sealing of windows, removal of equipment/fixtures, cutting of services, etc.



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Where to Find Demo Requirements

- **BC 3306.9 Safeguards.** Demolition shall be conducted in accordance with the requirements of Sections 3306.9.1 through 3306.9.14.
- **BC 3306.9.1** – Utilities and service lines
- **BC 3306.9.2** – Party wall exits, fire exits
- **BC 3306.9.3** – Dust
- **BC 3306.9.4** – Water accumulation



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Where to Find Demo Requirements

- **BC 3306.9.5** – Temporary elevators and standpipe systems
- **BC 3306.9.6** – Sprinkler systems
 - SP Permit
 - Maintained as non-automatic systems
 - Capped immediately below the floor being demolished
 - Siamese connection to be painted (903.6), marked with a red light and maintained free from obstructions



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Where to Find Demo Requirements

- For the removal of damaged sprinklers, you will also need a CCD-1 and a Letter of No Objection from FDNY
- Important to remember if the building has an existing standpipe (SD) system, the system must be maintained in a state of readiness, you will need:
 - SP Permit
 - Air pressurized alarm system for all existing standpipes (SD)
 - Application submitted by design professional
 - Electrical permit



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Where to Find Demo Requirements

- **BC 3306.9.7** – Use of explosives. The use of explosives in demolition operations shall conform to the requirements and limitations imposed by the New York City Fire Code and Section 3312.
- **BC 306.9.8** – Hazards to be removed. Prior to the commencement of demolition operations, hazards shall be removed in accordance with Sections 3306.9.8.1 through 3306.9.8.4.
- **BC 3306.9.8.1** – Combustible content. Prior to the commencement of demolition operations, the area authorized to be demolished by the work permit shall be thoroughly cleaned of combustible content and debris, including but not limited to building contents and exterior finishes, down to the structural elements.



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Where to Find Demo Requirements

- **BC 3306.9.8.2 – Asbestos.** Prior to the commencement of demolition operations, all asbestos shall be removed from the area authorized to be demolished by the department work permit, and certification to that effect shall be filed with the DOB and DEP...
- **BC 3306.9.8.3 – Glass.** Prior to the commencement of demolition operations, all glass located in the area authorized to be demolished by the work permit, including but not limited to glass in windows, doors, skylights, and fixtures, shall be removed.
- **BC 3306.9.8.4 – Steam and fuel.** Prior to the commencement of demolition operations, all pipes, tanks, boilers, or similar devices containing steam or fuel and located in the area authorized to be demolished by the work permit shall be purged of such steam or fuel.



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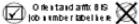
Where to Find Demo Requirements

- **BC 3306.9.9** – Stairs. All enclosed vertical shafts and stairs shall be maintained enclosed at all floors except the uppermost floor being demolished, and all work on the uppermost floor shall be completed before stair and shaft enclosures on the floor below are disturbed. All hand rails and banisters shall be left in place until actual demolition of such floor is in progress.
- **BC 3306.9.13** – Rodent Extermination. A licensed exterminator shall effectively treat the premises for rodent extermination as per the requirements of the Department of Health and Mental Hygiene.
- **BC 3306.11** – Completion of demolition operations. All work required for **structural stability and permanent waterproofing** of adjacent buildings must be completed prior to demolition sign-off.



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Required Forms for Demolition

NYC Buildings PW1: Plan / Work Application  Must be typewritten.

1 Location Information *Required for all applications.*

House No(s)	Street Name			
Borough	Block	Lot	BIN	C.B. No.
Work on Floor(s)			Apt. / Condo No(s)	

2 Applicant Information *Required for all applications. Fax, mobile telephone and e-mail address are optional information.*

Last Name	First Name	Middle Initial
Business Name		Business Telephone
Business Address		Business Fax
City	State	Zip
E-Mail		Mobile Telephone
		License Number
Choose one: <input type="checkbox"/> P.E. <input type="checkbox"/> R.A. <input type="checkbox"/> Sign Hanger <input type="checkbox"/> R.L.A. <input type="checkbox"/> Other		

3 Filing Representative *Complete only if different from applicant specified in section 2. Fax, mobile phone, and e-mail are optional info.*

Last Name	First Name	Middle Initial
Business Name		Business Telephone
Business Address		Business Fax
City	State	Zip
E-Mail		Mobile Telephone
		Registration Number

4 Filing Status *Required for all applications. Choose one and provide specified associated information.*

<input type="checkbox"/> Initial Filing 5, 7, 11, 12A, 25-26 Choose only one: <input type="checkbox"/> Standard Plan Examination or Review <input type="checkbox"/> Professional Certification - PC1, POC1 <input type="checkbox"/> Professional Certification of Objections - A11	<input type="checkbox"/> Prior to Approval Actions 25-26 <input type="checkbox"/> Amend Existing Filing 4A <input type="checkbox"/> Subsequent Filing 6-7, 8A (A&2 only), 11 <input type="checkbox"/> Post Approval Amendment (PAA) 4A, 6, 24-25 Will PAA affect filing fees? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> New (Superseding) Applicant 4A, 25-26	<input type="checkbox"/> Reinstatement 24-26 <input type="checkbox"/> Withdrawal 26 <input type="checkbox"/> Specified in 4A and 6 <input type="checkbox"/> Entire Job 4A. Indicate existing document number affected by filing:
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5 Job/Project Types *Choose one and provide specified associated information.*

<input type="checkbox"/> Alteration Type 1 or Alteration Type 2 5A, 6A-D, 8A-B, 9-10, 13C-E, & 14, 20, 22 to meet New Building requirements (28-101.4.5) 6A-E, 8B-C, 9-10, 12, 13C-F, 14, 18-20, 22 & PW1A, PD1	<input type="checkbox"/> Alteration Type 2 5A, 6A-D, 8A-B, 9-10, 13C-E, & 14, 20, 22 <input type="checkbox"/> Alteration Type 3 5A, 6B-F, 8C, 9-10, 13C-E, 20, 22 <input type="checkbox"/> New Building 6A-E, 8F-G, 9A, 9C-K, 10, 12 & 13A-E, 14, 18-20, PW1A, PD1 <input type="checkbox"/> Sign 5A, 6B-D, 9A, 9D, 22-23	<input type="checkbox"/> Full Demolition 6B, 8D, 9A & C-D, D-E, 22 <input type="checkbox"/> Subdivision 9A, 9D, 12A-B <input type="checkbox"/> Condominium <input type="checkbox"/> Improved 17 5A Directive 14 acceptance requested? <input type="checkbox"/> Yes <input type="checkbox"/> No
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6 Work Types *Select all that apply but no more than allowed by job and filing type. "OT" required on all NB and Alteration 1 initial applications.*

6A <input type="checkbox"/> BL - Boiler PW1C <input type="checkbox"/> FA - Fire Alarm <input type="checkbox"/> FB - Fuel Burning PW1C	6C <input type="checkbox"/> FS - Fuel Storage PW1C <input type="checkbox"/> FP - Fire Suppression <input type="checkbox"/> MH - Mechanical <input type="checkbox"/> OTJGC - General Construction	6D <input type="checkbox"/> PL - Plumbing PW1B <input type="checkbox"/> SD - Standpipe PW1B <input type="checkbox"/> SP - Sprinkler PW1B <input type="checkbox"/> OT - Other, describe:	6E <input type="checkbox"/> CC - Curb Cut 16 <input type="checkbox"/> OTLAN - Landscape <input type="checkbox"/> OTJANT - Antenna <input type="checkbox"/> OTBPP - Builders Pavement Plan 8D <input type="checkbox"/> OTFPP - Fire Protection Plan <input type="checkbox"/> OTMAR - Marquee 8E, 26B
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Plan/Work Application Section 5:

- Job Application
- Type – Demolition



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Required Forms for Demolition

PW1 PAGE 2

7 Plans/Construction Documents Submitted *Plans are required for most applications.*
 Are plans being submitted with this PW1? ☐ Yes ☐ No *If yes, do the plans include:* ☐ FO — Foundation ☐ EN — Energy Analysis

8 Additional Information

8A W/T Cost	W/T Cost	W/T Cost	8B Is a building enlargement proposed? <input type="checkbox"/> No enlargement is proposed <input type="checkbox"/> Yes 12, PD1 <input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical Additional Construction Floor Area: <input type="text"/> sq. ft.	8C Estimated Job Cost: \$ <input type="text"/> 8D Street Frontage: <input type="text"/> linear ft. 8E Height: <input type="text"/> ft. Width: <input type="text"/> ft. 8F Total Construction Floor Area: <input type="text"/> sq. ft.
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9 Additional Considerations, Limitations or Restrictions

9A Reviews requested under which building code? ☐ 2014 ☐ 2008 ☐ 1968 ☐ Prior to 1968

9B ☐ Alteration required to meet New Building requirements (28-101.4.5) *If yes, 13A-8*
☐ Alteration is a major change to exits
☐ Change in number of dwelling units
☐ Change in occupancy / use
☐ Change is inconsistent with current certificate of occupancy
☐ Change in number of stories

9C ☐ Facade Alteration
☐ Adult Establishment *If yes, plot diagram (except DM)*
☐ Compensated Development (Inclusionary Housing)
☐ Low/Income Housing (Inclusionary Housing)
☐ Single Room Occupancy (SRO) Multiple Dwellings
☐ Filing to address violations (list #s—max. 5)
☐ Filing to comply with Local Laws (list #s—max. 2)

9D ☐ Landmark
☐ Little "E" or RD Site
☐ Unimproved/CCO Street
☐ Requesting legalization of work where no work without a permit violations have been issued
☐ Other (please specify on line provided below):

9E ☐ CRFN(s) Restrictive Declaration / Easement (max. 4):
☐ CRFN(s) Zoning Exhibit (I, II, III, etc. - max. 4):

9F ☐ BSA Calendar Numbers (max. 5):
☐ CPC Calendar Numbers (max. 5):

9G ☐ Work includes lighting fixture and/or controls, installation or replacement. [ECC §404 and §505]

9H ☐ Work includes modular construction under New York State jurisdiction
☐ Work includes modular construction under New York City jurisdiction

9I ☐ Structural peer review required per BC 16. *If yes, provide NYS P.E. license number:*

9J ☐ Work includes permanent removal of standpipe, sprinkler or fire suppression related systems

9K ☐ Work includes partial demolition as defined in AC §28-101.5, or the raising/moving of a building. *If yes, 21B*
☐ Structural stability affected by proposed work

10 NYCECC Compliance *New York City Energy Conservation Code*
☐ To the best of my knowledge, belief and professional judgment, all work under this application is in compliance with the NYCECC.
 Code Compliance Path (choose one): ☐ NYCECC ☐ ASHRAE
 Energy Analysis (choose one): ☐ Tabular Analysis ☐ REScheck ☐ COMcheck ☐ Energy Modeling (EN1)
☐ To the best of my knowledge, belief and professional judgment, all work under this application is exempt from the NYCECC in accordance with one of the following (choose one):
☐ The work is an alteration of a State or National historic building.
☐ The scope of the work is entirely in a "low-energy building" and is limited to the building envelope.
☐ The entire scope of work involves a temporary structure and/or one or more of the following work types: FA, FP, SD, SP, FS, EQ, CC, OT/BPP, OT/FPP. Other work types are not exempt.
☐ This is a post-approval amendment and exempt under a prior edition of the energy code. See statement of exemption on attached drawings.

- Item 8D: Street frontage (linear feet)
- Item 9A: Review is requested under which Code
- Item 9C: Site Safety
- Item 9D:
 - Requesting legalization of work where there are no **Work without Permit** violations
 - Landmarks
 - Little E
 - Filing to address violations



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Required Forms for Demolition

PW1 PAGE 3

11 Job Description				11A Related DOB Job Numbers			
11B Primary application job no.							

12 Zoning Characteristics							
12A District(s) Overlay(s) Special Dist.(s) Map Number				12B Street legal width: _____ ft. Street Status: <input type="checkbox"/> Public <input type="checkbox"/> Private <i>If the zoning lot includes multiple tax lots, list all tax lots here ►</i>			
12C Proposed: Use*		Zoning Floor Area		District		FAR	
		sq. ft.					
		sq. ft.					
		sq. ft.					
		sq. ft.					
		sq. ft.					
		sq. ft.					
Proposed Totals		sq. ft.					
Existing Total		sq. ft.					
Proposed Lot Details: Lot Type: <input type="checkbox"/> Corner <input type="checkbox"/> Interior <input type="checkbox"/> Through Lot Coverage _____ % Lot Area _____ sq. ft. Lot Width _____ ft.				Proposed Yard Details: Check here if no yards: <input type="checkbox"/> or <input type="checkbox"/> Front Yard _____ ft. Rear Yard _____ ft. Rear Yard Equivalent _____ ft. Side Yard 1 _____ ft. Side Yard 2 _____ ft.			
Proposed Other Details: Enclosed Parking? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, no. of parking spaces: _____ Perimeter Wall Height _____ ft.							
<small>*Use can be one of the following: residential, commercial, manufacturing, or community facility. List only one use per line.</small>							

13 Building Characteristics <small>*Main use/dominant occupancy per AC §26-101.5. **Use 2014 Code equivalents only. †Residential w/other use.</small>							
13A Primary structural system, choose one: <input type="checkbox"/> Masonry <input type="checkbox"/> Concrete (CIP) <input type="checkbox"/> Concrete (Precast) <input type="checkbox"/> Wood <input type="checkbox"/> Steel (Structural) <input type="checkbox"/> Steel (Cold Formed) <input type="checkbox"/> Steel (Encased in Concrete)							
13B Existing		Proposed		13D Building Type: <input type="checkbox"/> 1, 2, or 3 Family <input type="checkbox"/> Other			
Structural Occupancy/Risk Cat.		2014 Code Design Risk Cat.		Mixed use building? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Seismic Design Cat.		2014 Code Design Risk Cat.		13E Building Height _____ ft.			
Occupancy Classification*		Construction Classification		Building Stories _____			
<input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No		Dwelling Units _____			
Multiple Dwelling Classification				Building was originally erected pursuant to which Building Code: <input type="checkbox"/> 2014 <input type="checkbox"/> 2008 <input type="checkbox"/> 1968 <input type="checkbox"/> Prior to 1968			
13F				The earliest Code with which this building or segment of it is required to comply: <input type="checkbox"/> 2014 <input type="checkbox"/> 2008 <input type="checkbox"/> 1968 <input type="checkbox"/> Prior to 1968			

14 Fill Choose one: <input type="checkbox"/> Not Applicable <input type="checkbox"/> On-Site <input type="checkbox"/> Off-Site <input type="checkbox"/> Under 300 cubic yards			
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15 Construction Equipment				16 Curb Cut Description			
<input type="checkbox"/> Chute <input type="checkbox"/> Sidewalk Shed		Construction Material: _____		Size of cut (with splay): _____ ft.		Distance to nearest corner to street: _____ ft.	
<input type="checkbox"/> Fence <input type="checkbox"/> Other _____		Size: _____ linear ft. BSAMEA Approval No. _____					
<input type="checkbox"/> Supported Scaffold							

17 Tax Lot Characteristics				18 Fire Protection Equipment			
Original tax lots being merged or reapportioned (if applicable): _____				Existing Proposed Yes No Yes No			
Tentative tax lot numbers (new tax lots only): _____				Fire Alarm <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
				Fire Suppression <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
				Sprinkler <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
				Standpipe <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			

Item 13D: Building type – 1, 2 or 3 family or other; Mixed use building

Item 13E: Building height & stories; Dwelling units (existing/ proposed)

Item 14: Fill – Onsite, off-site, or under 300 cubic yards

Item 18: Fire protection equipment



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Required Forms for Demolition

PW1 PAGE 4

19 Open Spaces					
	Existing	Proposed		Existing	Proposed
Plaza Area	sq. ft.	sq. ft.	Arcade Area	sq. ft.	sq. ft.
Parking Area	sq. ft.	sq. ft.	Parking Spaces		
Loading Berths	sq. ft.	sq. ft.	Loading Berths		

20 Site Characteristics		20A Flood Hazard Area Information	
Yes No	Yes No	Yes No	
<input type="checkbox"/> Tidal Wetlands	<input type="checkbox"/> Freshwater Wetlands	<input type="checkbox"/> Substantial improvement?	
<input type="checkbox"/> Coastal Erosion Hazard Area	<input type="checkbox"/> Urban Renewal	<input type="checkbox"/> Substantially damaged?	
<input type="checkbox"/> Flood Hazard Area	<input type="checkbox"/> Flood Hazard Area	<input type="checkbox"/> Floodshields part of proposed work?	

21 Demolition Details *Mechanical equipment other than hand-held devices to be used for demolition or removal of debris (NYC § 24-206.4).*

Yes No

21A ☐ Demo. filing is for a secondary structure? *If yes, specify structure being demolished:*

☐ Mechanical means* from out of building? *If yes, mechanical means will demolish: ☐ entire structure or ☐ part of structure*

☐ Mechanical means* from within building? *If yes, describe equipment proposed:*

21B ☐ Demolition work affects the exterior building envelope

☐ The scope of work involves raising/moving of a building

22 Asbestos Abatement Compliance *Choose one.*

☐ The scope of work requires related asbestos abatement as defined in the regulations of the NYC Department of Environmental Protection (DEP).

☐ The scope of the work is **not** an asbestos project as defined in the regulations of the NYC DEP. *DEP Control # is required.*

DEP ACP-5 Control No. _____

☐ The scope of work is exempt from the asbestos requirement as defined in the regulations promulgated by the NYC DEP (15 RCNY 1-23b)) or is an alteration to a building constructed pursuant to plans submitted for approval on or after April 1, 1987, in accordance with § 28-106.1.

23 Sign

Purpose: ☐ Advertising ☐ Non-Advertising

Type: ☐ Illuminated 23A ☐ Non-Illuminated

Estimated Cost: \$ _____ Total Square Feet: _____

Height above Curb: _____ ft. in.

Location: ☐ Ground ☐ Roof ☐ Wall ☐ Other _____

23A Illuminated type: ☐ Direct ☐ Flashing ☐ Indirect

Yes No

☐ If sign projects beyond building line, is owner notified? *If no, specify in 23C*

23B ☐ Is roof sign tight, closed or solid?

23C Sign wording. *If extensive, provide only key wording.*

23D Distance from Arterial Highway: _____ ft.

23E Distance from Park 1/2 acre or more: _____ ft.

23F OAC Sign Number: _____

23G OAC Registration Number: _____

If answer is "yes" to either of the above two questions and this is an advertising sign, OAC sign number is required in section 23F

24 Comments *Place additional comments on an A-1 form. See Guide for proper incorporation of professional certification statements.*

- Item 21: Demolition details
- Item 22: Asbestos abatement
- Compliance



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Required Forms for Demolition

NYC Buildings PS1: Demolition Submittal Certification Form
Must be typewritten.

Demolition drawings must be submitted along with this form.

☒ On standard 8 1/2" x 11" size 14 pt. font

BIS Document No., required.

1 Location Information Required for all certifications.

House No(s) Street Name
Borough Floor(s)

2 Preparer Information Required for all certifications.

Check all that apply: ☐ PW1 Applicant ☐ P.E./R.A. Other Than PW1 Applicant

Last Name First Name Middle Initial
Business Name Business Telephone
Business Address Business Fax
City State Zip Mobile Telephone
License Type ☐ P.E. ☐ R.A. ☐ Other: License Number

3 Demolition Description and Certification Required prior to permit. Subsequent revisions must be submitted to the Department.

Indicate Submittal Type: ☐ Initial submittal ☐ Supersede existing submittal(s) - indicate scan code(s) of DS1 being superseded below

Scan Code(s):

3A Demolition Type: ☐ Full Demolition (DM) ☐ Partial Demolition (Alteration)

3B Demolition work will involve, per BC 3306.5 (authorized preparers indicated in parenthesis): Check all that apply

☐ Non-mechanical demolition means and methods **only** (P.E. or R.A. only) - **stop and proceed the section 3C**
☐ Use of hand-held mechanical equipment (P.E. or R.A. only) ☐ Work on interior of building
☐ Use of other than hand-held mechanical equipment (P.E. or R.A. only) ☐ Work on exterior of building
☐ Raising and/or moving of a building

General description of the type(s) of mechanical demolition equipment used:

3C If superseding a previous plan submittal, indicate scan code(s) of the A11: (Note: any revisions/additions/deletions to the original plan submittal must be accompanied by an A11 form detailing all the plan changes)

3D Statement by demolition document preparer:

I have prepared the attached demolition submittal documents in accordance with BC 3306 and certify that they are in compliance.

Name (please print) Signature Date

I hereby state that all of the above information is correct and complete to the best of my knowledge. Falsification of any statement is a misdemeanor and is punishable by a fine or imprisonment, or both. It is unlawful to give to a city employee, or for a city employee to accept, any benefit, monetary or otherwise, either as a gratuity for properly performing the job or in exchange for special consideration. Violation is punishable by imprisonment or fine or both.

P.E./R.A. Seal (apply seal, then sign and date over seal)

12/14

- **DS1 Demolition Submittal Certification Form:** Must be submitted by the professional preparing demolition submittal plans – required prior to permit when performing full or partial demolition work as per BC 3306.5. This certification form must be submitted together with the form.
- **Items 3A & 3B:** Full/partial demolition description and certification (BC 3306.5); Mechanical equipment with general
- **Descriptions (Hand-held & Other):** Non-mechanical means & methods; Work on building interior, exterior or both



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Required Forms for Demolition

NYC BUILDINGS APPLICATION FOR BEST RECOMMENDATION FOR MECHANICAL MEANS DEMOLITION
Application must be typewritten.

BEST USE ONLY
DEMOLITION #

Structure and Location Information:
Number of structures at this address you intend to demolish (a separate application is required for each):
Name: _____ Company: _____
E-mail: _____ Phone: _____ Fax: _____
Application date: _____ ☐ Bronx ☐ Brooklyn ☐ Manhattan ☐ Queens ☐ Staten Island
Structure type (check only one): ☐ House ☐ Garage ☐ Shed ☐ Commercial Building ☐ Other: _____
Building address: _____
Cross streets: _____ BIN: _____ Block: _____ Lot: _____
All AKA's ("Also-Known-As", if applicable): _____
BIS job # for demolition (DM) filing: _____ Other related BIS job #s: _____
Distance from nearest street corner (in feet): _____

Mechanical Means Information:
Description of mechanical equipment proposed for demolition: _____
☐ Requesting full mechanical demolition ☐ Requesting partial mechanical demolition
A plot plan must accompany this request. It must show:

- the size of the lot, the size, location and height of all structures on the lot of adjacent structures
- the structures which are to be demolished and the structures or portions thereof which are to be demolished by mechanical means
- the construction classification of the building to be demolished
- the mechanical means to be used (type of machinery) and proposed location of it
- the safety zone
- the location of the sidewalk shed, fences and other protective construction
- the width of the adjoining street

Agreement and Signature:
By signing below, I agree that if issued a mechanical means permit:

- A construction fence will be erected along the perimeter of job site. No persons other than the operator of the equipment will be permitted within the safety zone of demolition while the mechanical means method of demolition is in use. No part of the equipment, when in use will extend beyond the permitted boundaries. Letter of Request, Letter of Permission and Plot Plan must be available on the premises during course of demolition.
- All Building Department regulations will be followed when performing the demolition in accordance with Chapter 19 Article 6, section 27-1039d.
- All hand demolition will be completed and inspected by B.E.S.T. prior to commencement of any Mechanical demolition

Print Name: _____ Title: _____
Company: _____
Signature: _____ Date: _____

BEST Use Only ☐ Approved ☐ Disapproved
Reviewed by: _____ Signature: _____ Badge # _____ Date: _____
Supervisor: _____ Signature: _____ Badge # _____ Date: _____
Comments: _____

safety • service • integrity BEST 17/03


BEST Recommendation for Mechanical Means Demolition

- In order to request a recommendation in favor of using mechanical means for demolition, you must complete and submit (BEST 4) to BEST at time of submittal of pre-demolition application.
- The top must be filled out by the applicant.
- The bottom can be filled out by the contractor.



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Required Forms for Demolition

NYC Buildings		APPLICATION FOR INSPECTION PRIOR TO DEMOLITION (AND PRE-DEMOLITION REPORT)		BEST USE ONLY DEMOLITION #	
Applicant, please complete all information requested below. (For mechanical demolition requests complete form BEST-4 as well.)					
Number of structures at this address you intend to demolish (a separate application is required for each):					
Name:	Company:				
E-mail:	Phone:	Fax:			
Application date:	<input type="checkbox"/> Bronx	<input type="checkbox"/> Brooklyn	<input type="checkbox"/> Manhattan	<input type="checkbox"/> Queens	<input type="checkbox"/> Staten Island
Structure type (check only one):	<input type="checkbox"/> House	<input type="checkbox"/> Garage	<input type="checkbox"/> Shed	<input type="checkbox"/> Commercial Building	<input type="checkbox"/> Other:
Building address:	Legalizing a completed demolition? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Cross streets:	BIN:	Block:	Lot:		
All AKA's ("Also-Known-As", if applicable):					
BIS job # for demolition (DM) filing:		Other related BIS job #s (if applicable):			
Distance from nearest street corner (in feet):		Mechanical demolition requested? <input type="checkbox"/> No <input type="checkbox"/> Full <input type="checkbox"/> Partial			
BEST must be notified in writing 24 hours prior to the commencement of any full demolition (see BC 105.6.1).					
PLOT DIAGRAM (MUST INDICATE ZONE OF SAFETY ON DIAGRAM)					
 The north point of the diagram must agree with the arrow.					
A survey may be submitted in addition to or in lieu of a plot diagram as long as the zone of safety is indicated.					
DO NOT WRITE BELOW THIS LINE: OFFICIAL USE ONLY					
Date of report:	Number of stories:	Height of building:			
Occupancy: Is building vacant? <input type="checkbox"/> Yes <input type="checkbox"/> No	Sidewalk shed required? <input type="checkbox"/> Yes <input type="checkbox"/> No				
If yes, has a sidewalk shed been erected? <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, provide permit number:				
Does the building have fire escapes or other exits used jointly with an adjoining or abutting building? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Will the removal of the fire escape or other exit affect the adjoining building? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Does the building have party walls or walls enclosing an adjoining building? <input type="checkbox"/> Yes <input type="checkbox"/> No					
If yes, please describe:					
Has the demolition of the building commenced? <input type="checkbox"/> Yes <input type="checkbox"/> No		If yes, answer the following questions:			
Has work been stopped? <input type="checkbox"/> Yes <input type="checkbox"/> No		Have the police been notified? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Has an ECB violation been issued? <input type="checkbox"/> Yes <input type="checkbox"/> No		If yes, provide ECB violation number:			
Comments:					
Inspection Result: <input type="checkbox"/> Pass <input type="checkbox"/> Fail					
Inspected by:	Signature:	Badge #	Date:		
Supervisor:	Signature:	Badge #	Date:		
Administrative Comments:					

β Form 2A (Rev. 2/15)

B2A

- All demolition applications must be pre-filed prior to requesting a pre-demolition inspection from BEST
- BEST will only accept applications for inspection prior to demolition (B form 2A) with the nine digit BIS job number on the upper right hand corner of the form



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Required Forms for Demolition

NYC Buildings

**TR1: Technical Report
Statement of Responsibility**

This form is not to be typewritten

☒ Orient and affix this form to the building ☒

1 Location Information *Required for all applications.*

House No(s) _____ Street Name _____

Work on Floor(s) _____

2 Applicant Information *Required for all applications.*

Choose all that apply: ☐ Design Applicant 3A, 4A, 5 ☐ Special Inspections Applicant 3B-D, 6-9 ☐ Progress Inspections Applicant 4B-D, 6-9

Last Name _____ First Name _____ Middle Initial _____

Business Name _____ Business Telephone _____

Business Address _____ Business Fax _____

City _____ State _____ Zip _____ Mobile Telephone _____

License Type choose one: ☐ P.E. ☐ R.A. ☐ Other: _____ License Number _____

Special Inspection Agency Number _____

3 Special Inspection Categories *Required for all applications, continued on page 2. ■ indicates report required.*

3A Identification of Requirement		3B Identification of Responsibilities	3C Certificate of Complete Inspections / Tests	3D Withdrawal Responsibilities
Y	N	Initial & Date	Initial & Date	Initial & Date
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.3.1		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.3.2		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.3.3		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.3.4		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.4		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.4		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.4		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.4		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.5		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.6.1		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.6.2		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.6.3		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.7.1		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.7.2		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.7.3		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.7.4		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.8		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.9.5		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.9		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.10		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.11		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.12		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.13		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.14		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.15		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.16		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.17		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.18		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.18		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.19		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.20.1		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.20.2		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.20.3		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1814		
<input type="checkbox"/>	<input type="checkbox"/>	BC 1704.20.4		

TR1 12/2014

Important for Demolition TR1

- Item 3: Special Inspection items
 - Structural stability
 - Existing buildings
- May be a requirement for the adjoining buildings during demolition operations
 - Mechanical demolition



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Required Forms for Demolition

NYC Buildings

**TR1: Technical Report
Statement of Responsibility**
This form is not to be typewritten

3 Special Inspection Categories (continued) Required for all applications, continued on page 2. ■ indicates report required.

3A Identification of Requirement	3B Identification of Responsibilities	3C Certificate of Complete Inspections / Tests	3D Withdraw Responsibilities
Y N	Code/Section	Initial & Date	Initial & Date
<input type="checkbox"/>	Raising and Moving of a Building BC 1704.20.5		
<input type="checkbox"/>	Soil Percolation Test - Private On-Site Storm Water Drainage Disposal Systems, and Detention Facilities ■ BC 1704.21.1.2		
<input type="checkbox"/>	Private On-Site Storm Water Drainage Disposal Systems, and Detention Facilities Installation BC 1704.21.2		
<input type="checkbox"/>	Individual On-Site Private Sewage Disposal Systems Installation BC 1704.22		
<input type="checkbox"/>	Soil Percolation Test - Individual On-Site Private Sewage Disposal Systems ■ BC 1704.22		
<input type="checkbox"/>	Sprinkler Systems BC 1704.23		
<input type="checkbox"/>	Standpipe Systems BC 1704.24		
<input type="checkbox"/>	Heating Systems BC 1704.25		
<input type="checkbox"/>	Chimneys BC 1704.26		
<input type="checkbox"/>	Fire-resistant Penetrations and Joints BC 1704.27		
<input type="checkbox"/>	Aluminum Welding BC 1704.28		
<input type="checkbox"/>	Flood Zone Compliance (attach FEMA elevation/dry flooding certificate where applicable) BC 1704.29 BC 1705		
<input type="checkbox"/>	Luminous Egress Path Markings ■ TR7 BC 1704.30 BC 1024.8		
<input type="checkbox"/>	Emergency and Standby Power Systems (Generators) BC 1704.31		
<input type="checkbox"/>	Post-installed Anchors (BSW 2014-018, 2014-019) BC 1704.32		
<input type="checkbox"/>	Seismic Isolation Systems BC 1707.8		
<input type="checkbox"/>	Concrete Design Mix ■ TR3 BC 1805.3 BC 1913.5	Submit TR3 to complete this item	
<input type="checkbox"/>	Concrete Sampling and Testing ■ TR2 BC 1805.6 BC 1913.10	Submit TR2 to complete this item	

4 Progress Inspection Categories Required for all applications. ■ indicates report required.

4A Identification of Requirement	4B Identification of Responsibilities	4C Certificate of Complete Inspections / Tests	4D Withdraw Responsibilities
Y N	Code/Section	Initial & Date	Initial & Date
<input type="checkbox"/>	Preliminary 28-116.2.1, BC 110.2		
<input type="checkbox"/>	Footings and Foundation BC 110.3.1		
<input type="checkbox"/>	Lowest Floor Elevation BC 110.3.2		
<input type="checkbox"/>	Structural Wood Frame BC 110.3.3		
<input type="checkbox"/>	Energy Code Compliance Inspections ■ TR6 BC 110.3.5	Submit TR6 to complete this item	
<input type="checkbox"/>	Fire-Resistance Rated Construction BC 110.3.4		
<input type="checkbox"/>	Public Assembly Emergency Lighting 28-116.2.2		
<input type="checkbox"/>	Final* 28-116.2.4.2, BC 110.4 Directive 14 of 1975, and 1 RCNY §101-10		

* For column 4C, indicate date when the actual final inspection was performed

5 Design Applicant's Statements and Signatures P.E./R.A. responsible for plans, choose both below and sign/seal.

☐ I have identified all of the special inspections, progress inspections and tests required for compliance.

☐ I certify that the Special Inspection and Approved Agencies engaged by the owner to supervise the work specified above are acceptable. (BC 1704.1)

Name (please print) _____

Signature _____ Date _____

P.E./R.A. Seal (apply seal, then sign and date over seal)

TR1 12/20/14


Important for Demolition TR1

- Item 3: Special inspection items
 - Sprinkler systems
 - Standpipe systems




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Demolition Checklist Plans



Demolition Filing Checklist



1. The address on the plan must be the same as the "Filed At" location indicated BIS.

1 Location Information (Filed At)

House No(s): 280	Street Name: BROADWAY			
Borough: Manhattan	Block: 153	Lot: 1	BIN: 1079215*	CB No: 101
Work on Floor(s): PEN 001 thru 007	Apt/Condo No(s):			Zip Code: 10007

2. All drawings must be to scale as per BC 28-104.7.3 (regarding plans drawn to suitable scale).

- All fonts must a minimum of 3/32" in size.

3. If the building is fully occupied or partially occupied:

- Tenant protection and or tenant safety plan may be required.
- Ensure that all occupied areas are shown in full or in part on the plans?

4. The following forms are required as part of your submission:

- Photos of all four elevations
- BEST 2A
- BEST 4B
- DS1
- TR1's
- PW1
- Required Asbestos form

5. The Demolition Plans must graphically represent the following, but is not limited to:

- Site plan must show the property to be demolished and all adjoining properties. Building stories and heights must be provided for both the building being demolished as well as the adjoining buildings with in 20' of the lot in question, in addition to horizontal offset of structures from property lines and from each other. All Addresses and block/lot numbers must be provided. Property lines must be clearly identified in bold lines.
- All Construction fencing/gates including type and location must be identified. The location of the project's info sign must also be shown. A section detail must be provided for the fencing. All dimensions must be shown for the above. BC 3307.3 Signage BC 3301.9.3

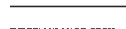
Demo Checklist

- ✓ Is the minimum standard for required items on the demo plan



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Site Safety Plan Objections

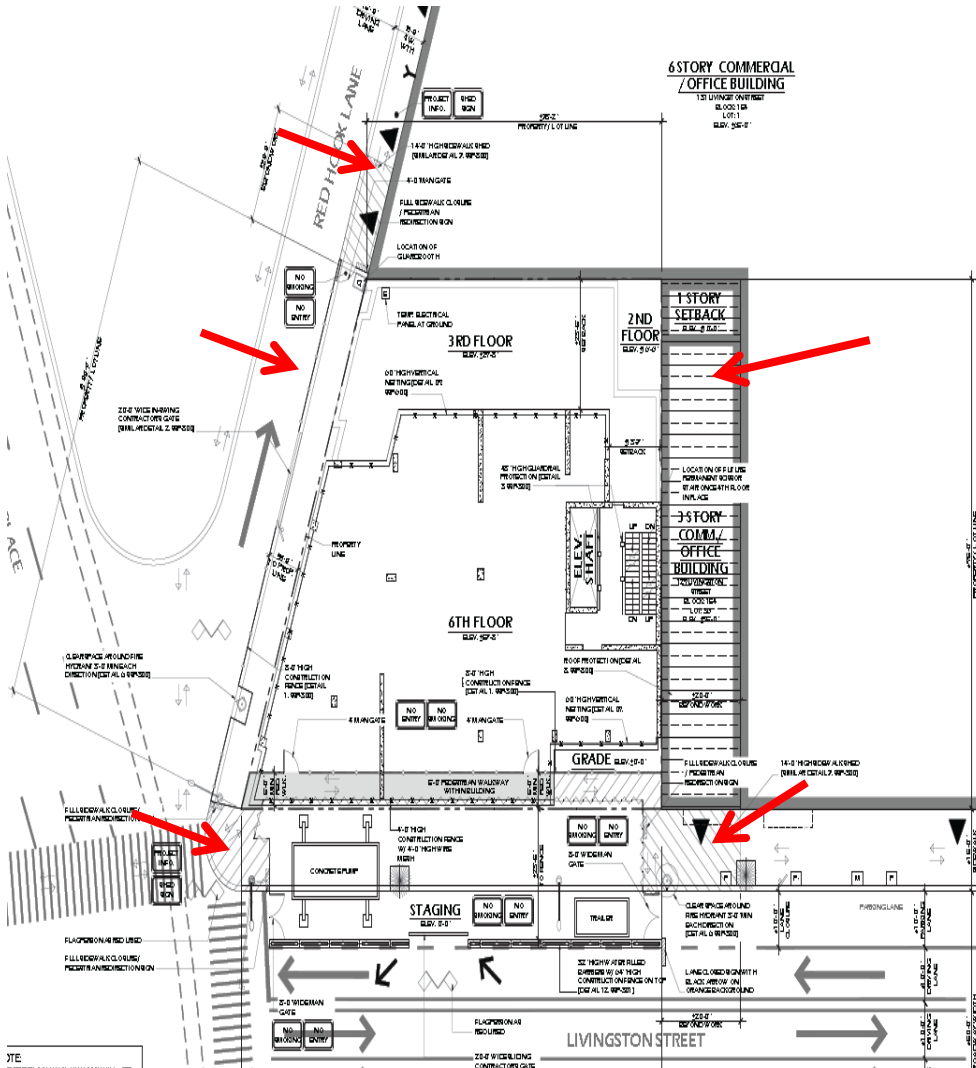


- Fences
- Side walk sheds
- Over head protection

- Roof/Sky lights
- Yards
- Adjoining buildings egress
- Decks/Balconies/Terraces

Site Safety Plan: Below 75feet

Site Safety Plan Objections



Pedestrian Protection

- Fences
- Side walk sheds
- Over head protection

Adjoining

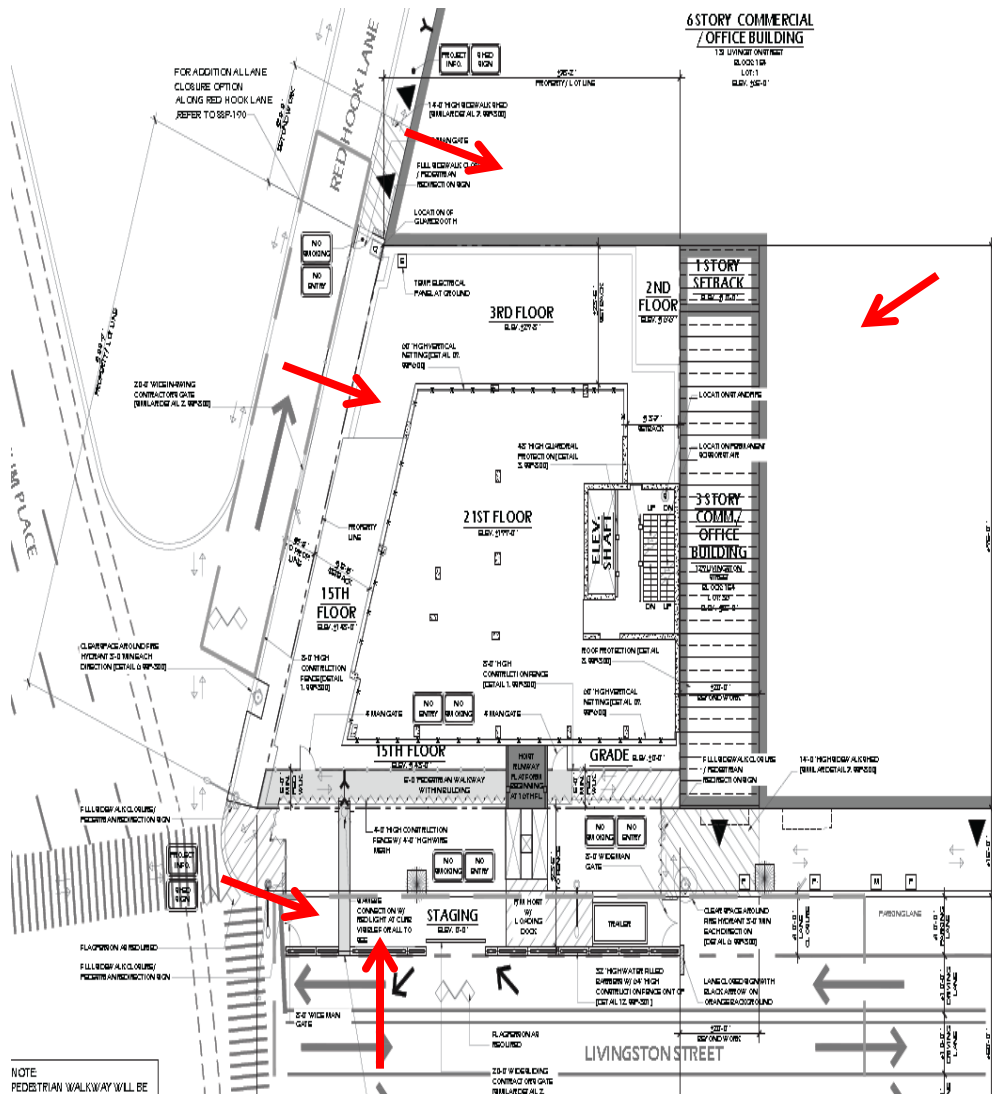
- Roof/Sky lights
- Yards
- Adjoining buildings egress
- Decks/Balconies/Terraces



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Site Safety Plan: Above 75feet

Site Safety Plan Objections



Pedestrian Protection

- Fences
- Side walk sheds
- Over head protection

Adjoining

- Roof/Sky lights
- Yards
- Adjoining buildings egress
- Decks/Balconies/Terraces



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Site Safety Plans

Required Crane information

- Mobile Crane
 - Make & model
 - CN & CD if available
 - Max boom length & minimum boom length
 - Tail swing/counter weight radius
- Tower Crane
 - Make & model
 - CN & CD if available
 - Max boom length & minimum boom length
 - Weather veining radius/counter weight radius



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Building Collapses

Manhattan: West 123rd Street



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Building Collapses

Manhattan: West 123rd Street



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Building Collapses

Manhattan: West 123rd Street



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Building Collapses

Brooklyn: Carroll Gardens



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Building Collapses

Brooklyn: Myrtle Avenue



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Building Collapses

Manhattan: West 124th Street



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Scaffolding Protection During Demolition

Manhattan: Third Avenue



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Common Errors and Omissions in Excavation & Interior Demo Submissions



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Topics

- Brief overview of engineering audits by the Engineering Unit of the Construction Safety Units.
- 10 common errors and omissions noticed during engineering audits/plan reviews.
- Photos of good and bad support of excavations (SOE) and underpinning.
- Discuss the following chapters of the 2014 NYC Building Code relevant to the Excavation, Underpinning and Support of Excavations
 - Chapter 16 - Structural Designs
 - Chapter 17 - Structural Tests and Special Inspections.
 - Chapter 18 - Soils and Foundations
 - Chapter 33 - Safeguards During Construction



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Engineering Unit

The Engineering Unit is a part of the Excavation, Interior Demolition, and Scaffold Safety Units.

- At present, the unit is headed by the Director of Engineering and an Assistant Chief Engineer with four professional engineers/plan examiners.
- The Engineering Unit provides technical support for the inspection team and borough plan exam units and performs audits to enforce the Building Code & public safety.
- Audits are performed proactively and are from referrals to assist the Inspection Team and Borough/HUB.



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Ten Most Common Errors & Omissions

Noticed during Engineering Audits

1. Adjacent buildings structure not shown on the plans. Bottom of existing adjacent footings not indicated.
2. Deficient design of SOE systems where the lateral loads and eccentricities are not accounted for in the design. Existing footing projections are removed.
3. No SOE provided for excavations less than 5ft., but within 5ft. of adjacent foundation.
4. Inadequate bracing for underpinning or SOE systems. Excessive vertical and horizontal displacements. Deflection/lateral movements must be considered in the design (only stress accounted for).



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Ten Most Common Errors & Omissions

Noticed during Engineering Audits (continued)

5. Sequence of construction not indicated or not indicated to sufficient detail
6. No monitoring specified for protection of adj., buildings and/or landmark structures within 90ft (TPPN 10/88).
7. No pre-construction surveys for determining existing condition of adjacent buildings.
8. Structural stability inspections for adjacent structures not indicated or implemented.
9. Inadequate soil investigations and lack of documentation.
10. Adjacent utilities not surveyed/located and documented prior to start of construction.



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Ten Most Common Errors & Omissions Adjacent Building Structure Not Indicated

1. *Adjacent buildings structure not shown on the plans. Bottom of existing adjacent footings not indicated.*



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2014 Building Code – Chapter 1 Administration

BC 107 Construction Documents

BC 107.7.1 Foundation Plans

Foundation plans shall show compliance with the requirements of Chapter 18 of this code regarding foundation design and shall show the plan locations, design loads, design elevations of the bottoms, and details as to sizes, reinforcement, and construction of all footings, piers, foundation walls, pile groups, and pile caps. **The levels of footings of adjacent structures shall be indicated or, if the adjacent structures are pile supported, this shall be stated.** Where applicable, the plans shall include underpinning details.



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2014 Building Code

Chapter 1: Administration

BC 107 Construction Documents

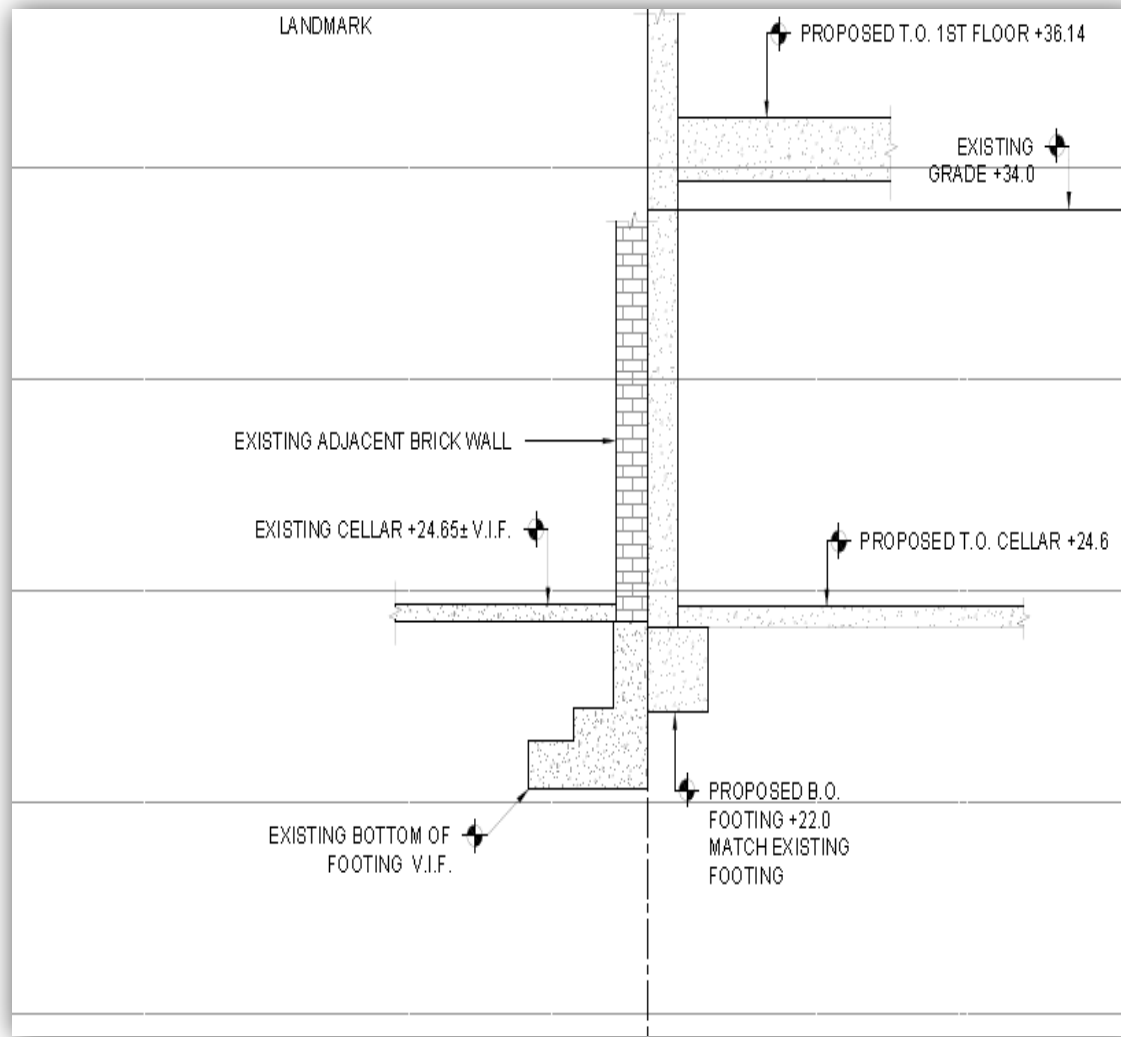
107.8 Earthwork Plans

For excavation operations, the plans shall also indicate the levels of footings of all adjacent structures or, if the adjacent structures are pile supported, this shall be stated. Where applicable, the plans shall also include underpinning details, soil information in accordance with Chapter 18, and a final grading plan representing the lot after all earthwork, excavation or fill operations have been completed.



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Bottom of Existing Footing V.I.F.



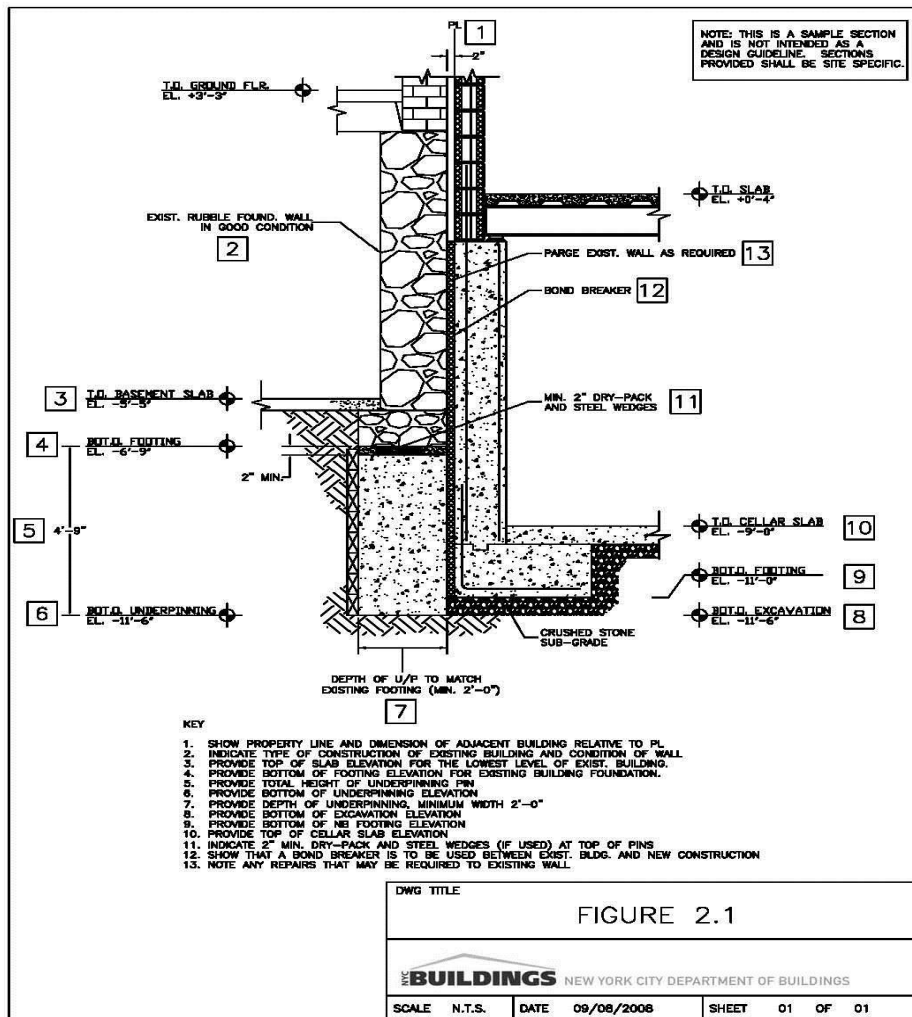
Bottom of existing adjacent footings must be documented prior to filing and permitting with the Department. Do not address during construction and note V.I.F.

No Good



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Bottom of Existing Footing Indicated



Example of sufficient documentation of existing & new construction and bottom of existing adjacent footing

Good



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Soldier Piles



Installed without
Subsurface Info –
No Test Pits

Result: Two soldier
piles pierced an
existing column
footing



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Ten Most Common Errors & Omissions

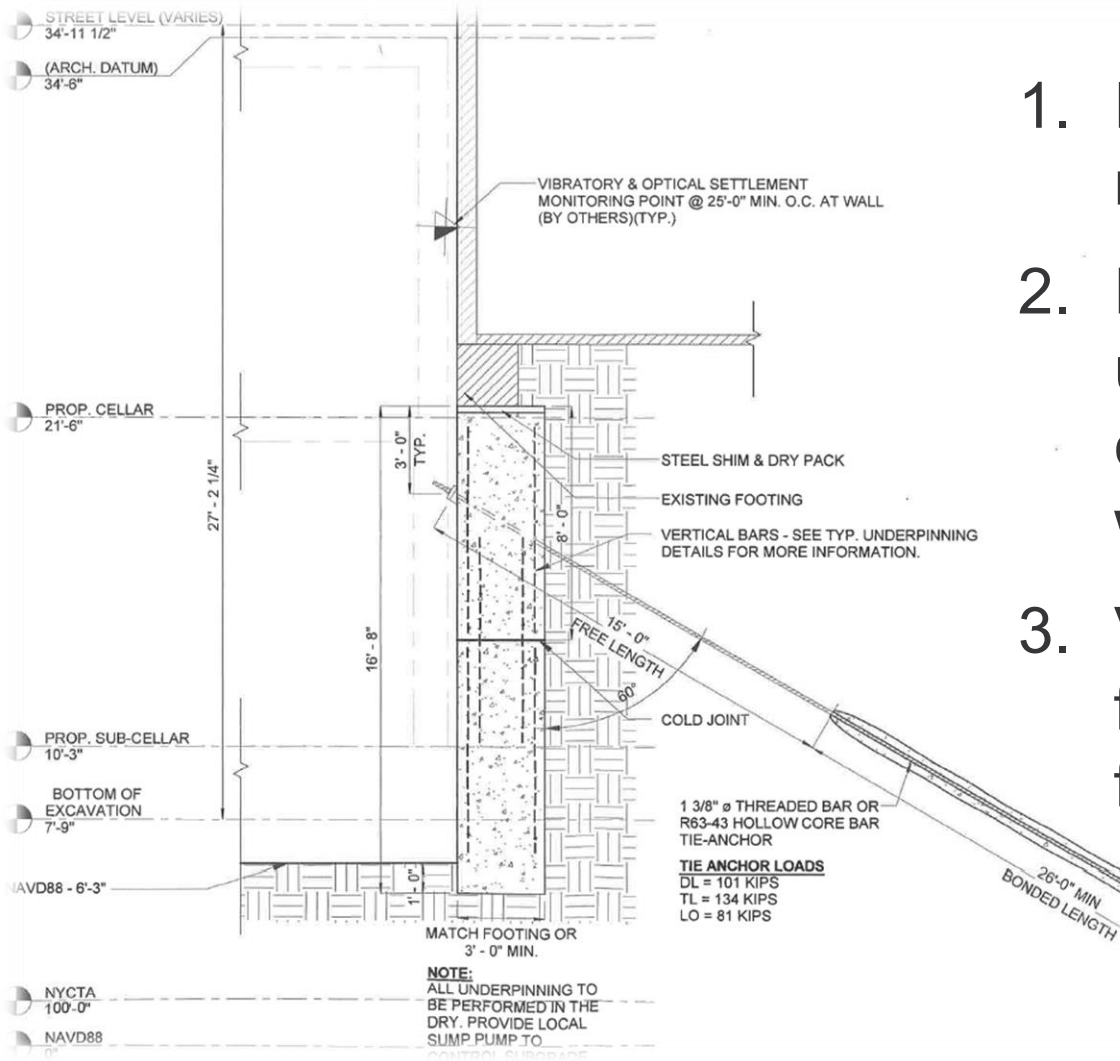
Lateral Loads & Eccentricities Not Accounted for in the Design

2. *Deficient design of SOE systems where the lateral loads and eccentricities are not accounted for in the design. Existing footing projections are removed.*



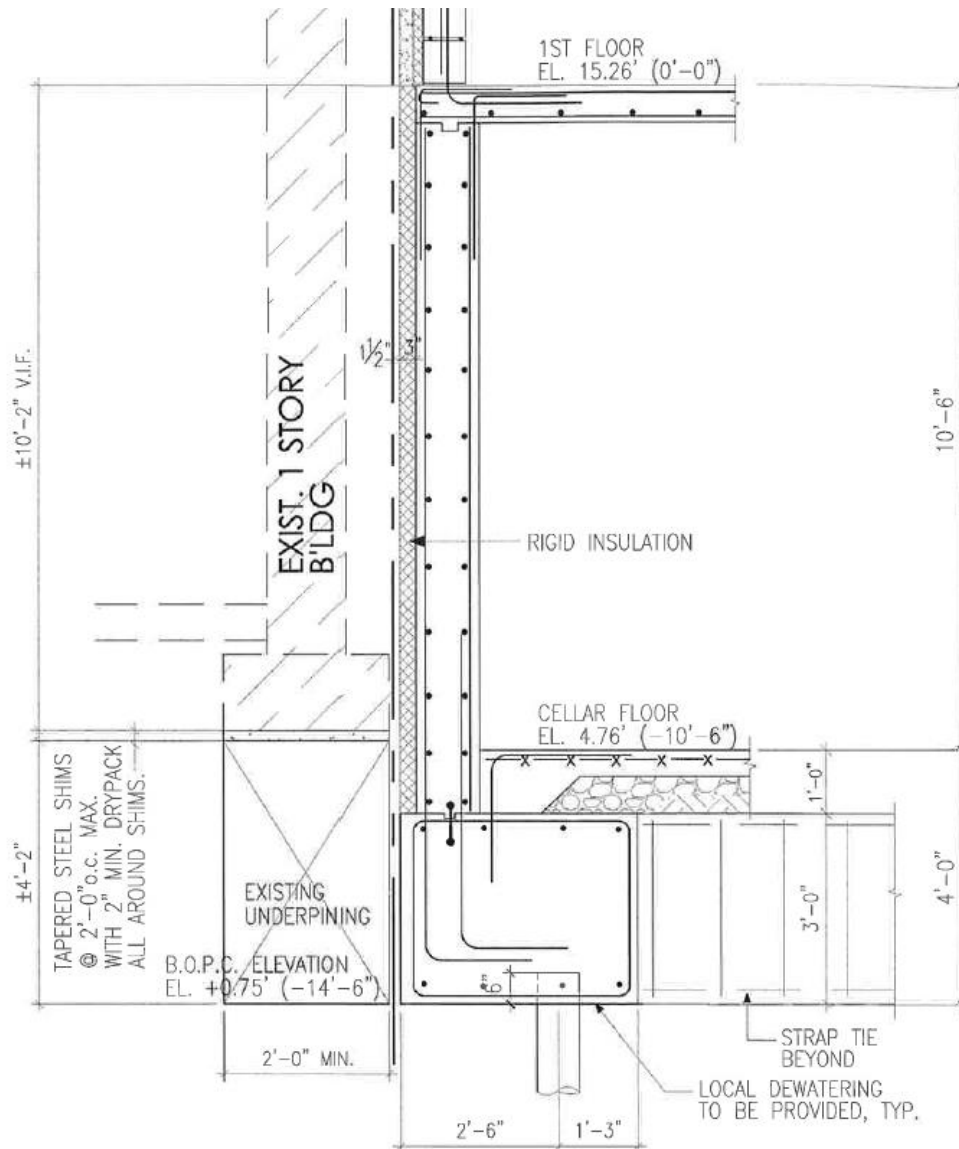
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Eccentricity and Lateral Loads



1. Footing projection/toe removed.
2. Eccentrically loaded underpinning. Not centered with footing width above.
3. Vertical component from tieback accounted for in design?

Eccentricity and Lateral Loads



1. Footing projection/toe maintained.
2. Centrally loaded footing.
3. Width of underpinning matches existing footing width.

Ten Most Common Errors & Omissions

No SOE provided for < 5ft

- 3. No SOE provided for excavations less than 5ft., but within 5ft. of adjacent foundation.*



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2014 Building Code

Chapter 33: Safeguards

BC 3304 Soil and Foundation Work

3304.2 Support of excavation drawings

The sides of all excavations, including related or resulting embankments, shall be supported as specified on the drawings. Such drawings shall be site specific and shall clearly illustrate all related protection and support of excavation, including but not limited to sloping, stepping, sheeting, shoring, bracing, guardrail systems, and fences as required by Section 3304.4 (protection of sides of excavation), with all dimensions indicated. Such drawings shall also indicate any utilities or public infrastructure impacted by the excavation.



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Error and Omission #3

BC 3304 Soil and Foundation Work

3304.2 Support of excavation drawings (continued)

Exceptions:

1. Drawings for the support of excavations are not required for an excavation:

1.1 That occurs 5 feet or less in depth **PROVIDED**:

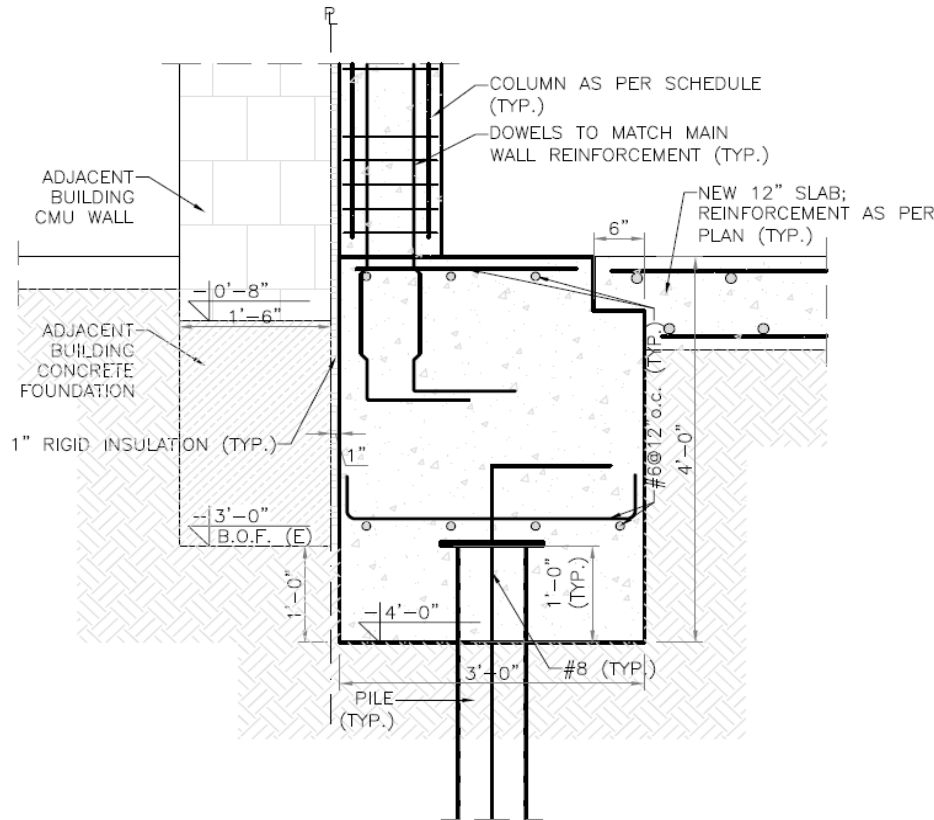
1.1.1 The excavation also occurs more than 5ft from **all** footings and foundations; **or**

1.1.2 Where the excavation occurs within 5ft or less from a footing or foundation, such excavation does not occur below the level of the footing or foundation.



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**SOE: No Support of Excavation
for Depth Less than 5ft.
*Error & Omission #3***



Excavation is occurring adjacent to and below the existing foundation. Depth is 4ft.

ADJACENT BUILDING - CORNER CONDITION

Scale: $3/4" = 1'-0"$



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Ten Most Common Errors & Omissions

Inadequate Bracing and Displacement of Support of Excavation

4. Missing or inadequate bracing for underpinning or support of excavation. Excessive vertical and horizontal displacement. Deflection/lateral movement must be considered in design (only stress accounted for).



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2014 Building Code

Chapter 18: Foundations

BC 1814 Underpinning and Support of Adjacent Property

1814.1.1 Underpinning and Bracing

Underpinning piers, walls, piles and footings shall be designed as permanent structural elements and installed in accordance with provisions of this chapter and Chapter 33 and shall be inspected in accordance with the provisions of Chapter 17. Underpinning shall be designed and installed in such a manner so as to limit the lateral and vertical displacement of the adjacent structure to permissible values as established in accordance with Section 1814.3 (Monitoring).



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Local Collapse



Undermining of
rubble foundation
wall



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Chapter 33: Safeguards

BC 3309 Protection of Adjoining Property

3309.4 Soil or foundation work affecting adjoining property

Whenever soil or foundation work occurs, regardless of the depth of such, the person who causes such to be made shall, at all times during the course of such work and at his or her own expense, preserve and protect from damage any adjoining structures, including but not limited to footings and foundations...



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Chapter 33: Safeguards

BC 3309 Protection of Adjoining Property

3309.4.1 Additional safeguards during construction The following additional requirements shall apply during excavation:

1. The person causing the excavation shall support the vertical and lateral load of the adjoining structure by proper foundations, underpinning, or other equivalent means where the level of the foundations of the adjoining structure is at or above the level of the bottom of the new excavation.



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SOE: Lateral Movement Utilities Not Safeguarded *Error & Omission #4*



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SOE: Insufficient Bracing

Error & Omission #4



SOE System: Insufficient Bracing



Lateral movement and settlement of adjacent building

SOE: Soldier Piles and External Bracing



20ft deep excavation with sufficient bracing provided by **raker** and **waler** system

Good Example



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Ten Most Common Errors & Omissions Sequence of Construction

5. Sequence of construction not indicated or not indicated to sufficient detail.



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Chapter 18: Foundations

BC 1814 Underpinning and Support of Adjacent Property

1814.1 General

Where the protection and/or support of a structure or property adjacent to an excavation is required, an engineer shall prepare a preconstruction report summarizing the condition of the structure or property. The engineer shall determine the requirements for underpinning or other protection of the site and structure-specific plans, including details and *sequence of work* for submission to the commissioner.



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Poor/Insufficient Sequencing

Sequence of Work

Responsibility of the Contractor. Means and Methods of Construction...NO

Shoring Procedure

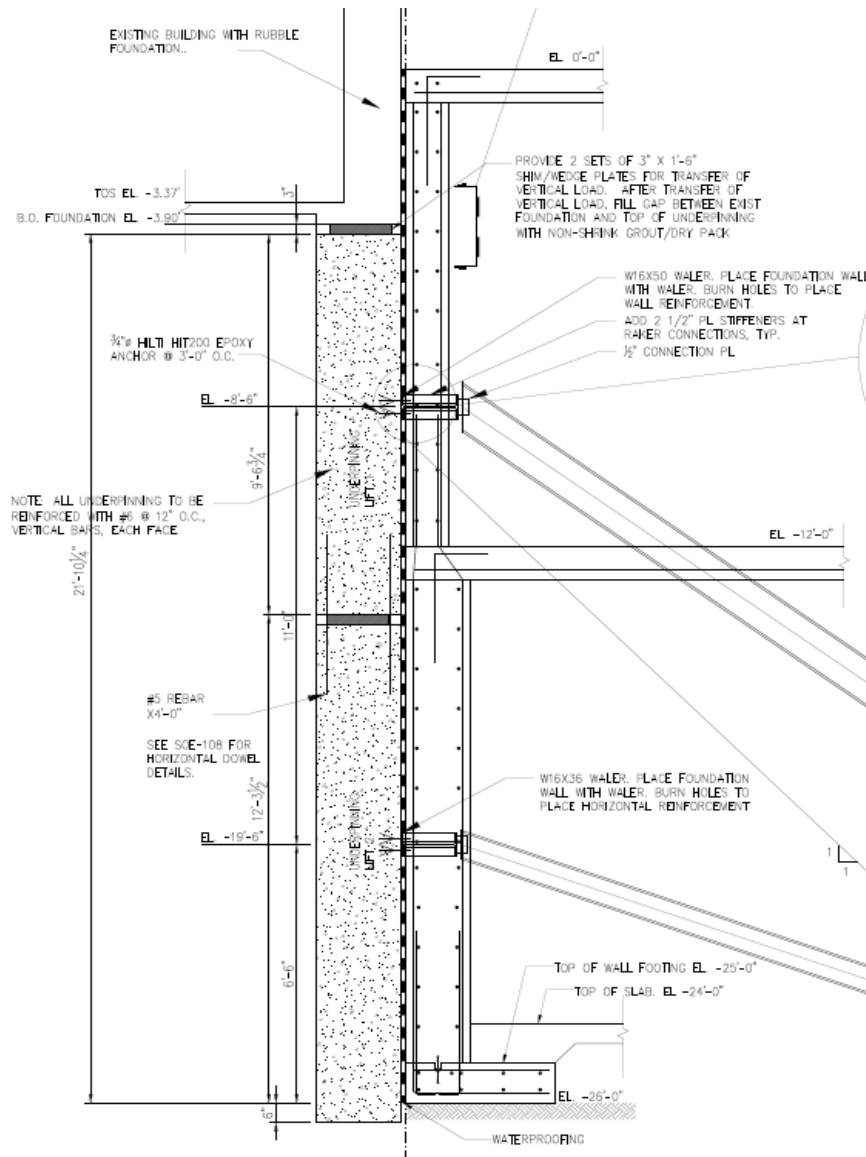
1. Excavate locally to insert Soldier Beam to E.L.
2. Insert Soldier Beam
3. Excavate locally and install Timber Lagging 3" X 10" OR 1" steel plate.
4. Continue STEP 3 until the excavation is done up to required elevation.
5. Continue with proposed construction.

Site Specific or Generic?



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Multi Tier Underpinning Sequence – E&O #5



CONSTRUCTION SEQUENCE:

1. START WITH LIFT 1 UNDERPINNING LABELED "A". EXCAVATE AND CONSTRUCT APPROACH PIT PER DETAILS.
2. CONSTRUCT FORMWORK PER UNDERPINNING PIT FORMWORK DETAILS.
3. PLACE CONCRETE FOR LIFT 1, PIN "A".
4. TRANSFER LOAD TO LIFT 1, PIN "A" PER NOTES 18 HOURS MIN AFTER THE UNDERPINNING IS CAST. DO NOT APPLY LATERAL LOAD TO UNDERPINNING UNTIL 3 DAYS AFTER THE UNDERPINNING IS CAST.
5. REMOVE APPROACH PIT AND BACKFILL.
6. ONCE CONSTRUCTION OF ALL LIFT 1 "A" UNDERPINNING IS COMPLETE, SPECIAL INSPECTOR SHALL PERFORM VISUAL INSPECTION TO ENSURE PINS HAVE NOT SETTLED/SHRUNK AND THAT THE VERTICAL LOAD IS BEING PROPERLY TRANSFERRED. THERE SHOULD BE NO GAPS BETWEEN THE BOTTOM OF EXISTING FOOTING AND THE TOP OF THE UNDERPINNING. IF VERTICAL LOAD IS NOT PROPERLY TRANSFERRED, RE-SHIM AND DRY PACK. CONTRACTOR AND SPECIAL INSPECTOR SHALL INFORM ENGINEER IMMEDIATELY AND WAIT FOR AUTHORIZATION TO PROCEED.
7. REPEAT STEPS 1-6 FOR LIFT 1 UNDERPINNING LABELED "B", "C", AND "D" WHILE PERFORMING CONTINUOUS VISUAL INSPECTIONS.
8. EXCAVATE DOWN TO JUST BELOW TOP BRACING ELEVATION. INSTALL TOP WALKER.
9. TRENCH (1) 5' WIDE SECTION @ 1:1 SLOPE AS SHOWN IN SECTION.
10. INSTALL TOP RAKER AND HEEL BLOCK.
11. MOVE TO NEXT RAKER LOCATION AND CONTINUE TO TRENCH LOCALLY AND INSTALL TOP RAKERS AND HEEL BLOCKS ONE AT A TIME UNTIL ALL TOP RAKERS ARE INSTALLED.
12. CONSTRUCT LIFT 2 BY STARTING WITH
13. CONSTRUCT FORMWORK PER UNDERPINNING PIT FORMWORK DETAILS.
14. PLACE CONCRETE FOR LIFT 2, PIN "A".
15. TRANSFER LOAD TO LIFT 2, PIN "A" PER NOTES 18 HOURS MIN AFTER THE UNDERPINNING IS CAST. DO NOT APPLY LATERAL LOAD TO UNDERPINNING UNTIL 3 DAYS AFTER UNDERPINNING IS CAST.
16. REMOVE APPROACH PIT AND BACKFILL.
17. ONCE CONSTRUCTION OF ALL LIFT 2 "A" UNDERPINNING IS COMPLETE, SPECIAL INSPECTOR SHALL PERFORM VISUAL INSPECTION TO ENSURE PINS HAVE NOT SETTLED/SHRUNK AND THAT THE VERTICAL LOAD IS BEING PROPERLY TRANSFERRED. THERE SHOULD BE NO GAPS BETWEEN THE BOTTOM OF EXISTING FOOTING AND THE TOP OF THE UNDERPINNING. IF VERTICAL LOAD IS NOT PROPERLY TRANSFERRED, RE-SHIM AND DRY PACK. CONTRACTOR AND SPECIAL INSPECTOR SHALL INFORM ENGINEER IMMEDIATELY AND WAIT FOR AUTHORIZATION TO PROCEED.
18. REPEAT STEPS 12-17 FOR LIFT 2 UNDERPINNING LABELED "B", "C", AND "D" WHILE PERFORMING CONTINUOUS VISUAL INSPECTIONS.
19. STAGGER UNDERPINNING PIERS IN LIFT 1 AND LIFT 2 PER DETAIL.
20. EXCAVATE DOWN TO JUST BELOW BOTTOM BRACING ELEVATION. INSTALL BOTTOM WALKER.
21. TRENCH (1) 5' WIDE SECTION AS SHOWN IN SECTION.
22. INSTALL BOTTOM RAKER.
23. MOVE TO NEXT RAKER LOCATION AND CONTINUE TO TRENCH LOCALLY AND INSTALL BOTTOM RAKERS ONE AT A TIME UNTIL ALL BOTTOM RAKERS ARE INSTALLED.
24. ONCE ALL SUPPORT BRACING IS INSTALLED, EXCAVATE TO REQUIRED ELEVATION AS SHOWN IN DETAIL.



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Multi Tier Underpinning



Doable if properly designed, braced, sequenced and monitored.

Good Example



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SOE: Soldier Pile and Lagging Wall Failure



Improper sequencing led to failure.

Toe-pin was required in lieu of rock socket for soldier piles.

Ten Most Common Errors & Omissions Monitoring

6. No monitoring specified for protection of adj., buildings and/or landmark structures with 90ft (TPPN 10/88).



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2014 Building Code

Chapter 18: Foundations

BC 1814 Underpinning and Support of Adjacent Property

1814.3 Monitoring

When excavation, foundation construction, or underpinning is required, adjacent structures and properties shall be monitored in accordance with a plan prepared by the engineer. The engineer shall develop the scope of the monitoring program, including location and type of instruments, frequency and duration of readings, and permissible movement and vibration criteria.



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Chapter 18: Foundations

BC 1814 Underpinning and Support of Adjacent Property

1814.3 Monitoring (continued)

This scope shall take into account the structures or property to be monitored and the conditions thereof. The monitoring program shall include necessary actions to address exceedances. These actions shall include notification of the commissioner. Monitoring of historic and landmarked structures shall be subject to special requirements as determined by the department.



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Chapter 17: Special Inspections

BC 1704.20 Structural Stability

1704.20.7.1 Monitoring

The design documents shall include any requirements for monitoring of the subject structure and/or adjacent structures, as determined by the registered design professional responsible for the design. The monitoring plan shall be specific to the buildings to be monitored and operations to be undertaken, and shall specify the scope and frequency of monitoring, acceptable tolerances, and reporting criteria for when tolerances are exceeded.



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2014 Building Code

Chapter 33: Safeguards

BC 3309 Protection of Adjoining Property

3309.4.4 Monitoring

During the course of excavation work the following shall be monitored in accordance with Section 3309.16:

1. Buildings that are within a distance from the edge of the excavation that is equal to or less than the maximum depth of the excavation.
2. Historic structures that are contiguous to or within a lateral distance of 90 feet from the edge of the lot where an excavation is occurring (TPPN 10/88).



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2014 Building Code

Chapter 33: Safeguards

BC 3309 Protection of Adjoining Property

3309.16 Monitoring plan

Where monitoring is required by Section 3309, such monitoring shall be in accordance with a monitoring plan developed by a registered design professional and acceptable to the commissioner. The monitoring plan shall be specific to the structures to be monitored and operations to be undertaken, and shall specify the scope and frequency of monitoring, acceptable tolerances, and reporting criteria for when tolerances are exceeded.



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Ten Most Common Errors & Omissions Pre-construction Surveys

7. No pre-construction surveys for determining condition and protection of adjacent buildings.



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Chapter 18: Foundations

BC 1814 Underpinning and Support of Adjacent Property

1814.1 General

Where the protection and/or support of a structure or property adjacent to an excavation is required, an engineer shall prepare a preconstruction report summarizing the condition of the structure or property.

The engineer shall determine the requirements for underpinning or other protection of the site and structure-specific plans, including details and sequence of work for submission to the commissioner.



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Chapter 33: Safeguards

BC 3309 Protection of Adjoining Property

3309.4.3 Preconstruction survey

No excavation work to a depth of 5 feet to 10 feet within 10 feet of an adjacent building, or an excavation over 10 feet anywhere on the site shall commence until the person causing an excavation to be made has documented the existing conditions of all adjacent buildings in a preconstruction survey.



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Ten Most Common Errors & Omissions Structural Stability Inspections

8. *Structural stability inspections for adjacent structures not indicated or implemented.*



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2014 Building Code: Chapter 17

Special Inspections

BC 1704.20 Structural Stability

1704.20.1 Structural stability of existing buildings

Alterations to existing structures in which loads are transferred from one structural system of structural elements to another, such as installation of columns or girders, replacement of existing bearing walls, the creation of openings or slots in existing walls, girders or floors, alteration of arches, rigid frames, trusses in frame buildings, where the stability or integrity of a structural system is to be temporarily diminished, or where otherwise required by the commissioner, shall be subject to special inspections in accordance with Sections 1704.20.6 through 1704.20.10.



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Chapter 17: Special Inspections

BC 1704.20 Structural Stability

1704.20.1.1 Construction operations influencing adjacent structures.

Where construction operations have the potential to affect structurally the condition or occupancy of the subject structure and/or an adjacent structure, the structural stability of such structures shall be subject to special inspections in accordance with Sections 1704.20.6 through 1704.20.10.



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Ten Most Common Errors & Omissions Inadequate Soil Investigations

9. Inadequate soil investigations and lack of documentation.



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2014 Building Code: Chapter 1 Administration (BC 107 Construction Documents)

BC 107.7.1 Foundation Plans

In addition, there shall be a statement indicating the character and minimum class of the soil strata required for the support of the foundation; the allowable soil pressure used for the design of footings; and the character, class, and presumptive bearing capacity of the bearing stratum to which piling is required to penetrate. The types and design capacities of pilings and the records of required borings or test pits shall also be shown...



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Chapter 16: Structural Design

BC 1603 Construction Documents

BC 1603.1 General (continued)

1603.1.7 Geotechnical Information

The design load-bearing values of soils or rock under shallow foundations and/or the design load capacity of deep foundations shall be shown on the construction drawings.



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Ten Most Common Errors & Omissions Surveying/Locating Adjacent Utilities

10. *Adjacent utilities not surveyed/located and documented prior to start of construction.*



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2014 Building Code: Chapter 1 Administration

BC 107 Construction Documents

107.8 Earthwork Plans

Where the application is sought solely for or includes earthwork, excavation or fill operations, including but not limited to site decontamination, soil remediation and grading, the applicant shall submit 1) a lot diagram showing the exact location of the lot and dimensions to the nearest corner; and

2) plans showing the exact location, extent, and depth or height of the proposed earthwork, excavation or fill operation and any existing utilities, foundations or other infrastructure potentially impacted by the earthwork, excavation or fill operation.



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Chapter 33: Safeguards

BC 3304 Soil and Foundation Work

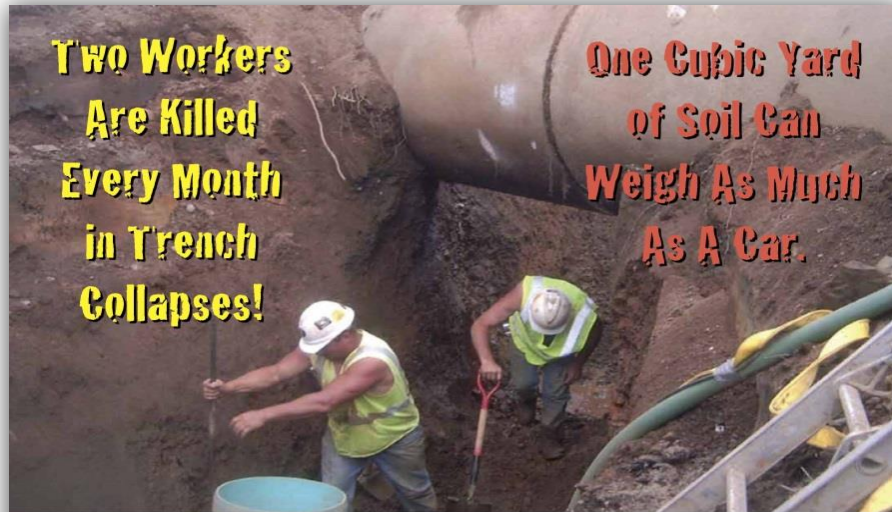
3304.2 Support of excavation drawings

The sides of all excavations, including related or resulting embankments, shall be supported as specified on the drawings. Such drawings shall be site specific and shall clearly illustrate all related protection and support of excavation, including but not limited to sloping, stepping, sheeting, shoring, bracing, guardrail systems, and fences as required by Section 3304.4 (protection of sides of excavation), with all dimensions indicated. Such drawings shall also indicate any utilities or public infrastructure impacted by the excavation.



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Project Examples & Photos



AN UNPROTECTED TRENCH IS AN EARLY GRAVE

Make sure that trenches are protected from cave-ins by:

- Sloping or benching trench walls, or
- Shoring trench walls with supports, or
- Shielding trench walls with trench boxes.



Photo courtesy of Speed Shoring Corp.

Inspect trenches at the start of each shift and as needed, throughout the workday.

Provide safe entry and exit through the use of ladders, ramps or stairways.

Know where underground utilities are located before digging.

Keep all equipment, materials and spoil piles at least 2 feet back from trench edges.



Division of Occupational Safety and Health

www.lni.wa.gov/Safety 1-800-423-7233

Other formats for persons with disabilities are available on request. Call 1-800-547-8367. TDD users, call 360-902-5797. L&I is an equal opportunity employer. This poster is based on OSHA poster 3215-08R-11. The Washington State Department of Labor & Industries thanks OSHA for permission to use this poster.



Washington State Department of Labor & Industries

PUBLICATION FSP0-912-000 [04-2013]

A single cubic yard of soil weighs approximately: 3,250 lbs.



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Underpinning



Adequate
approach and
box pit
construction

Good Example



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Underpinning



Poor Example

- Safeguards?
- Approach pits?
- SOE?
- Safety gear?

Underpinning



Poor Example

- Approach Pits?
- Width of Pin?
- Lagging?
- Sequence?

Underpinning



- Width of Pin?
- Approach Pits/
SOE?
- Lagging/
SOE?

Poor Example

Underpinning: Wide Pins



8ft. wide pins - double the specified 4ft. width



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Underpinning Tunneling

Never try to dig a tunnel for underpinning a foundation - use box and approach pits.



SOE: Soldier Pile & Lagging



Good Example



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SOE: Soldier Pile & Lagging



Good Example



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Design of Deep Support of Excavation



45 ft. deep sheeted excavation – upper most tie back too low from the top of excavation; Lateral movement.



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Lateral Movement of Support of Excavation



Settlement visible at top of the SOE system due to lateral movement

Inadequate Support of Excavation



- Insufficient design
- Steel placed without any connections

Collapse: Improperly Designed SOE



Unsupported Excavation



- More than 5ft.?
- Sequence?
- Excavation adjacent to neighboring foundation.

No Support of Excavation



Example of improper means and methods/sequence for SOE installation. Full excavation was performed first! No SOE.



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Deep Shear Cuts without Support of Excavation



10ft. high shear cuts - No Support of Excavation. Undermining of adjacent foundations.

Thank you!



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This concludes the American Institute of Architects Continuing Education Systems Course.

Department Contact for AIA:

Allison Ginsburg

Aginsburg@buildings.nyc.gov, 212-393-2167

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