



# CONSTRUCTION SAFETY: CODE REQUIREMENTS & IMPLEMENTATION with a FOCUS ON CASE STUDIES

presented by

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# DESCRIPTION

This presentation will provide an overview of **NYC Building Codes**, specifically **Chapters 16, 17, 18** and **33**, pertaining to excavations, interior demolitions and scaffold safety. Case studies will be utilized to examine how adjacent properties are impacted during excavations and interior demolitions. Some participants will also be alerted to hazardous conditions on public safety that arise from design and construction errors and omissions.

# LEARNING OBJECTIVES

**At the end of this presentation, you will be able to:**

1. Participants will discuss requirements related to Construction Safety including excavation, interior demolition and scaffolds/sidewalk sheds
2. Participants will analyze case studies and be able to identify site and public safety issues triggered by unsafe excavations.
3. Participants will examine various interior demolition/alteration case studies that demonstrate site and public safety issues caused by non-conformance.
4. Participants assess sidewalk shed and scaffold design, drawings and inspection requirements and utilize case studies to identify common errors and omissions.

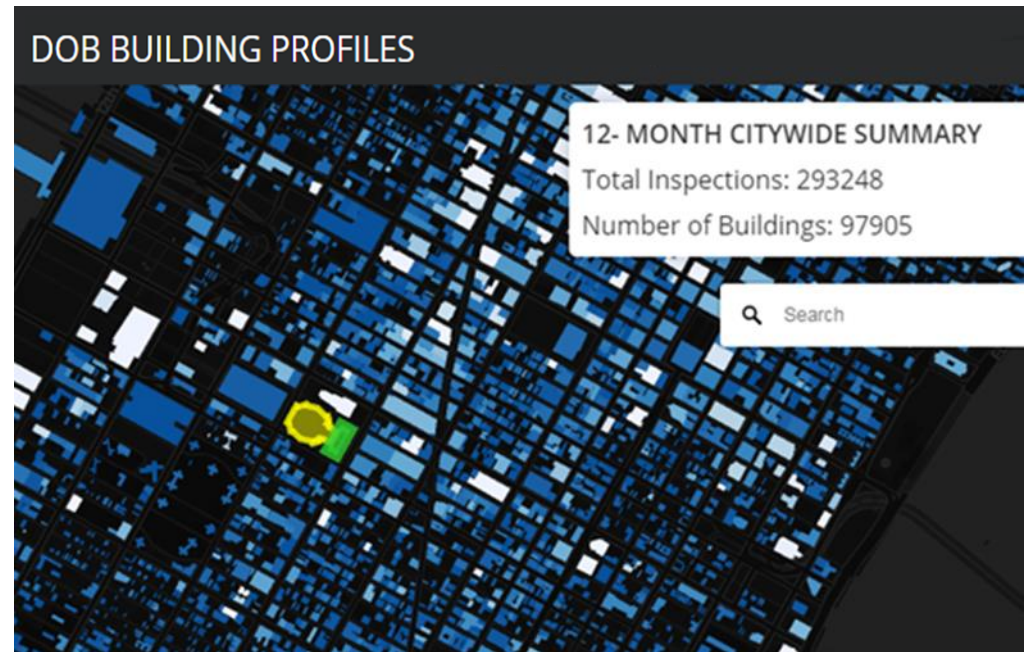
# AGENDA

- General Governing Codes
- Excavation: Notable Codes & Case Studies
- Structural Steel: Notable Codes & Case Studies
- Interior Demolition: Notable Codes & Case Studies
- Scaffold/Sidewalk Shed: Notable Codes & Case Studies

# RECENT DEPARTMENT RESOURCE

## DOB Building Profiles Map (1 of 2)

This interactive map provides current building activity for the past 12 months including permits, complaints, inspections, violations and accidents. Select a category from the main menu to view specific types of activity across the city. Or click on a building footprint to get aggregated building profile statistics. DOB data presented in this application is updated weekly.



<https://www1.nyc.gov/assets/buildings/html/dob-building-profiles.html>

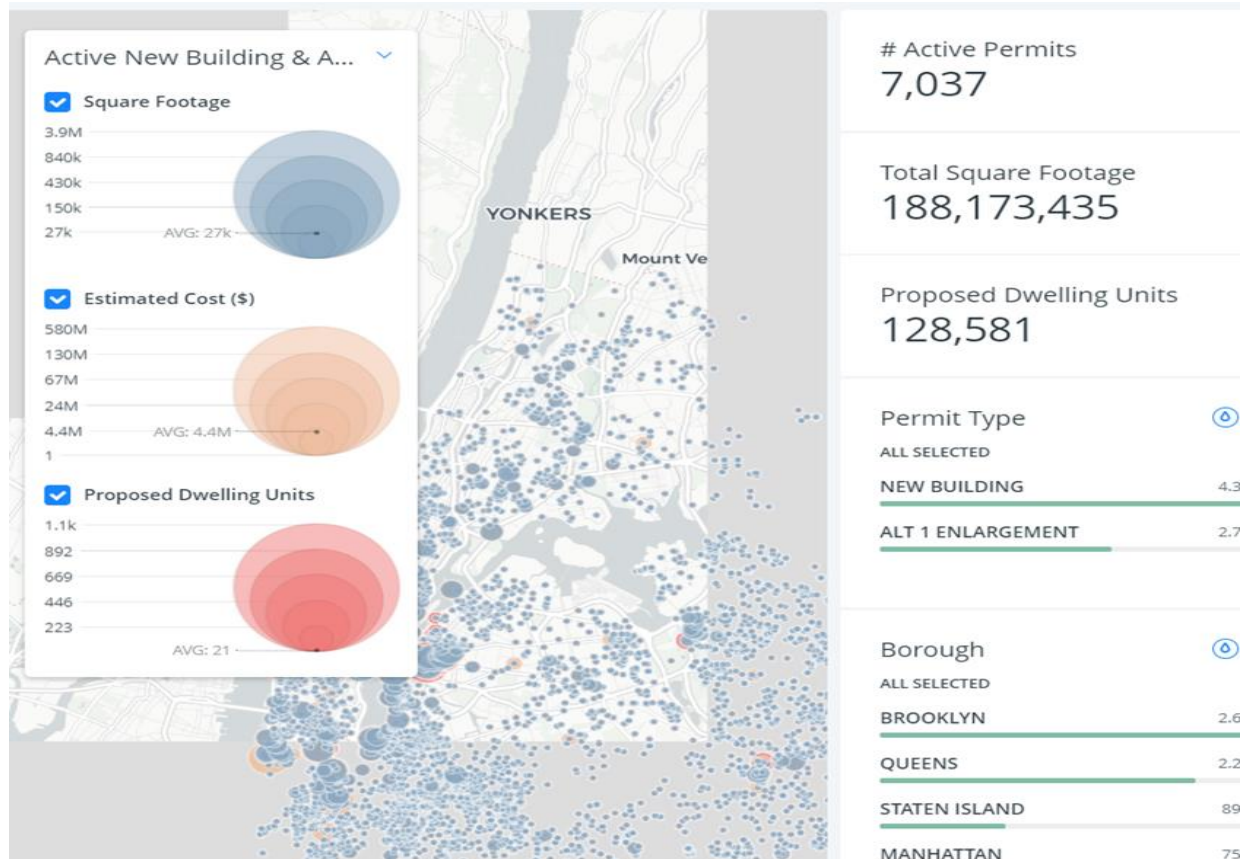
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# RECENT DEPARTMENT RESOURCE

## Real-time Construction Map (2 of 2)

<https://www1.nyc.gov/assets/buildings/html/nyc-active-major-construction.html>



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The background of the slide is a faded, light-colored image of a building's steel framework under construction. A construction crane is visible on the right side of the frame. The overall tone is light and professional.

# **GENERAL GOVERNING CODES & NOTABLE PROVISIONS**

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# GOVERNING CODES

- **NYC Administrative Code** (2014)
- **NYC Building Codes** (2014, Optional Use of Prior)  
Prior Codes still govern the use of existing buildings  
NYC Building Codes:
  - 1860      – 1887      – 1896      – 1899
  - 1906      – 1916      – 1922      – 1938
  - 1968      – 2008      – 2014
- **NYC Rules** (1 RCNY 101-06, 1 RCNY 101-07, 1 RCNY 3301-02)
- **NYC Building Bulletins** (BB 2016-12, BB 2016-005)
- **IMPORTANT** - Industry Notices (DOB Website)

# NOTABE PROVISIONS: ADMINISTRATIVE CODE (1/2)

**AC 28–301.1 Owner’s responsibilities** – All buildings and all parts thereof and all other structures shall be maintained in a **safe** condition...

- In addition this governs notification to DOB of hazardous conditions.

# NOTABE PROVISIONS: ADMINISTRATIVE CODE (2/2)

- **AC 28-101.2 – Intent** – Establish reasonable **minimum** requirements  
*(concept dates back to 1860)*
- **AC 28-103.2** – Interpretation – liberally  
*(first occurrence 1866)*
- **AC 28-104.7.1 – Construction documents to be of sufficient clarity**

The background of the slide is a faded, light-colored image of a building's steel framework under construction. A construction crane is visible on the right side of the frame. The overall tone is light and airy.

# **EXCAVATION**

## *Notable Codes & Case Studies*

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# EXCAVATION: NOTABLE CODES & CASE STUDIES



## INDUSTRY NOTICE

### Earthwork Notification: 811 (Call Before You Dig) One Call Ticket Number Requirement

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Beginning May 1, 2017, the Department of Buildings requires Earthwork Contractors to provide the 811 (Call Before You Dig) One Call ticket number when making normal notification of the commencement of earthwork. The required ticket number can be obtained through the 811 One Call phone number or online at [www.newyork-811.com](http://www.newyork-811.com).

Notification is not complete unless the 811 ticket number is provided to the Department. Once the Department receives the required ticket number, the information will be recorded in the Department's notification database. All documents related to the notification **must** be kept on-site and available upon request.

*NOTE: The 811 ticket number **must** address **all street frontages** associated with the excavation.*

To complete the Department's Earthwork Notification, please call (212) 393-2550. For questions or additional information, please email [Enquiry@buildings.nyc.gov](mailto:Enquiry@buildings.nyc.gov).

## 811 Call Before You Dig Notification

As of May 1, 2017 it is required that the **811 Call Before You Dig** ticket number(s) be provided for **all** street frontages associated with the excavation

# EXCAVATION: NOTABLE CODES & CASE STUDIES

*(1 of 2)*

**1803.1 Excavations near foundations.** Excavations for any purpose shall not remove vertical or lateral support from any foundation without first underpinning or protecting the foundation against settlement or lateral translation. Where required, underpinning or shoring shall be provided in accordance with Section 1814.

**§1803.1 – Structures must be protected from removing support and causing settlement and lateral translation.**

- Pre-permit critical requirement
- Design item

# EXCAVATION: NOTABLE CODES & CASE STUDIES

*(2 of 2)*

## Drawing Requirements

- §107.3 – Lot diagram
- §107.7.1 – Foundation plans
- §107.7.3 – Detailed drawings
- §107.8 – Earthwork plans
- §3304.2 – Support of excavation drawings
- §3304.4 – Protection of sides of excavations

# EXCAVATION: PRECONSTRUCTION REPORTS

(1 of 3)

## SECTION 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 preconstruction report shall be prepared based on an examination of the structure or property, the review of available documents and, if necessary, the excavation of test pits. The engineer shall determine the requirements for underpinning or other protection and prepare site and structure-specific plans, including details and sequence of work for submission to the commissioner. Such protection may be provided by underpinning, sheeting, and bracing, or by other means acceptable to the commissioner.

### §1814.1 – Preconstruction report required by a P.E.

- Basis of structural stability
  - Support of excavation;
  - Underpinning; and
  - Support of adjacent properties
- Pre-permit critical requirement
- This has to be provided upon Department request



# EXCAVATION: PRECONSTRUCTION REPORTS

*(2 of 3)*

## Suggested Minimum Requirements

Affirmative statement that all adjoining structures (list structures) have been reviewed and approved for the proposed support systems.

- Technical justification (all structures)
  - Subsurface investigation
  - Superstructure investigation
  - Support methodology
  - Proposed systems
  - Maximum allowable movement thresholds (both the system and the adjoining building) – Coordinate with monitoring protocol

# EXCAVATION: PRECONSTRUCTION REPORTS

(3 of 3)

## Suggested Minimum Requirements

- **Report Format:** Include site map with labeled adjacent properties
  - BINs, blocks, lots
  - Identify subgrade features (cellar / basement)
  - Identify foundation construction
  - Include photos
  - Technical content
  - State what documents were reviewed
  - Appendix with reviewed document

# EXCAVATION MONITORING PROTOCOLS

*(1 of 2)*

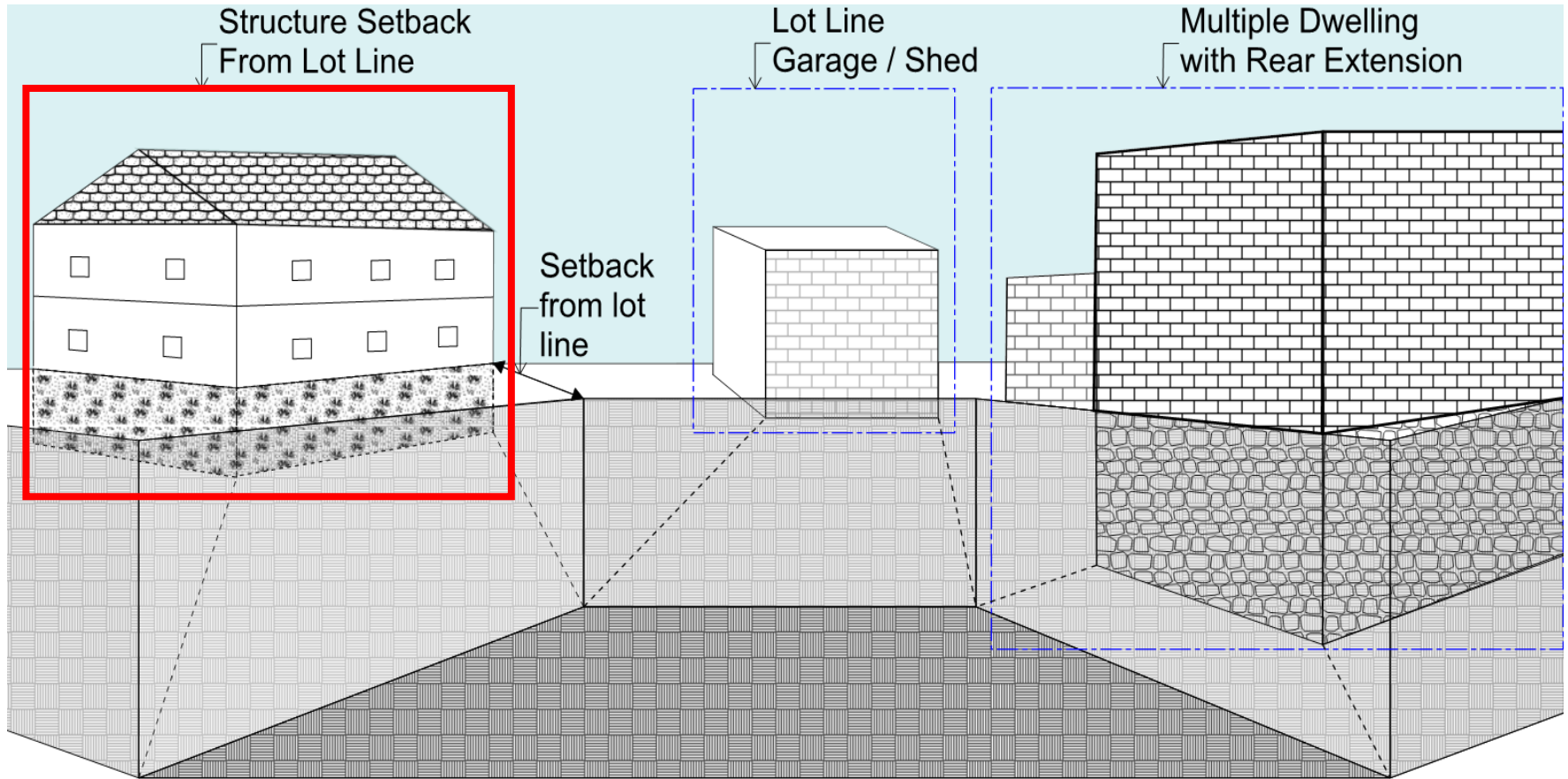
- Developed by the Engineer of Record/ Registered Design Professional. **§1814.3; §3309.4.4; §3309.6; §3309.16**
- Coordinated with the **Preconstruction Report §1814.1**
- **Design item**
  - Monitored by SIA with notifications to all parties.
  - Implemented by Permit holder.
  - Must be filed

# EXCAVATION MONITORING PROTOCOLS

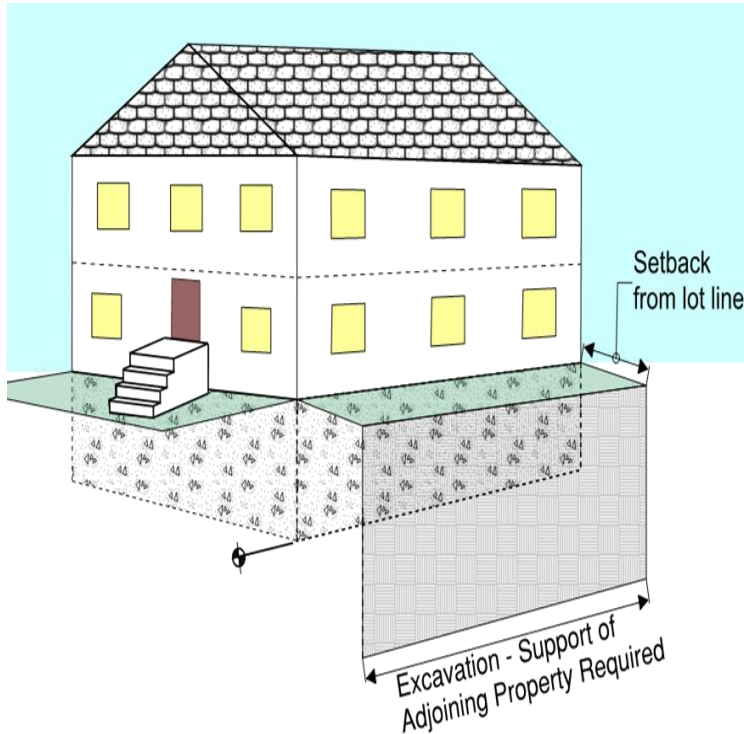
Can this be produced by a qualified third party? *(2 of 2)*

- Potentially...not ideal
- EOR must provide the third party with a copy of their **pre-construction report §1814.1**
- **Specific guidance must be provided**
- EOR must review, and accept the protocol (design item)
- Drawings must reference this review and acceptance
- Any changes to the protocol must be approved by EOR and kept on-site.

# EXCAVATION: ISOMETRIC EXAMPLE



# EXCAVATION: STRUCTURE SETBACK FROM LOT LINE



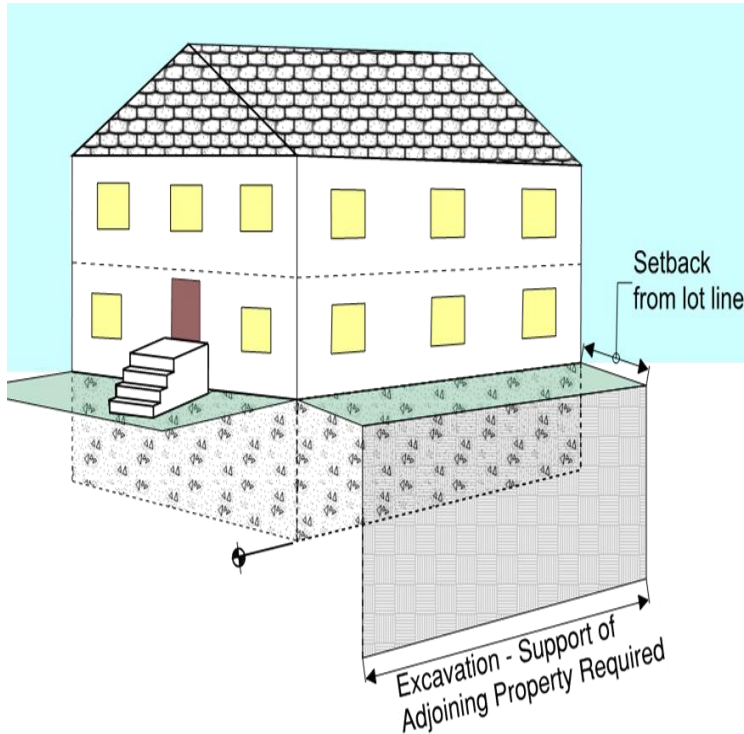
## Pre-permit Considerations

- Investigation (Building Research)
  - Test pits/Borings **§1802.4**
  - Bottom of footing elevation **§107.8;**  
**§1814**
- Support of Adjacent Properties (P.E.)  
**§1814**

## Preconstruction Report (P.E.) **§1814.1**

- Monitoring
  - **§1704.20.7.1**
  - **§3309.4.4**
  - **§3309.6**
  - **§3309.16**
  - **§1814.3**

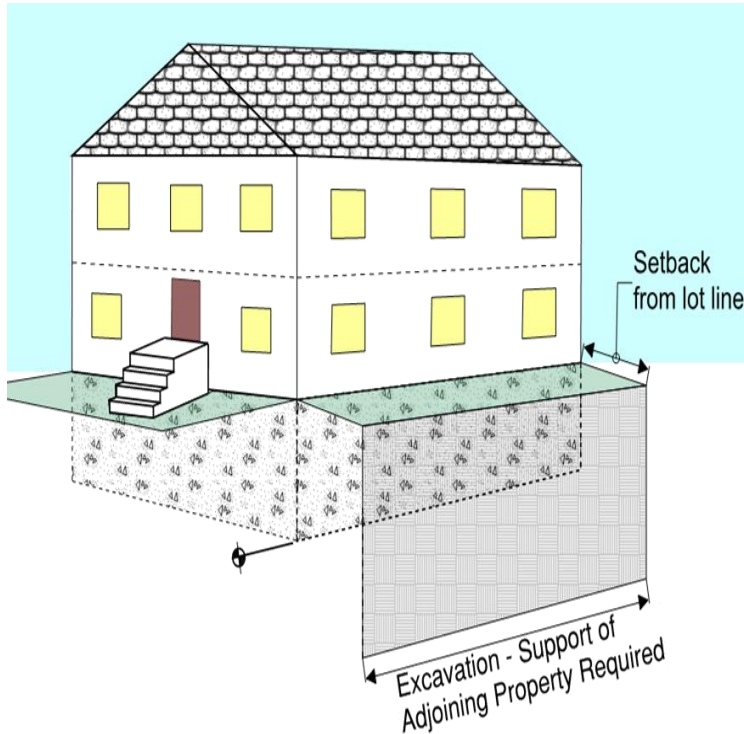
# EXCAVATION: STRUCTURE SETBACK FROM LOT LINE



## Pre-permit Considerations *(continued)*

- Adherence to Lot **AC 28-105.12.3**
- Structural Stability Inspection Protocol **§1704.20.7**
- Drawing Requirements/sequence **§1814; §107.8; §3304.2**

# EXCAVATION: STRUCTURE SETBACK FROM LOT LINE

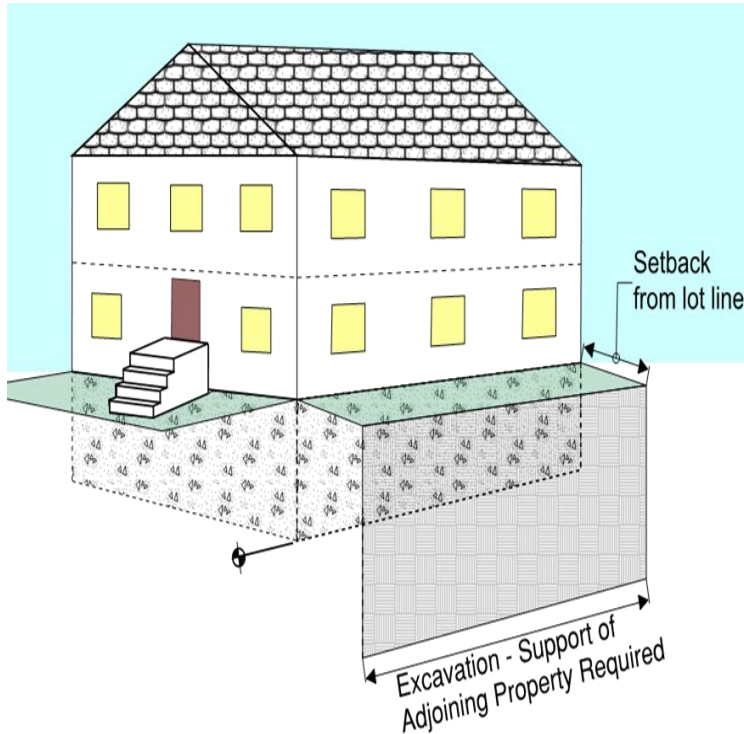


## Post-permit Considerations

- Preconstruction Survey **§3309.4.3**
- Monitoring
  - **§1704.20.7.1**      - **§3309.16**
  - **§1814.3**              - **§3309.6**
  - **§3309.4.4**
- Adherence to Lot **AC 28-105.12.3**
- Inspection Program **§1704.20.6**
- SOE Affecting Adjoining Property **§3309.4**
- Notifications (DOB, Neighbors, etc.) **§3304.3**



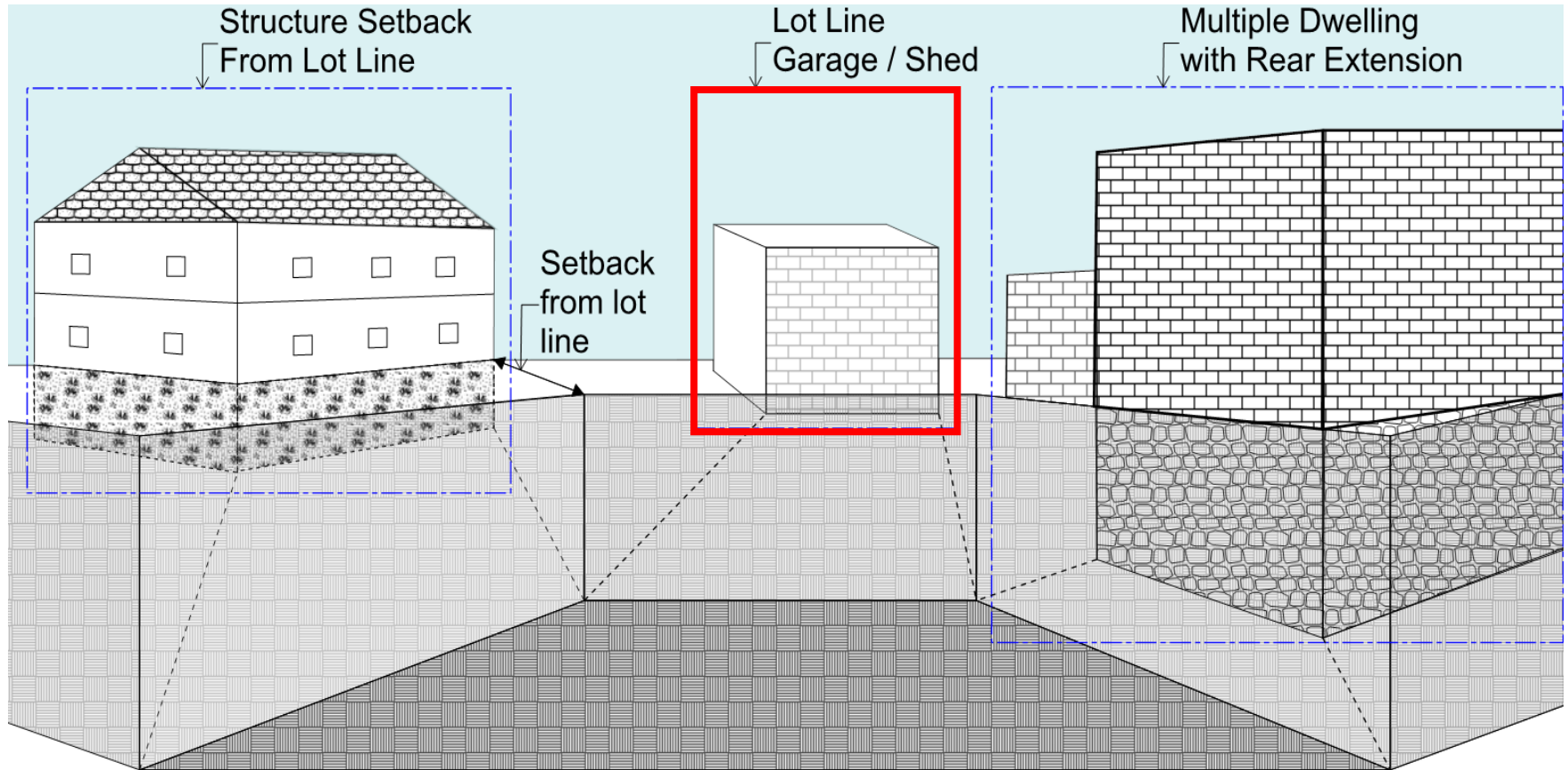
# EXCAVATION: STRUCTURE SETBACK FROM LOT LINE



## Tenant Protection Considerations

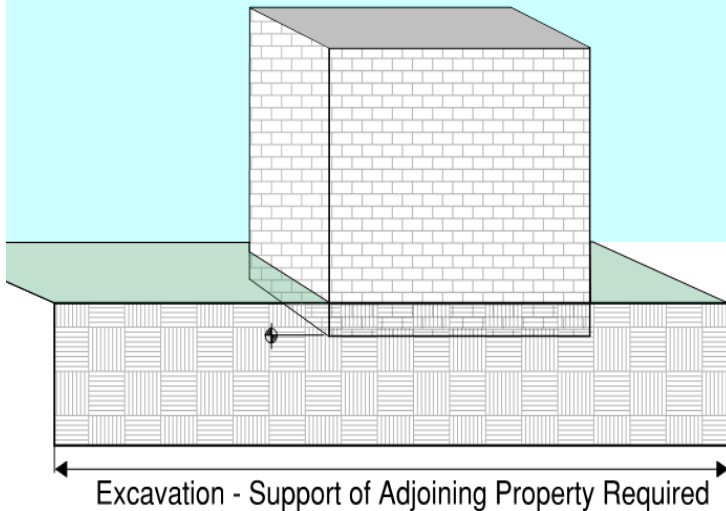
- Fence Maintenance **§3307.7**
- Overhead Protection
  - **§3309.10** (Roofs)
  - **§3309.12** (Chimneys)
  - Lot line windows **§3309.14**
- Protect and maintain egress
- SSP
  - Construction Super required effective 11/06/17

# EXCAVATION: ISOMETRIC EXAMPLE



# EXCAVATION: LOT LINE GARAGE/SHED

**Note:** Use **EXTREME CAUTION** with these sheds and garages. Rarely have foundations and will require double height support. May require supplemental bracing.

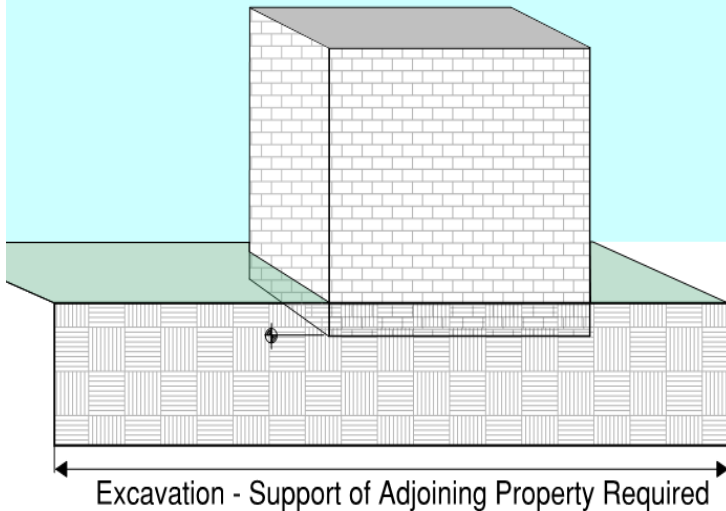


## Pre-permit Considerations

- Investigation (Building Research)
  - Test pits/Borings **§1802.4**
  - Bottom of footing elevation **§107.8; §1814**
- Support of Adjoining Properties (P.E.) **§1814**
  - Preconstruction Report (P.E.) **§1814.1**
- Monitoring
  - **§1704.20.7.1**
  - **§3309.6**
  - **§3309.16**
  - **§3309.4.4**
  - **§1814.3**

# EXCAVATION: LOT LINE GARAGE/SHED

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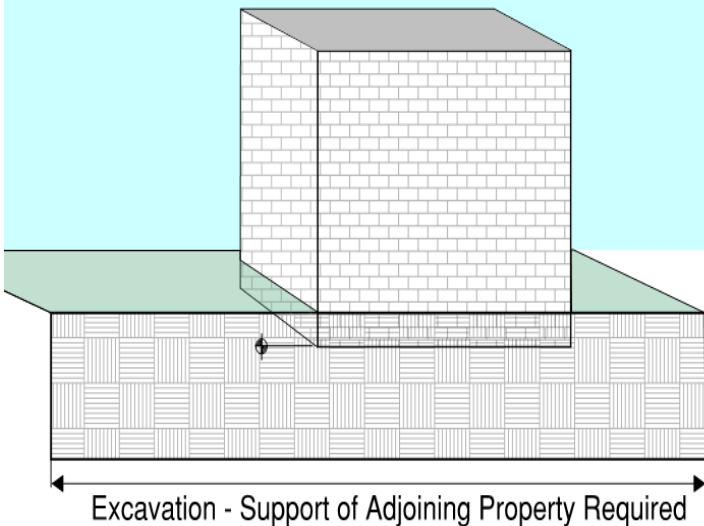


## Pre-permit Considerations *(continued)*

- Adherence to Lot **AC 28-105.12.3**
- Structural Stability Inspection Protocol **§1704.20.7**
- Drawing Requirements / Sequence **§1814; §107.8; §3304.2**

# EXCAVATION: LOT LINE GARAGE/SHED

**Note:** Use **EXTREME CAUTION** with these sheds and garages. Rarely have foundations and will require double height support. May require supplemental bracing.

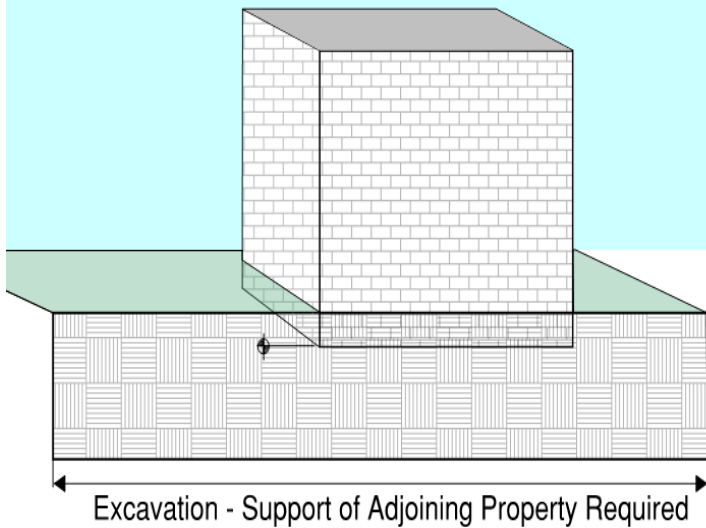


## Post-permit Considerations

- Preconstruction Survey **§3309.4.3**
- Monitoring
  - **§1704.20.7.1**      – **§3309.16**
  - **§1814.3**              – **§3309.6**
  - **§3309.4.4**
- Adherence to Lot **AC 28-105.12.3**
- Weatherproof Integrity **§3309.9**
- Inspection Program **§1704.20.6**
- SOE Affecting Adjoining Property **§3309.4**
- Notifications (DOB, Neighbors, etc.) **§3304.3**

# EXCAVATION: LOT LINE GARAGE/SHED

**Note:** Use **EXTREME CAUTION** with these sheds and garages. Rarely have foundations and will require double height support. May require supplemental bracing.



## Tenant Protection Considerations

- Fence Maintenance **§3307.7**
- Overhead Protection
  - **§3309.10** (Roofs)
- Lot line windows **§3309.14**
- SSP
  - Construction Super **required** effective 11/06/17

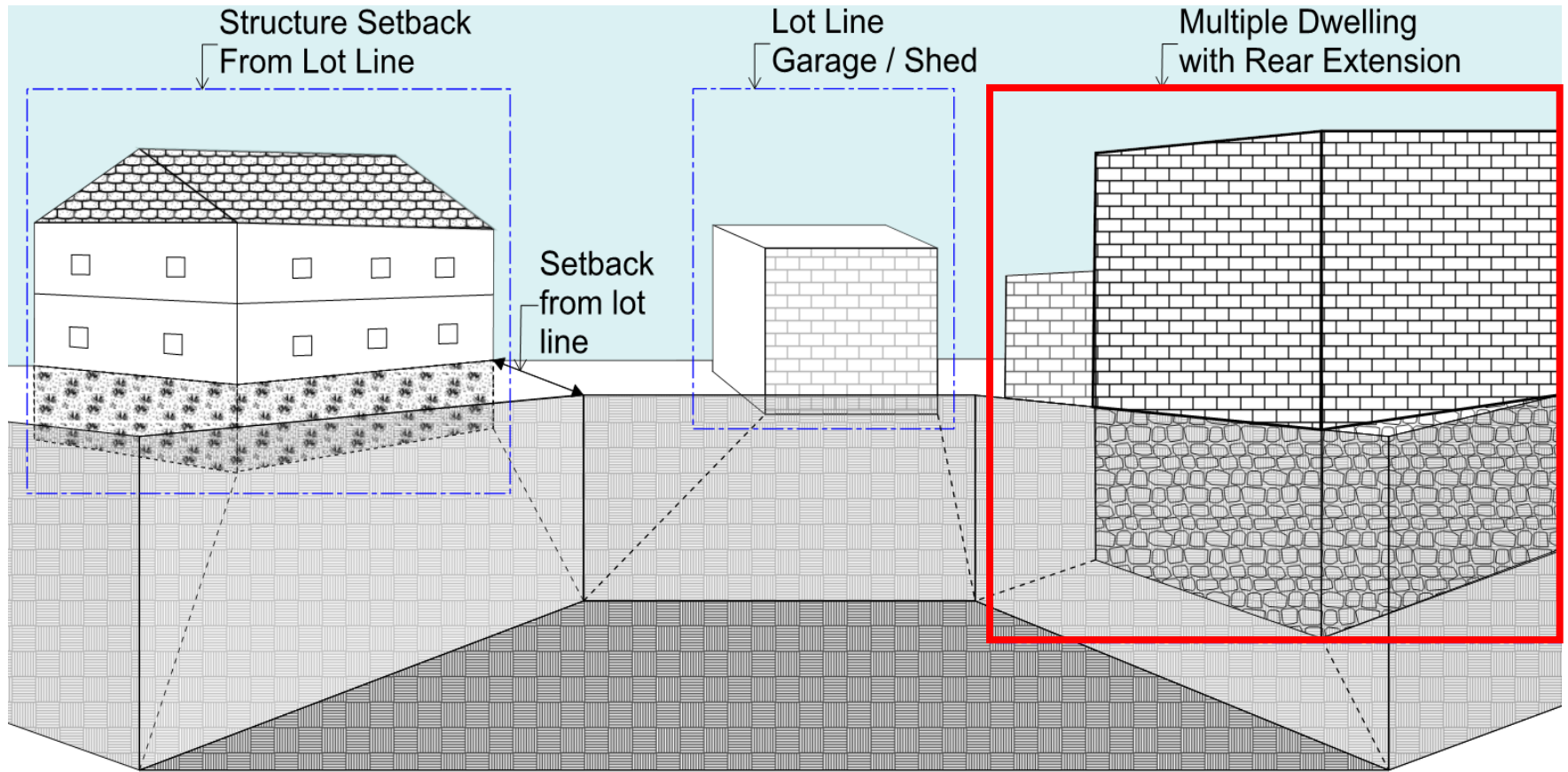
# EXCAVATION: LOT LINE GARAGE/SHED



## Why is this important?

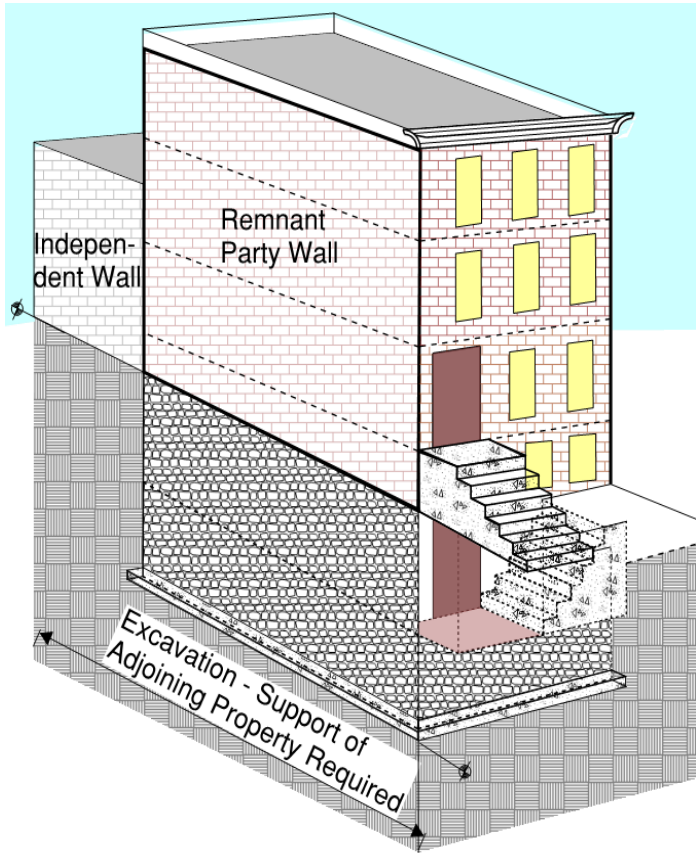
- Vertical/lateral failure at lot line support of excavation
- Partial Collapse
- Vacate Orders
- Danger to the public

# EXCAVATION: ISOMETRIC EXAMPLE





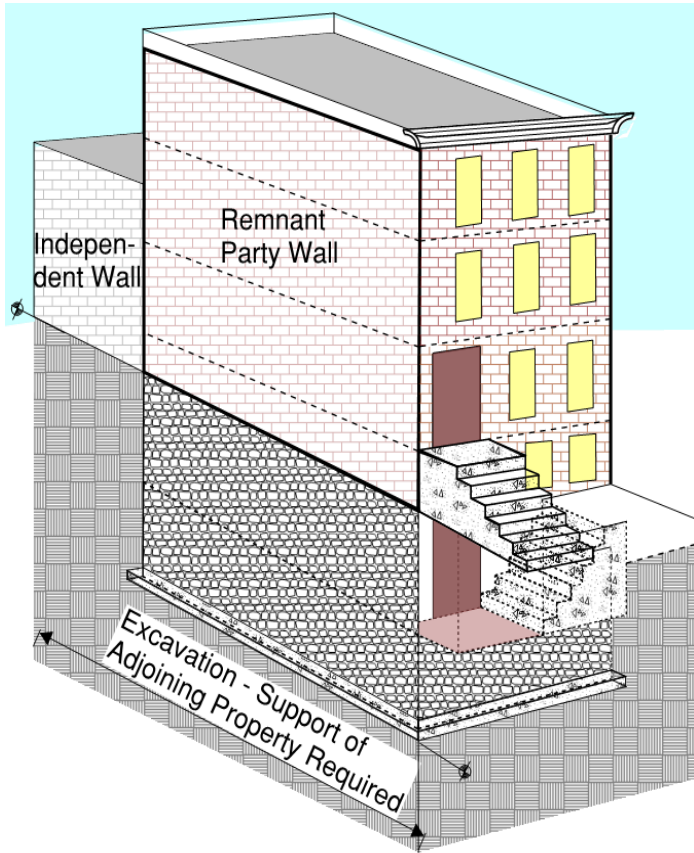
# EXCAVATION: MULTIPLE DWELLING WITH REAR EXTENSION



## Pre-permit Considerations

- Investigation (Building Research)
  - Test pits/Borings **§1802.4**
  - Bottom of footing elevation **§1814; §107.8**
  - Prior Alteration History
- Drawing Requirements/Sequence **§1814; §107.8; §3304.2**
- Structural Stability Inspection Protocol **§1704.20.7**
- Lot Diagram **§107.3**
  - Are the walls plumb?
  - Adherence to diagram **AC28-105.12.3**

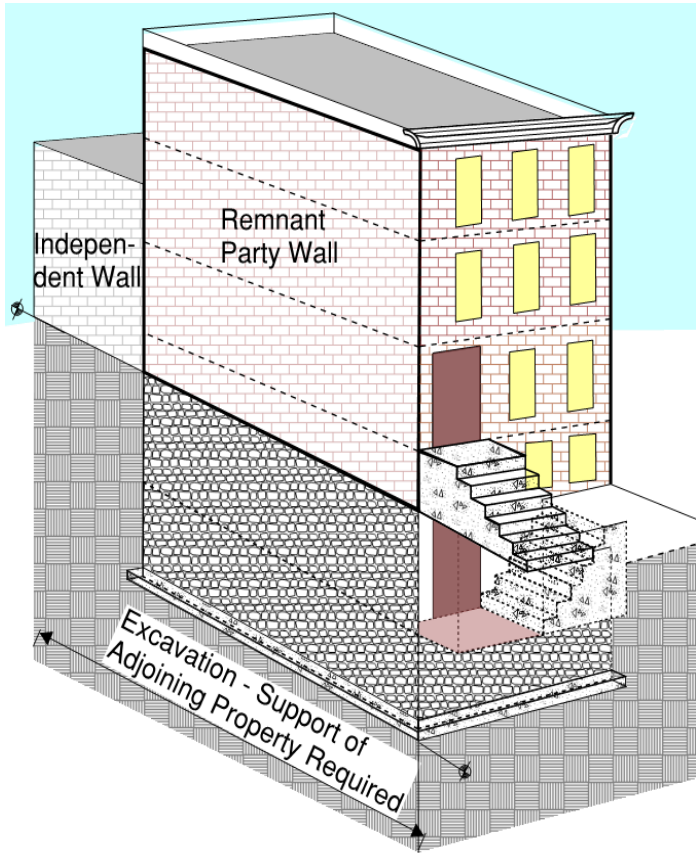
# EXCAVATION: MULTIPLE DWELLING WITH REAR EXTENSION



## Pre-permit Considerations *(continued)*

- Support of Adjoining Properties **§1814**
- Pre-construction Report (P.E.) **§1814.1**
  - **§3309.8** – Are existing joists tied to the independent/party wall?
  - **§1814** – Design account for eccentricity?
  - **Be mindful of cutting existing projections**
- Use of Existing Walls **§2104.10; §3309.8**
  - Are existing joists tied to the independent / party wall?
- Monitoring: **§1704.20.7.1, §1814.3, §3309.4.4, §3309.16, §3309.6**

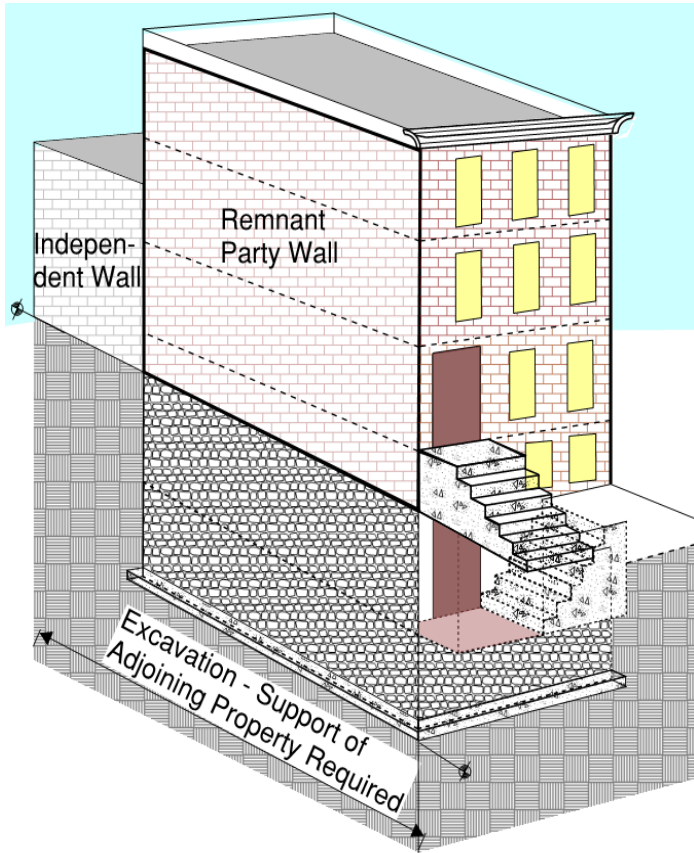
# EXCAVATION: MULTIPLE DWELLING WITH REAR EXTENSION



## Post-permit Considerations

- Notifications (DOB, Neighbors, etc.) **§3304.3**
- Inspection Program **§1704.20.6**
- Review of Design Documents **§1704.20.7**
- Preconstruction Survey **§3309.4.3**
- Monitoring: **§1704.20.7.1**, **§1814.3**, **§3309.4.4**, **§3309.16**, **§3309.6**

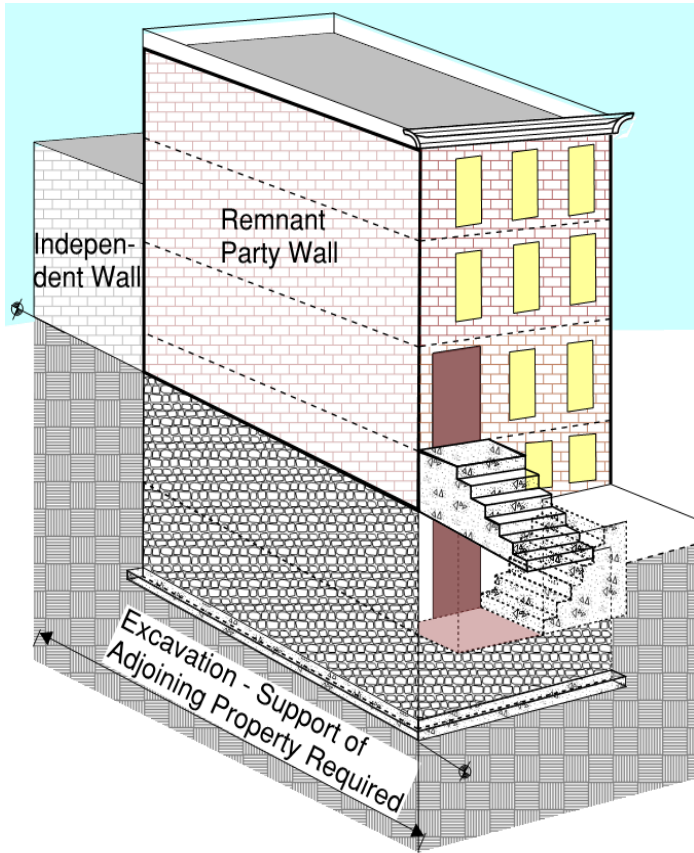
# EXCAVATION: MULTIPLE DWELLING WITH REAR EXTENSION



## Post-permit Considerations *(continued)*

- Adherence to Lot **AC 28-105.12.3**
- SOE Affecting Adjoining Property **§3309.4**
- Existing Joists Tied/Beam Pockets Closed **§3309.8**
- Weatherproof Integrity **§3309.9**

# EXCAVATION: MULTIPLE DWELLING WITH REAR EXTENSION



## Tenant Protection Considerations

- Fence Maintenance **§3307.7**
- Overhead Protection **§3309.10** (Roofs)
- Chimney Protection **§3309.12**
- Lot Line Windows
  - **§3309.14** – typically seen in old/new law tenement
- SSP
  - Construction Super **required** effective 11/06/17

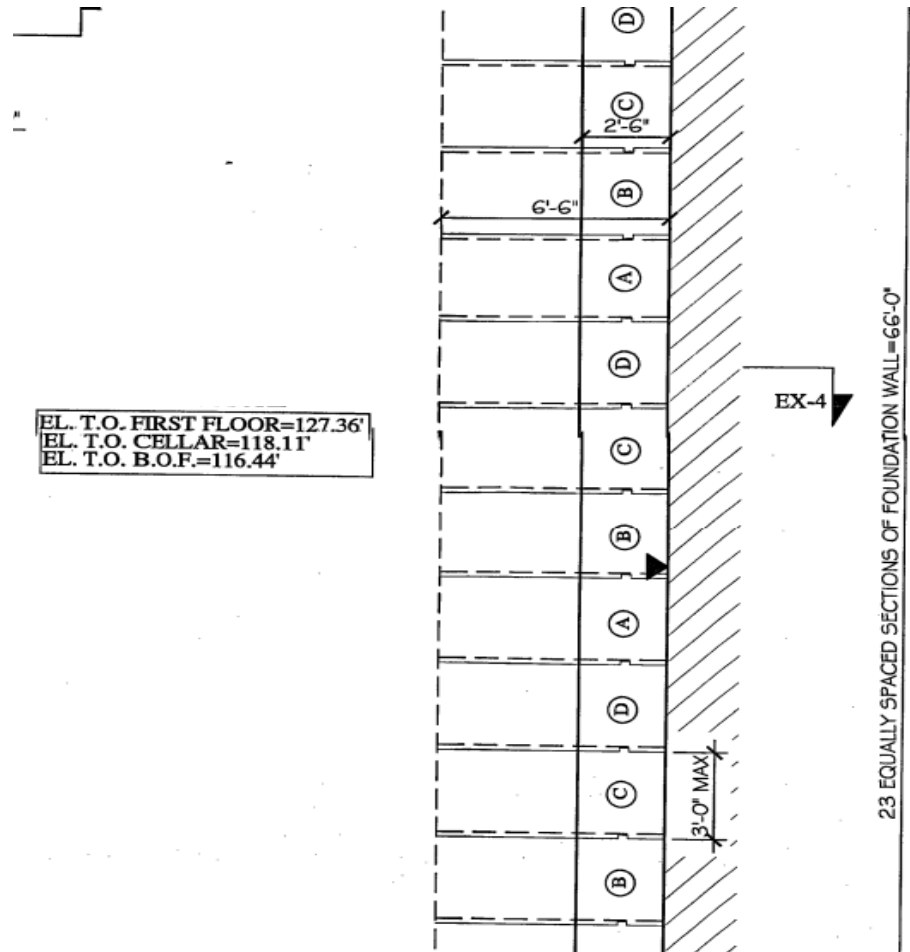
# EXCAVATION: CASE STUDY 1



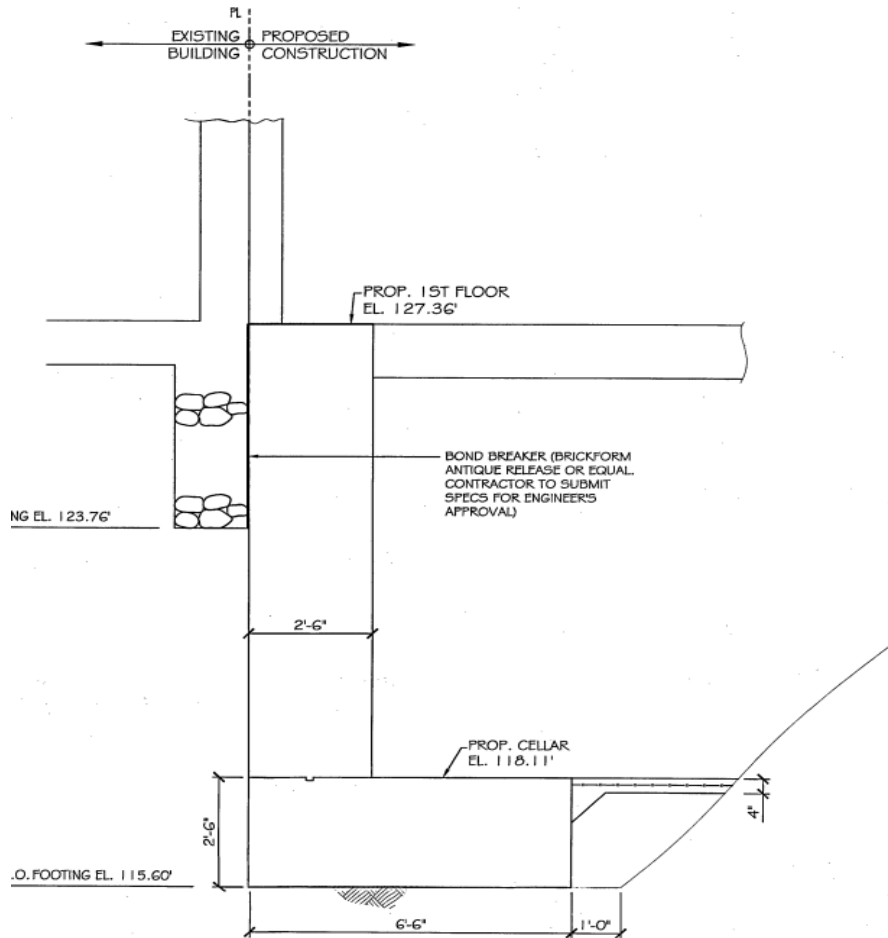
- No agreement for underpinning
  - No support of excavation  
**§3304.2**
  - No support of adjoining properties  
**§1803.1; §1814;  
§3309.4.1**

# EXCAVATION: CASE STUDY 1

- Plan clip from the drawings
- Sequential in-board foundation wall
- Support of adjoining property unclear
- EX-4 referenced



# EXCAVATION: CASE STUDY 1



SECTION EX-4

## ■ Section EX-4

- No underpinning or equivalent support  
**§1803.1; §1814;**
- Very Unsafe
- No agreement is not an excuse for no SOE



# EXCAVATION: CASE STUDY 1



- No trench box  
**§3304.2**
- No approach pit  
**§3304.2**
- No intent to underpin **§1803.1;**  
**§1814; §3309.4.1**

# EXCAVATION: CASE STUDY 1



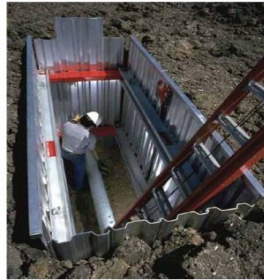
- Second view
- Box pit was shown on design drawings

# EXCAVATION: SOIL WEIGHT



## 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.



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](http://www.Lni.wa.gov/Safety) 1-800-423-7233



Washington State Department of  
Labor & Industries

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 3213-08R-11. The Washington State Department of Labor & Industries thanks OSHA for permission to use this poster.

PUBLICATION FSP0-912-000 (04-2013)

- A single cubic yard of soil weighs approximately:  
**3,000 lbs.**

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# **STRUCTURAL STEEL**

## *Notable Codes & Case Studies*

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# STRUCTURAL STEEL: NOTABLE CODES

**2205.6 Fabrication, erection and quality control.** In addition to the provisions for fabrication, erection and quality control in AISC 360, the following provisions shall be used.

**2205.6.1 Shop drawings.** Shop drawings shall include the location of oversized, short slotted and long slotted holes.

**2205.6.2 Field connections.** Field connections shall meet the requirements for corresponding types of shop connections described in AISC 360. No holes, copes or cuts of any type shall be made to facilitate erection unless specifically shown on the shop drawings or authorized in writing by the engineer or architect of record.

**2205.6.3 Structural steel erection.** In addition, to the provisions of AISC 360, the requirements of Section 3305.2 shall apply.

- Registered design professional **must** approve deviations from shop drawings.
- SIA **must** indicate a NCR for unapproved deviations.

# STRUCTURAL STEEL: NOTABLE CODES

**3305.2.4 Placing of structural members.** During the placing of a structural member, the load shall not be released from the hoisting rope until the member is securely supported.

**3305.2.4.1 Open web steel joists.** Open web steel joists that are hoisted singly shall be transferred from their place of storage directly to their permanent location and safely secured. No load shall be placed on open web steel joists until they are permanently fastened in place or otherwise secured in accordance with methods approved by the registered design professional of record.

**3305.2.5 Tag lines.** While structural members or assemblies are being hoisted, a tag line or tag lines shall be used, as needed, to prevent uncontrolled movement.

- Steel cannot be released from hoisting rope until secured
- Open web joists cannot be loaded until permanently fastened.
- Tag lines are to be implemented to control movement

# STRUCTURAL STEEL: CASE STUDY 1

- Department responded to a complaint regarding free-standing steel columns.
- Occupied multiple dwelling
- Work taking place in a dense urban environment
  - Shorter structure at Exposure 2
  - Taller structure with lot line windows at Exposure 4

# STRUCTURAL STEEL: CASE STUDY 1



- **Exposure 1 Condition**
  - Multi-story unbraced columns
    - Visible deflection of column
    - Oscillation
  - SWS
  - Fire Escapes

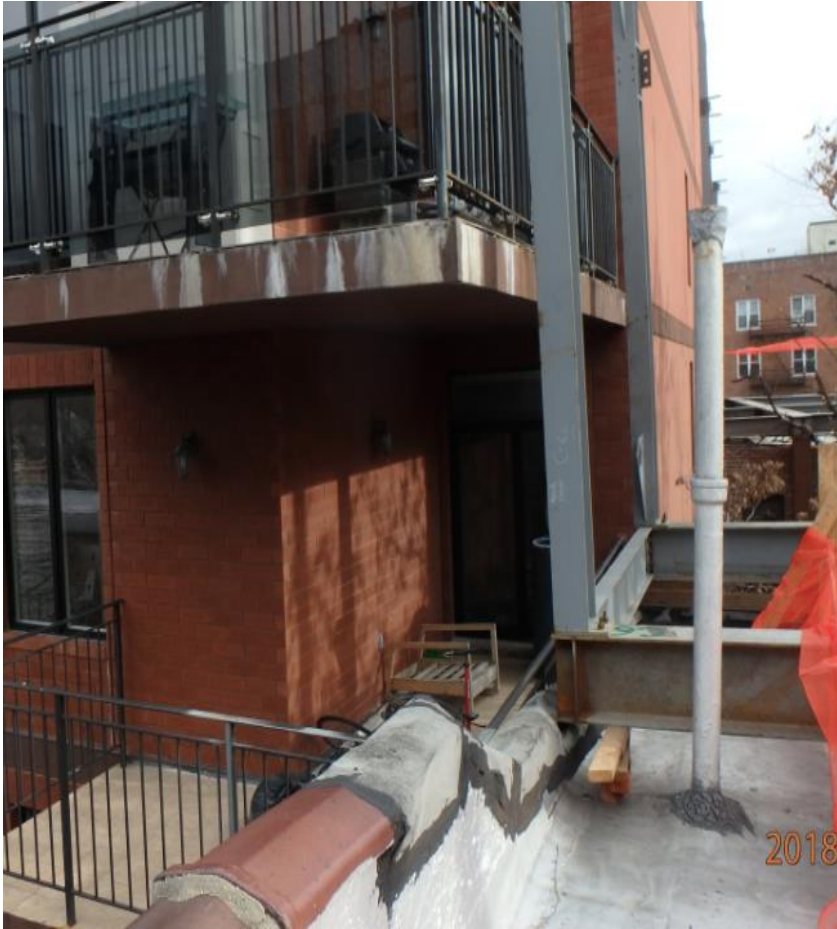


# STRUCTURAL STEEL: CASE STUDY 1



- **Exposure 2 Condition**
  - Multi-story unbraced columns
    - Visible deflection of column
    - Oscillation
  - No roof protection §**3309.10**
  - No egress path protection in the courtyard for the multiple dwelling (design and construction error) §**3303.10.1**; **AC28-104.8.4**

# STRUCTURAL STEEL: CASE STUDY 1



- **Exposure 4 Condition**
  - Multi-story unbraced columns
    - Visible deflection of column
    - Oscillation
  - Window/Overhead Protection Missing  
**§3309.14; §3309.10**

# STRUCTURAL STEEL: CASE STUDY 1

## ■ Findings

- Inadequate construction bracing – resulted in crane being required for column removal
- Inadequate TPP – Fireguard provided
- Full vacate required at Exposure 2 Building
- Partial vacate of balconies and rear yard at Exposure 4 Building.
- Window / Overhead Protection Missing
- Safety Compliance Officer (SCO) mandated

# STRUCTURAL STEEL: CASE STUDY 2

- Department responded to a complaint regarding free-standing steel columns.
- Work taking place in a dense urban environment
  - Exposure 2 overhead utility hazards
  - Exposure 3 - Occupied Church
  - Exposure 4 – Residential 1-2 Family

# STRUCTURAL STEEL: CASE STUDY 2



- **Exposure 2 Condition**
  - Multi-story unbraced columns
    - Visible deflection of column
    - Anchor bolt failure
  - Utility hazards

# STRUCTURAL STEEL: CASE STUDY 2

- **Exposure 3 Condition**
  - Multi-story unbraced columns
    - Visible deflection of column
    - Anchor bolt failure
  - Unprotected windows §**3309.14**



# STRUCTURAL STEEL: CASE STUDY 2



- **Anchor Bolt Failure**
  - Work contrary
  - Post-installed anchors improperly installed
    - Failure of SIA to perform their duties
    - Failure to report a Hazardous condition
  - Column leaning on foundation wall pocket
  - Evidence of other base plates with retrofits

# STRUCTURAL STEEL: CASE STUDY 2

## ■ Findings

- Inadequate construction bracing, work contrary, improper anchor installation, SIA failure to perform duties and failure to notify the Department resulted in near miss with road closure and complicated righting operation.
- Full vacate required at Exposure 3 Church
- Window/Overhead Protection Missing
- Balance of in-place anchor testing mandated



# STRUCTURAL STEEL: CASE STUDY 3



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# STRUCTURAL STEEL: CASE STUDY 3

- Very hazardous for workers and public
- Column splice erection failure
- Failure to safeguard - Electric lines damaged
  - No concrete on the steel decks
  - Adjacent to an occupied school
  - Overhead protection issues

# STRUCTURAL STEEL: CASE STUDY 4

- Field connections deviated from shop drawings.
- Torch cut members without proper implementation.
- No prior approval from Registered Design Professional.
- SIA failed to identify this NCR and potentially hazardous condition.

# STRUCTURAL STEEL: CASE STUDY 4



# STRUCTURAL STEEL: CASE STUDY 4

## Resulted in

- Lengthy SWO
- Replacement of 17 steel members.
- Enforcement actions to permit holder and SIA



# **INTERIOR DEMOLITION**

## *Notable Codes & Case Studies*

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# INTERIOR DEMOLITION: NOTABLE CODES

Wall bracing relates to demolition sequence and permanent structure:

- **§3306.8.2**

No section of wall with a height more than 22 times its thickness shall be permitted to stand without bracing designed by a registered design professional.

- Simply supported, does not apply to cantilevers
- Effective thickness
- Further guidance in ACI 530 and OSHA

- **§2104.10.1**

2104.10.1 Use of existing walls. An existing masonry wall may be used in the alteration or extension of a building provided that it meets the requirements of this code.

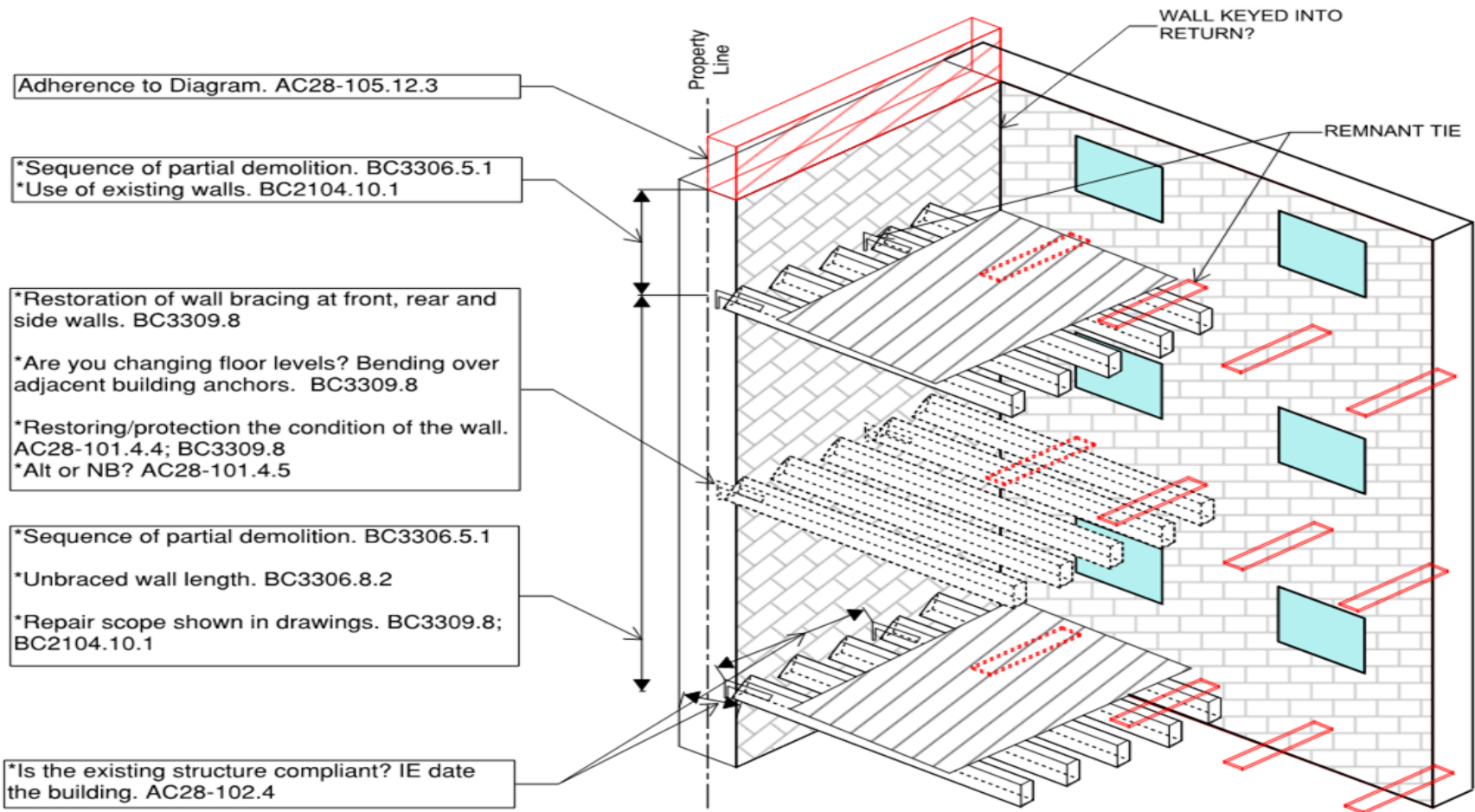
- What is the condition of the masonry walls?

# INTERIOR DEMOLITION: NOTABLE CODES

- **Demolition of Weakened Structures §3306.7**
  - What structural assessment has been done?
  - Shoring and bracing shall be provided
    - Safe demolition without collapse
  - Has the minimum structural stability inspection schedule been identified? **§1704.20.1**



# INTERIOR DEMOLITION: NOTABLE CODES



# INTERIOR DEMOLITION: CASE STUDY 1



## Townhouse Renovation With Partial Demolition

- Work took place without sufficient demo plans §3306.7; §3306.5.1
- Worked without inspections §1704
- Damaged adjoining property/ failure to safeguard §3301.2

# INTERIOR DEMOLITION: CASE STUDY 1

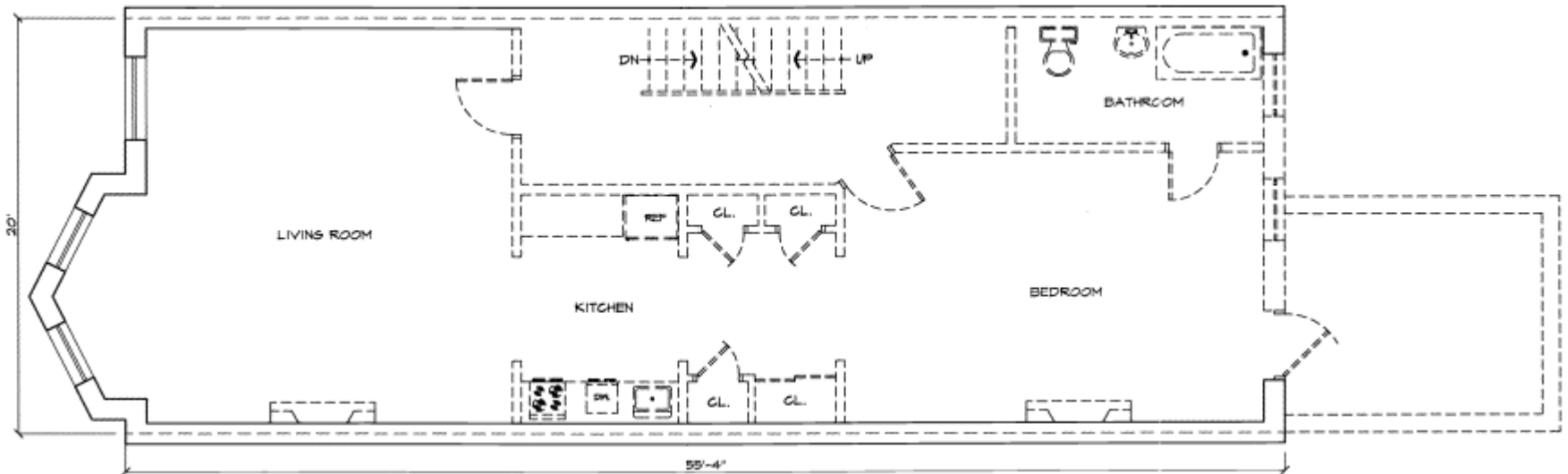


- Townhouse Renovation With Partial Demolition

# INTERIOR DEMOLITION: CASE STUDY 1

- **Design Applicant**

- Failed to identify required inspections §1704.1.1
- Deficient demolition drawings §3306.5.1
  - Uncoordinated scope of removals with structural
  - No sequence No shoring or support for rear wall
  - No party wall protections §3309.8



# INTERIOR DEMOLITION: CASE STUDY 1

- Resulted in
  - Emergency stabilization for the rear wall
  - Engineering audit
  - Enforcement actions

# INTERIOR DEMOLITION: CASE STUDY 2



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# INTERIOR DEMOLITION: CASE STUDY 2



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# INTERIOR DEMOLITION: CASE STUDY 2



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# INTERIOR DEMOLITION: CASE STUDY 2

- Owner's responsibilities – must maintain **SAFE AC28-301.1**
- Immediate notification of hazardous conditions  
**AC28-301.1**  
Took 14 days from date of PE inspection to Department notification
- Undocumented, unsafe shoring
  - Prior work without a permit **AC28-105.1**

# INTERIOR DEMOLITION: CASE STUDY 2



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# INTERIOR DEMOLITION: CASE STUDY 2

- **Resulted in**
  - Emergency monitoring, stabilization and partial demolition
  - Street closure (DOT)
  - Impact to subway (MTA)
  - OATH Summonses

# SIDEWALK SHEDS & SCAFFOLDS NOTABLE CODE SECTIONS & CASE STUDIES



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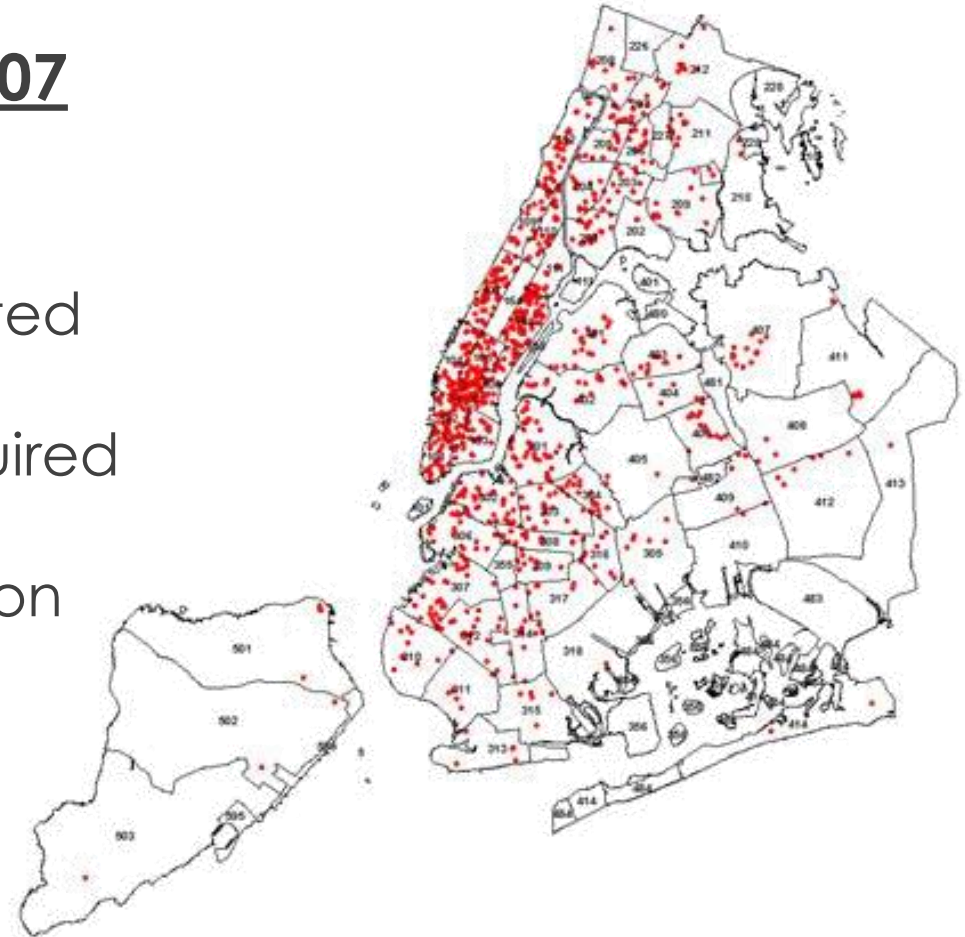
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# SIDEWALK SHED NOTABLE CODE SECTIONS

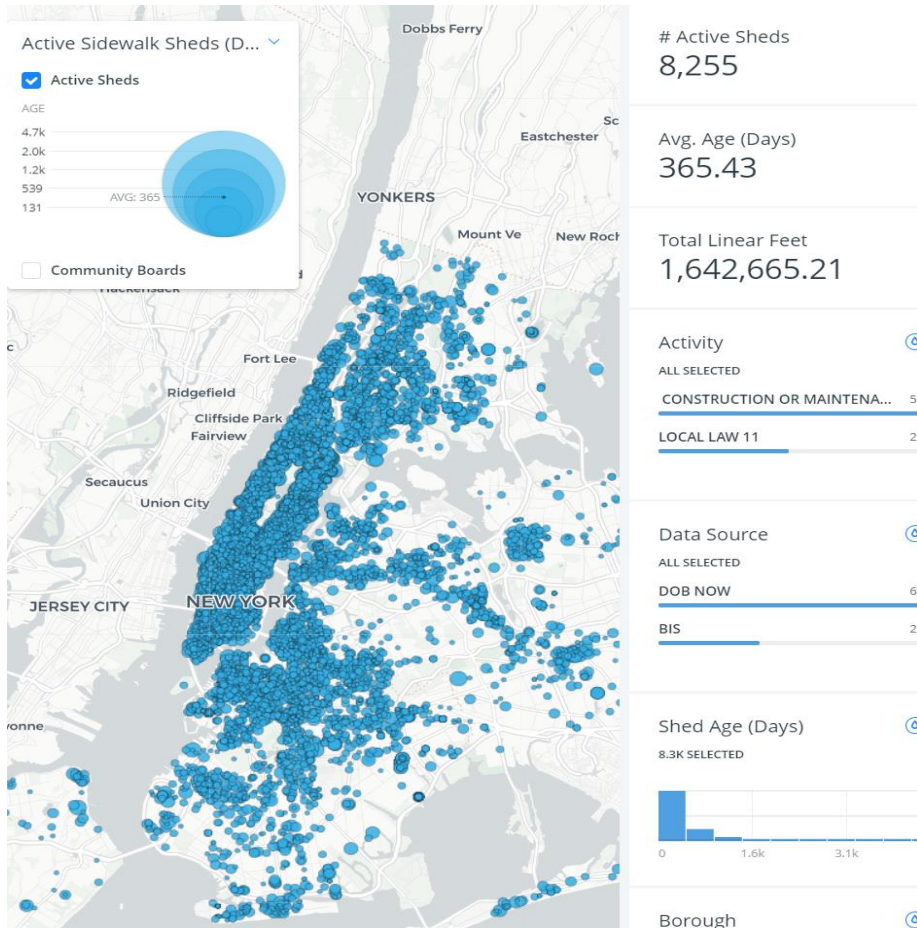
## Building Code Section 3307 Protection of Pedestrians

BC 3307.1 Scope

Pedestrians shall be protected during construction or demolition activities as required by this section and by the Department of Transportation



# RECENT DEPARTMENT RESOURCE



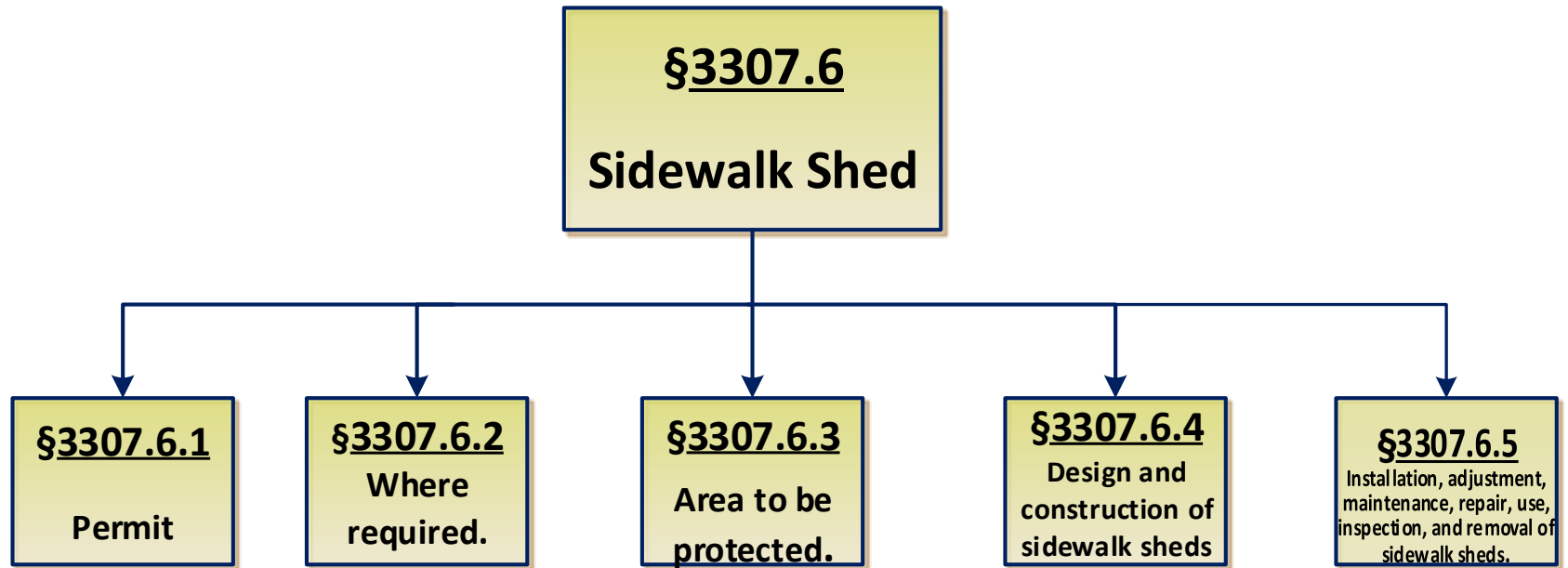
## DOB Sidewalk Shed Maps by Borough

<https://www1.nyc.gov/site/buildings/about/sidewalk-shed-map.page>

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# SIDEWALK SHEDS: NOTABLE CODE SECTIONS – BC 3307.6



## BC 3307.6 Sidewalk Sheds

Sidewalk sheds shall be provided as required by this section to protect pedestrians from construction or demolition operations

# **SIDEWALK SHED: NOTABLE CODE SECTIONS – PERMIT**

## **BC 3307.6.1 Permit**

No Sidewalk shed shall be installed without a permit in accordance with the requirements of Chapter 1 of Title 28 of the Administrative Code



# **SIDEWALK SHED: NOTABLE CODE SECTIONS – WHERE REQUIRED**

## **BC 3307.6.2 Where required**

1. Below a scaffold, mast climber, or chute. The sidewalk shed shall be installed prior to the installation of such equipment and shall not be removed until such equipment has been dismantled and/or removed from the protected area.
2. Structures being constructed higher than 40 feet or greater, the sidewalk, walkway, or pathway within a perpendicular distance from the new structure that is equal to or less than half the height of the new structure. The sidewalk shed shall be installed when the structure reaches the planned height of the shed. The sidewalk shed shall remain in place until the structure is enclosed and all exterior work has been completed including the removal of all temporary construction equipment.

# **SIDEWALK SHED: NOTABLE CODE SECTIONS – WHERE REQUIRED**

## **BC 3307.6.2 Where required**

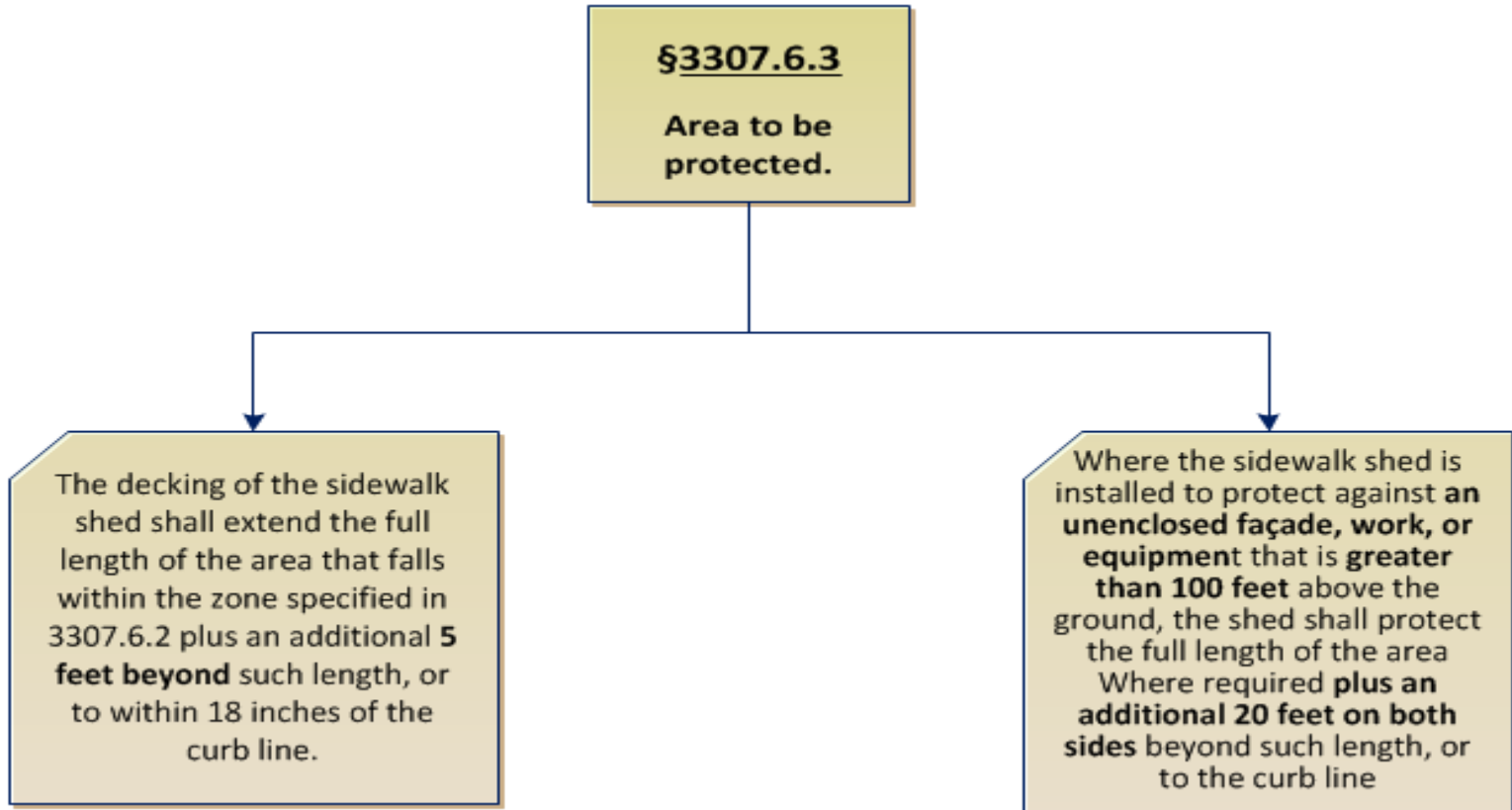
3. Façade work including vertical or horizontal enlargements over 40 feet. The sidewalk, walkway, or pathway within a perpendicular distance from the structure that is equal to or less than half the height of such facade work or enlargement (measured from the location of work). The sidewalk shed shall be installed prior to the commencement of work at a height greater than 40 feet above the curb level.
4. Full demolitions and partial exterior demolitions higher than 25 feet. The sidewalk shed shall be installed prior to the commencement of the demolition work. The sidewalk shed to remain in place until full demolition work reaches the height of the shed or the sidewalk shed shall remain in place for partial exterior demolition work until work is complete including the removal of all temporary construction equipment.

# **SIDEWALK SHED: NOTABLE CODE SECTIONS – WHERE REQUIRED**

## **BC 3307.6.2 Exceptions**

1. Sidewalks, walkways, and pathways that are closed, for their full width, to the public;
2. Temporary walkways in accordance with Section 3307.2.3
3. Inspections, including a facade inspection, provided no work occurs during the inspection;
4. Sign hanging occurring by or under the direct and continuing supervision of a licensed sign hanger;
5. Window washing;
6. Work confined to the roof of an existing building with a solid parapet at least 42 inches high or with vertical safety netting as per BC 3308.5
7. As subject to the approval of the Commissioner

# SIDEWALK SHED NOTABLE CODE SECTIONS – AREAS TO BE PROTECTED BC 3307.6.3



# SIDEWALK SHED NOTABLE CODE SECTIONS

## **BC 3307.6.3 Areas to be protected**

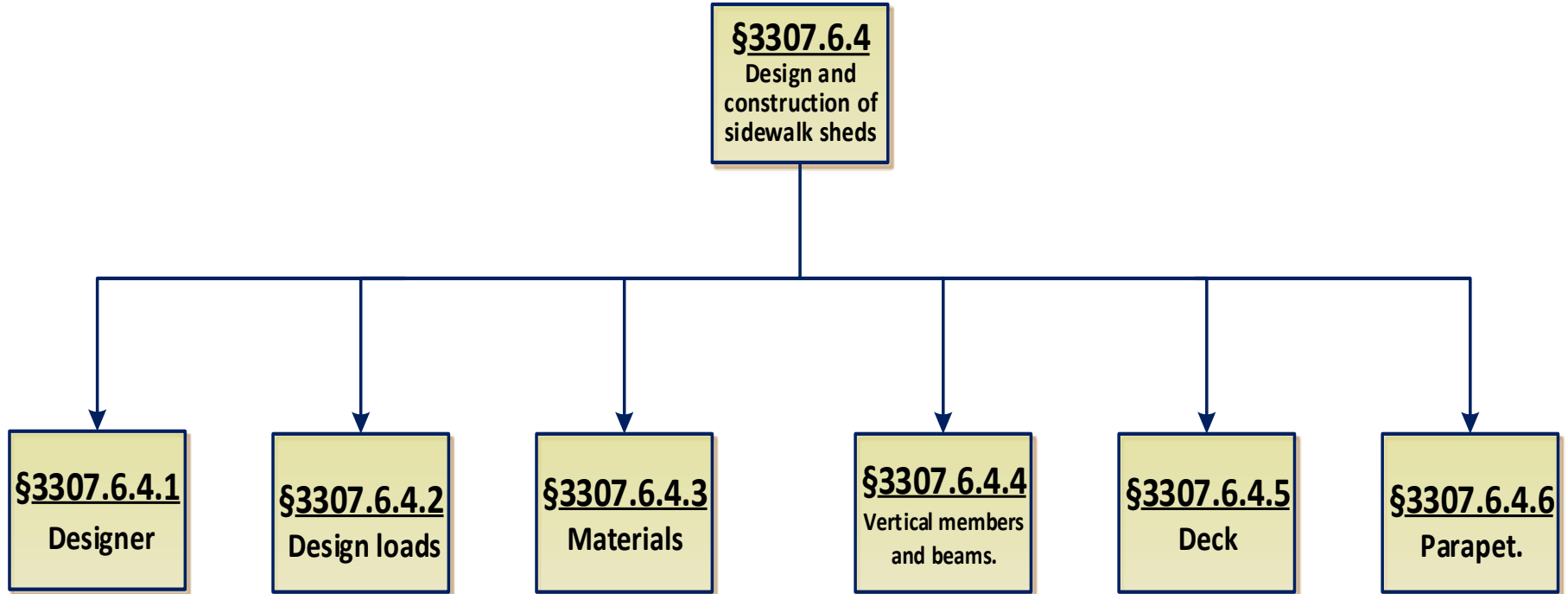
The decking of the sidewalk shed shall extend the full length of the area that falls within the zone specified in Section 3307.6.2, plus an additional 5 feet beyond such length, or to within 18 inches of the curb line, whichever is less.

The decking of the sidewalk shed shall also extend the full width of the sidewalk, walkway, or pathway that remains open to the public, except for a clearance to avoid existing obstructions, not to exceed 18 inches along the curb and not to exceed 1 inch along the face of the building or structure.

## **EXCEPTIONS:**

1. Where the sidewalk shed is installed to protect against an unenclosed façade, work, or equipment that is greater than 100 feet above the ground, the shed shall protect the full length of the area specified in Section 3307.6.2 plus an additional 20 feet on both sides beyond such length, or to the curb line, whichever is less.
2. Openings in the deck to avoid tree trunks and branches, provided such opening is brought as close to the tree as practical without damaging the tree.

# SIDEWALK SHED NOTABLE CODE SECTIONS – DESIGN & CONSTRUCTION BC 3307.6.4



# SIDEWALK SHED NOTABLE CODE SECTIONS – DESIGN & CONSTRUCTION

## BC 3307.6.4 Design and construction of sidewalk sheds

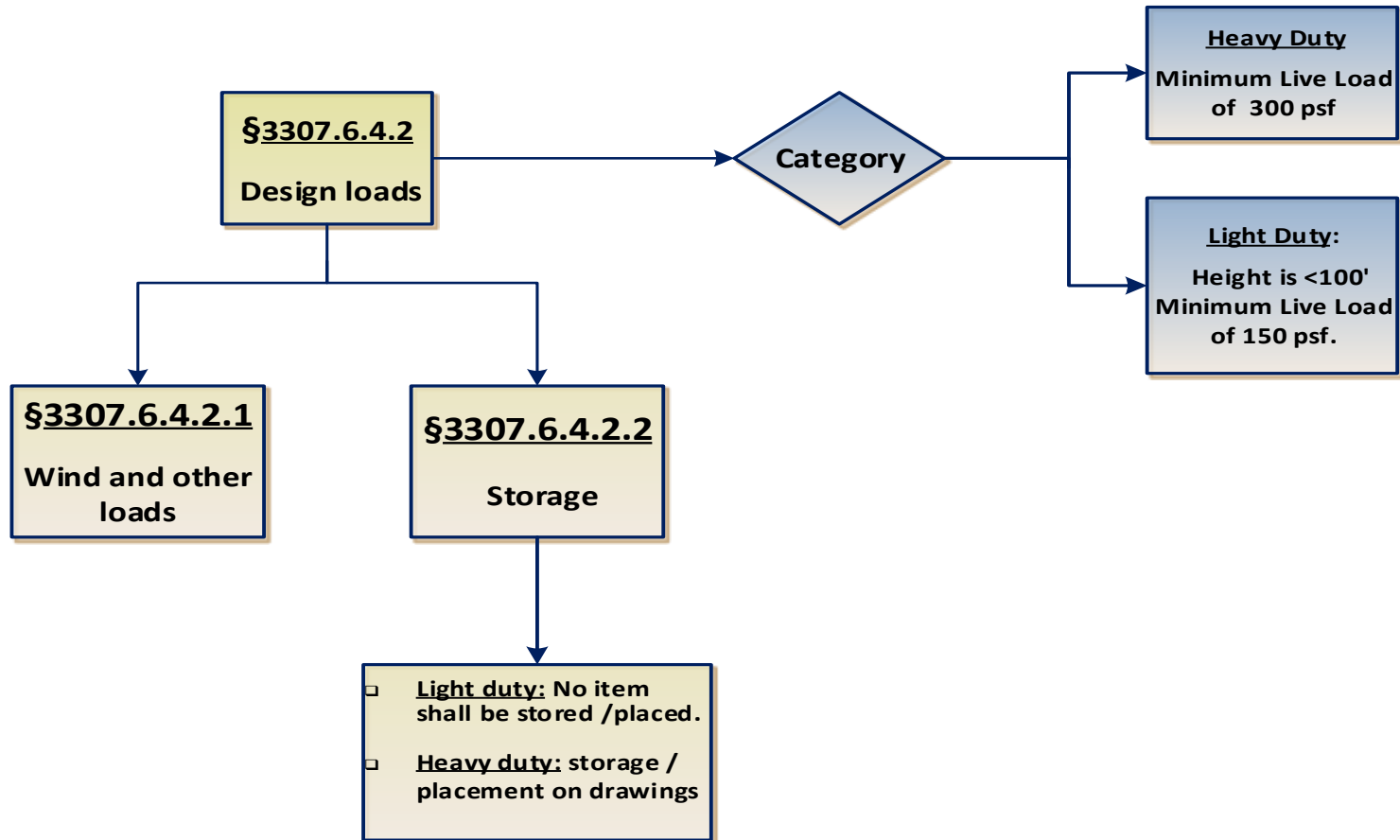
Sidewalk sheds shall be designed and constructed in accordance with the requirements of Section 3307.6.4.1 through Section 3307.6.4.11

### BC 3307.6.4.1 Designer

All sidewalk sheds shall be designed by a registered design professional.

**EXCEPTION:** Sidewalk sheds that conform to a design approved by the commissioner or the Board of Standards and Appeals, provided the shed is installed at the site in accordance with the standard design.

# SIDEWALK SHED NOTABLE CODE SECTIONS – DESIGN LOADS BC 3307.6.4.2





# SIDEWALK SHED NOTABLE CODE SECTIONS

## BC 3307.6.4.2 Design Loads

All sidewalk sheds shall be designed as a heavy duty sidewalk shed to carry a live load of at least 300 pounds per square foot. However, where the shed is installed to protect from work performed at a height of less than 100 feet above the ground, the sidewalk shed may be designed as a light duty sidewalk shed to carry a live load of at least 150 pounds per square foot, provided that no item is stored or placed upon the shed.

# SIDEWALK SHED NOTABLE CODE SECTIONS

## BC 3307.6.4.4 Vertical Members and Beams

1. Vertical members and beams shall be adequately braced and connected to prevent displacement or distortion of the framework.
2. The vertical members of the sidewalk shed shall be plumb, with a tolerance of  $L/100$ , with “L” measured as the distance from the ground to the first X-brace or bottom of the beam.
3. Vertical members shall not be placed into the street unless approved by the Department of Transportation.
4. Vertical members placed on the sidewalk shall not be placed closer than 18 inches from the face of the curb line.
5. Vertical members shall be placed at least 7 feet from the edge of the curb or vehicular access point, or where placed closer, the vertical members nearest the curb cut or vehicular access point shall be protected against displacement by vehicles, or shall be identified with high visibility markings.

# SIDEWALK SHED NOTABLE CODE SECTIONS

## BC 3307.6.4.5 Deck

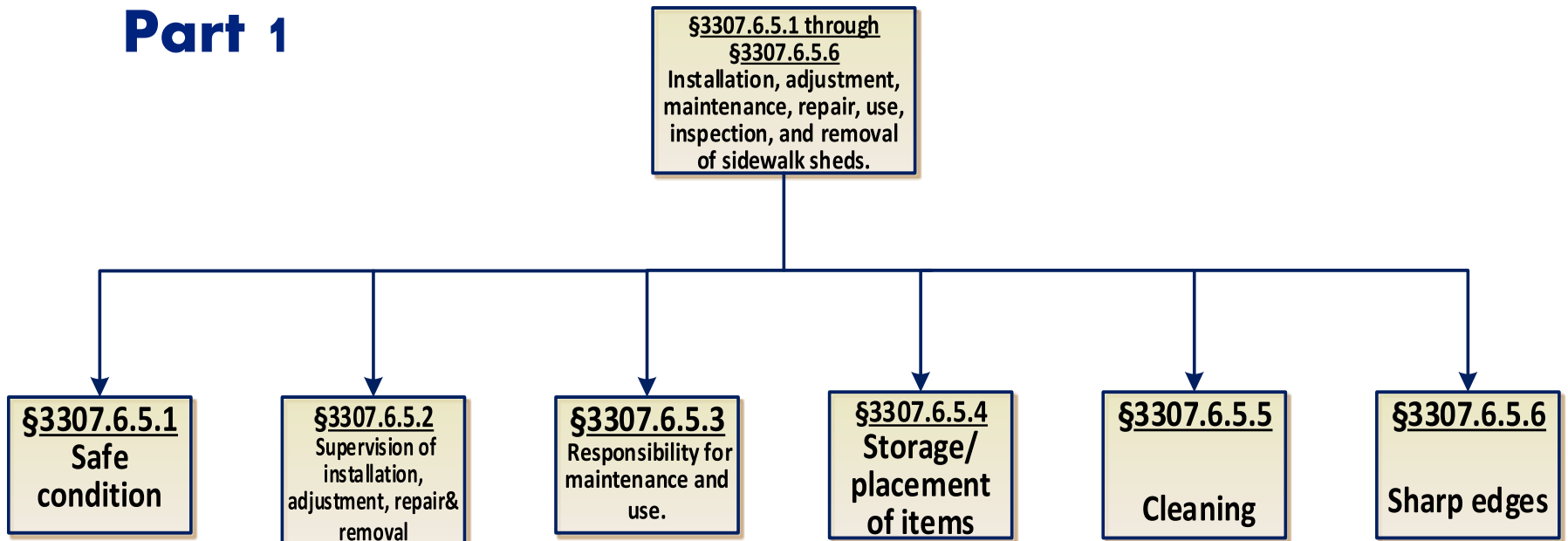
The deck of the sidewalk shed shall consist of 2-inch thick wood plank or equivalent material and shall be capable of sustaining the loads required by Section 3307.6.4.2. The deck shall be solid, or shall consist of planking laid close and made tight. Where the edge of the sidewalk shed abuts a building or structure, the decking shall be brought tight to the face of the building or structure (within 1 inch with gap covered/ sealed).

## BC 3307.6.4.6 Parapet

A vertical parapet at least 3 feet 6 inches high , as measured from the deck of the sidewalk shed , shall be constructed along all edges of the sidewalk shed...

# SIDEWALK SHED: NOTABLE CODE SECTIONS INSTALLATION/ADJUSTMENT/MAINTENANCE/REPAIR USE/INSPECTION/REMOVAL BC 3307.6.5

## Part 1



# SIDEWALK SHED NOTABLE CODE SECTIONS

## **BC 3307.6.5.1 Safe Condition**

Sidewalk sheds shall be maintained in a safe condition and used in a manner that eliminates hazards to the public. Any Hazardous conditions or defects discovered with the sidewalk shed shall immediately be brought to the attention of the permit holder for the shed.

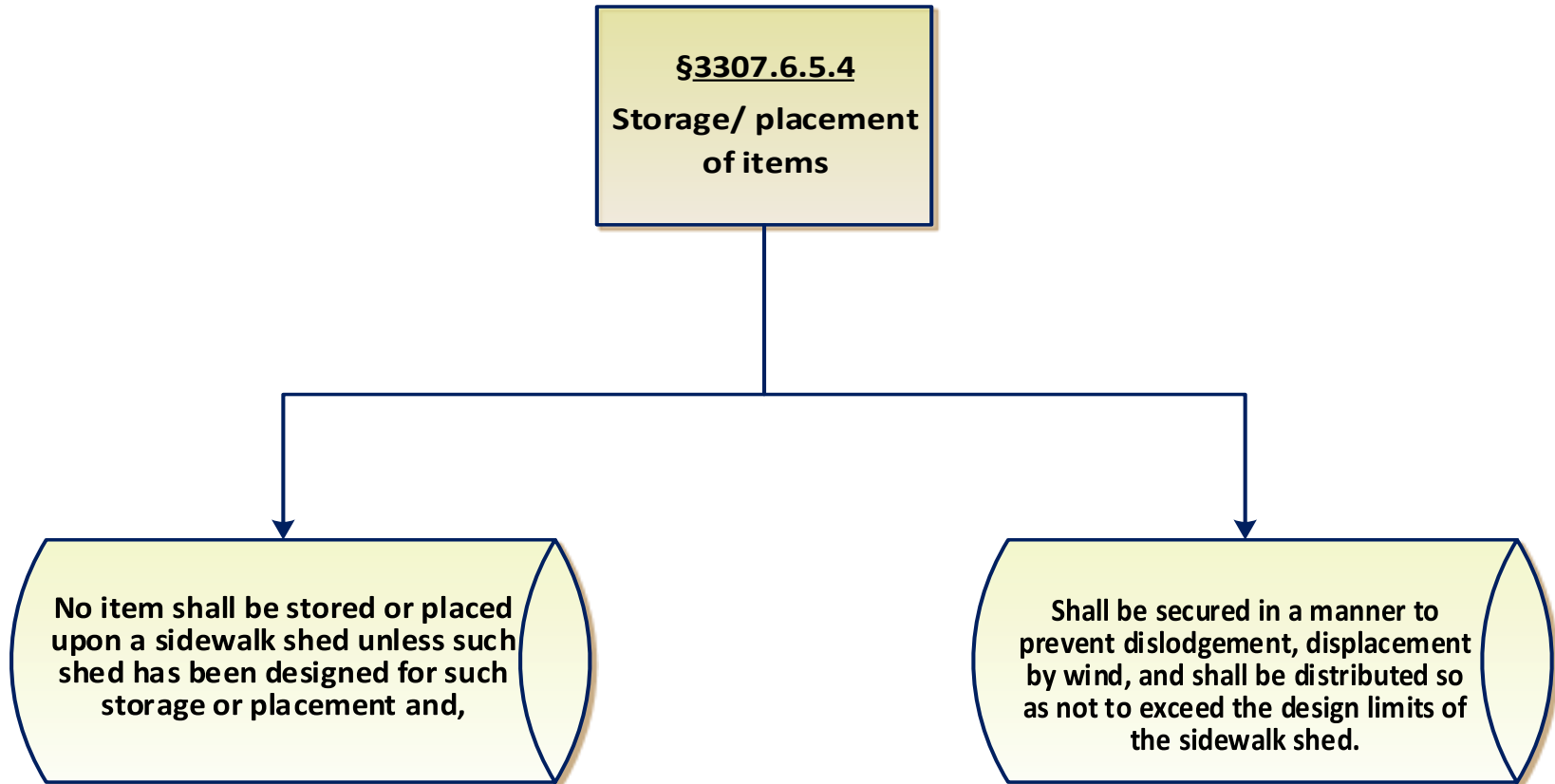
## **BC 3307.6.5.2 Supervision of installation, adjustment, repair, and removal**

The installation, adjustment, repair, or removal of a sidewalk shed shall be performed under the supervision of a competent person designated by the permit holder for the sidewalk shed.

## **BC 3307.6.5.3 Responsibility for maintenance and use**

Sidewalk sheds shall be maintained and used by the general contractor, or where there is no general contractor, the contractor causing the work to be performed, or where there is no active work, the building owner.

# SIDEWALK SHED NOTABLE CODE SECTIONS – STORAGE/PLACEMENT BC 3307.6.5.4



# SIDEWALK SHED: NOTABLE CODES

## CLEANING BC 3307.6.5.5

§3307.6.5.5

Cleaning

### BC 3307.6.5.5 Cleaning

The decks of the sidewalk sheds shall be broom swept and cleaned of material daily while active work is occurring at the site

Must be cleaned  
daily of any  
material

# SIDEWALK SHED NOTABLE CODES



## BC 3307.6.5.6 Sharp Edges

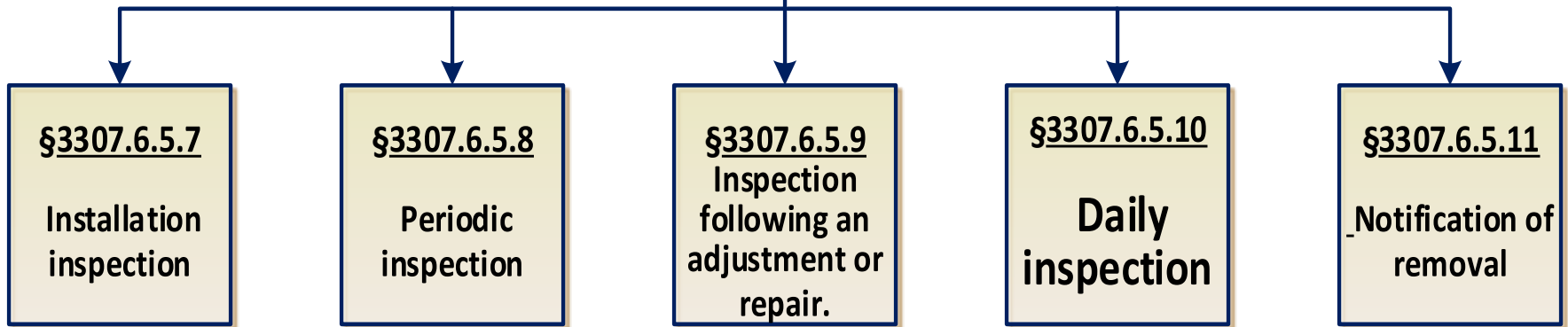
Where located in an area that could pose a danger to the public, bolts and screws without a cap, and sharp edges, shall be protected to prevent injury to the public



# SIDEWALK SHED – NOTABLE CODE SECTIONS INSTALLATION/ADJUSTMENT/MAINTENANCE/REPAIR USE/INSPECTION/REMOVAL BC 3307.6.5

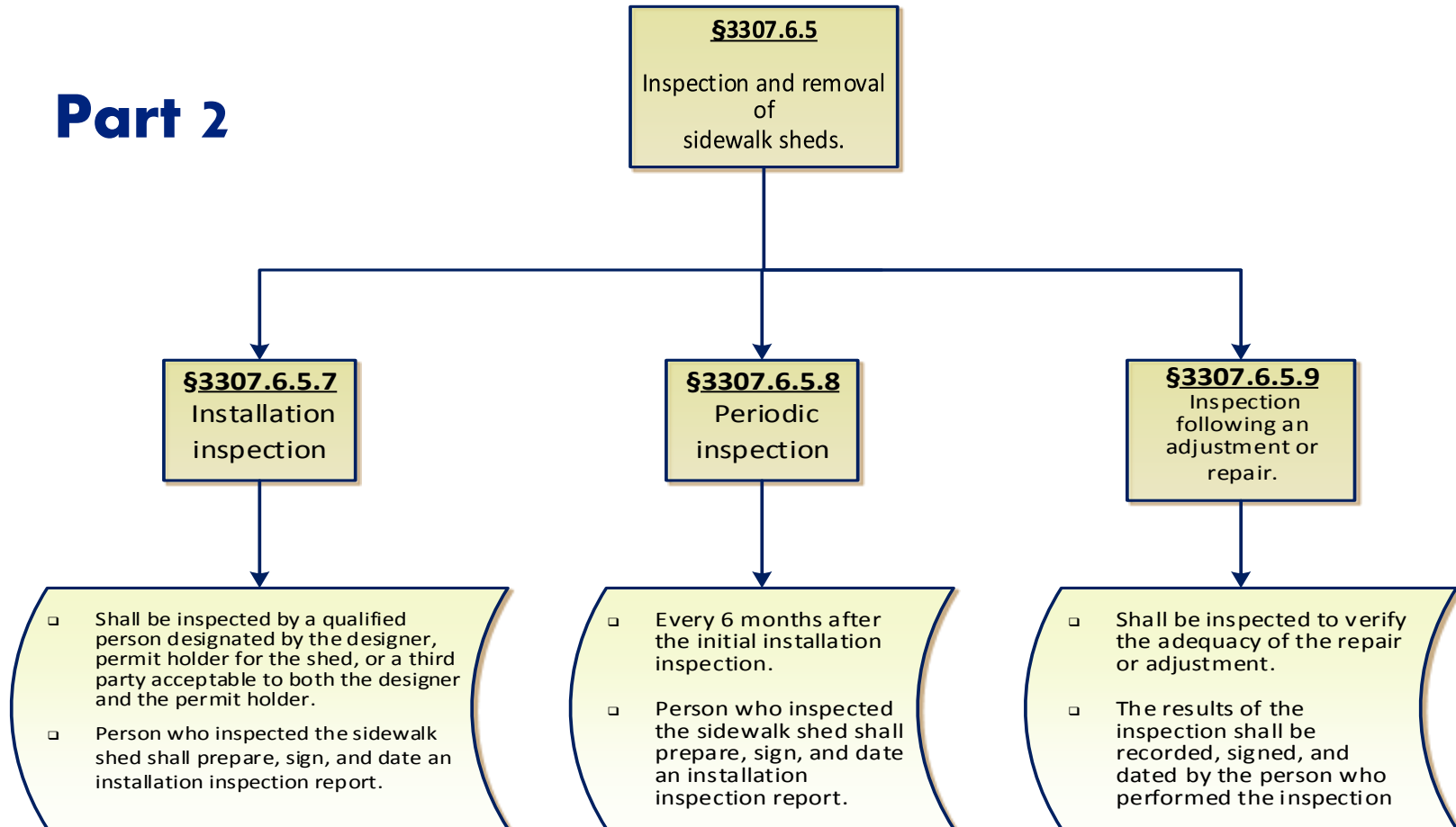
## Part 2

§3307.6.5.7 through  
§3307.6.5.11  
Installation, adjustment,  
maintenance, repair, use,  
inspection, and removal of  
sidewalk sheds.



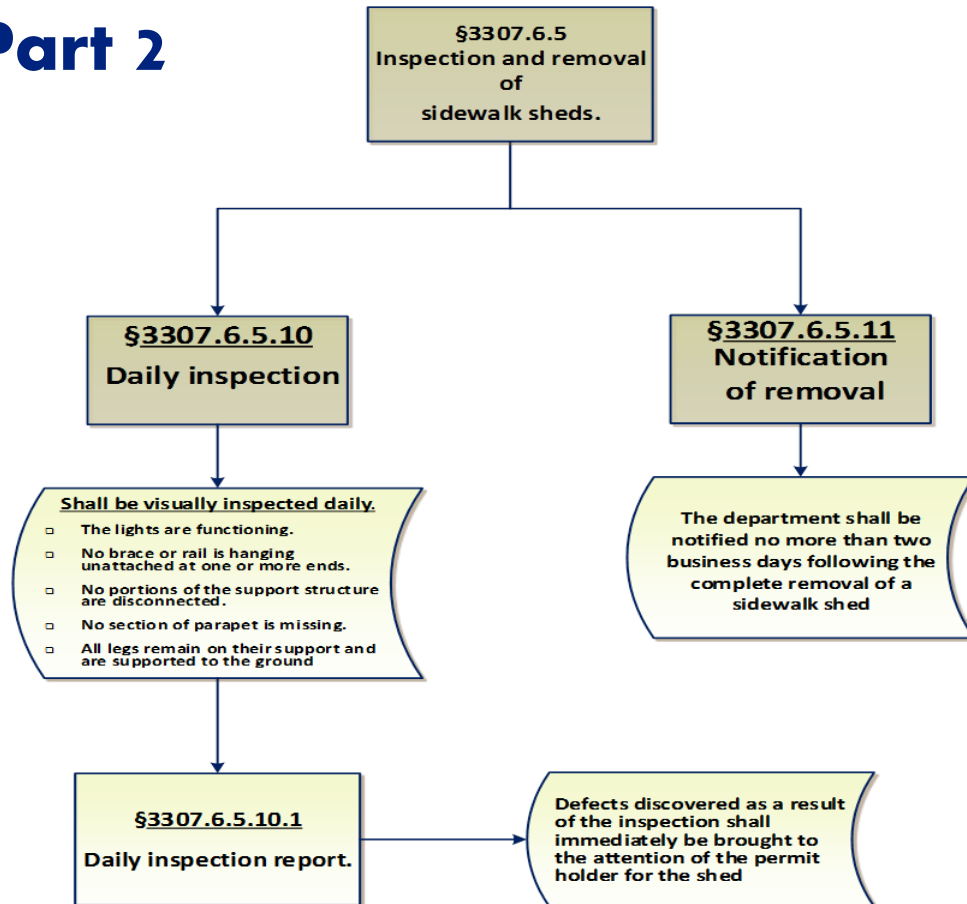
# SIDEWALK SHED NOTABLE CODE SECTIONS – INSPECTION & REMOVAL BC 3307.6.5

## Part 2



# SIDEWALK SHED NOTABLE CODE SECTIONS – INSPECTION & REMOVAL BC 3307.6.5

## Part 2



## BC 3307.6.5.10.1 Daily Inspection Report

A written record of such inspections shall be maintained by the contractor or owner, with such record signed and dated by the person who performed the inspection...

# SIDEWALK SHED: COMMON ERRORS AND OMISSIONS

## Permit Holder/Owner

1. Work contrary to approved plans – **AC28-105.12.2**
2. Parapets and extensions missing – **§3307.6.4.6**
3. Responsibility for maintenance – **§3307.6.5.3**
4. Signage missing – **§3301.9.2, §3301.9.2.6**
5. No installation inspection report – **§3307.6.5.7**
6. No daily inspection reports – **§3307.6.5.10.1**
7. No six-month periodic inspection report – **§3307.6.5.8**

# SIDEWALK SHED: COMMON ERRORS AND OMISSIONS

## Design Professional

1. Plans are not project specific and lack sufficient detail –  
**AC28-104.7.1**
2. Main frame beams and junior beams are not sufficiently sized for gravity loads – **§3307.6.4.2**
  - a. Generic load tables – all spans not addressed
  - b. Storage of materials/scaffold not addressed
  - c. Long span openings (garage/ drive through) not accounted for
3. Lateral system is insufficient for overturning/sliding –  
**§3307.6.4.2.1**
4. Storage loads and locations not identified on drawings –  
**§3307.6.5.4**

# CASE STUDY 1: SIDEWALK SHED WIND – BEFORE INCIDENT



*(Courtesy Google Street View)*

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# CASE STUDY 1: SIDEWALK SHED WIND – AFTER OVERTURNING FAILURE



**BC 3307.6.4.2.1 Wind and other loads** – The effect of wind and other loads on the sidewalk shed, and any item placed or attached on or to the shed, shall be considered in the design in accordance with Chapter 16

# CASE STUDY 1: SIDEWALK SHED WIND – AFTER OVERTURNING FAILURE

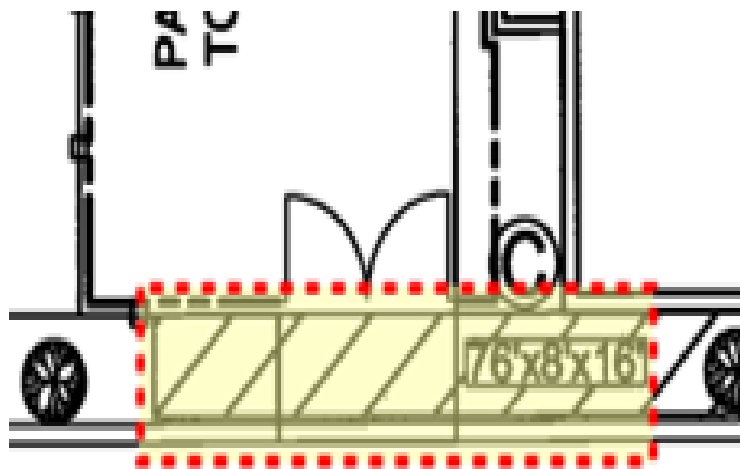


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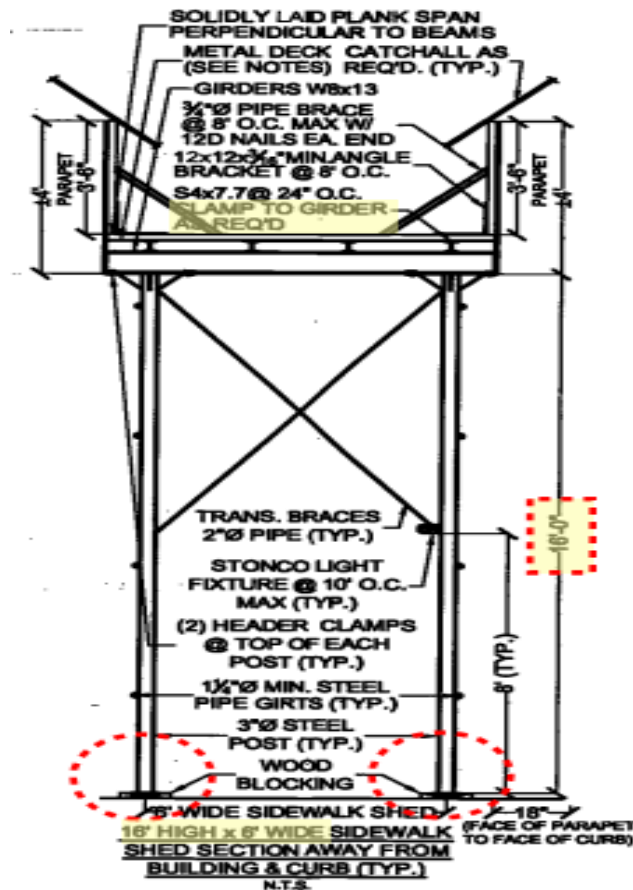
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# CASE STUDY 1: SIDEWALK SHED – WIND



***PLAN: Location of Failure***



***SECTION: Location of Failure***

# CASE STUDY 1: SIDEWALK SHED – WIND

## Errors and Omissions

1. Plans weren't project specific – **AC28-104.7.1**
  - Did not detail long span conditions at driveway
2. Failed lateral analysis in least plan dimension (8 feet) – Wind loads as per Chapter 16 not accounted for in the design – **§3307.6.4.2**
  - No tie downs/anchorage
  - No counterweights
  - No return framing
  - Slender structure
3. Gravity members undersized – **§3307.6.4.2**

# SIDEWALK SHED: CASE STUDY 2



1. BC 3307.6.4.4, #2 - Vertical members plumb with a tolerance of  $L/100$ ?
2. BC 3307.6.4.7 Height - Clearance of at least 8 feet? Note build up of sill plates.

# SIDEWALK SHED: CASE STUDY 2



3. **BC 3307.6.4.9 Avoid Interference** – Traffic sign obstructed? Junior beam missing due to sign.
4. **BC 3307.6.5.10 Daily Inspection** – Portions of the structure are disconnected!

# SIDEWALK SHED: CASE STUDY 2



## BC 3307.6.4.10 Founding

The surface upon which the shed rests shall be capable of supporting the design loads of the sidewalk shed, including any item placed or stored upon the shed

# NO PROTECTION: CASE STUDY 3



## Protection of Public & Property

- Ongoing building work – active permitted job prior to certificate of occupancy
- Exterior work being performed
- NO sidewalk shed
- NO sidewalk closure
- NO flag person – BC 3307.4.4

*As per BC3307.6.2 a sidewalk shed or sidewalk closure must be present until all exterior work is complete.*

# SCAFFOLDS: SUPPORTED & SUSPENDED

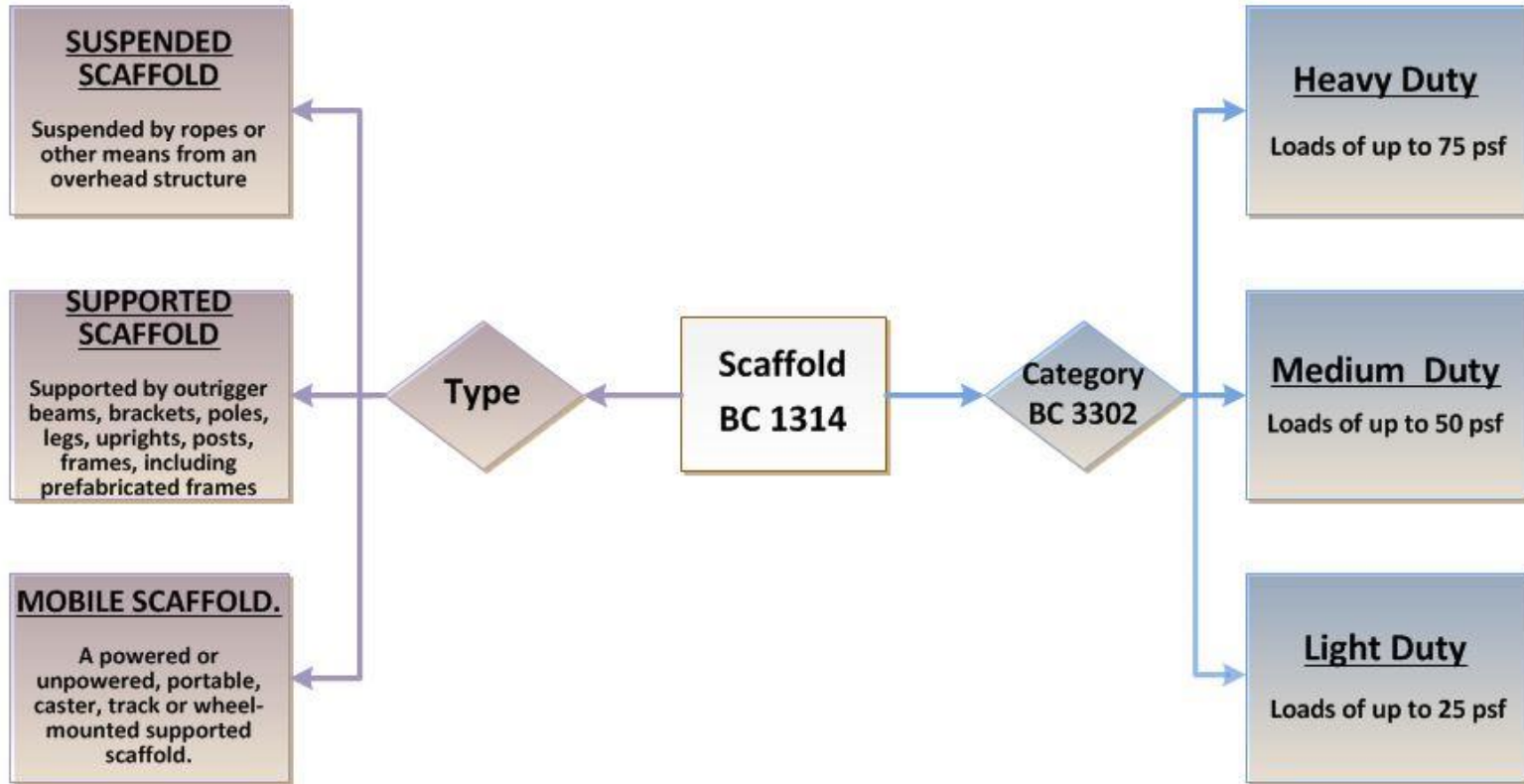


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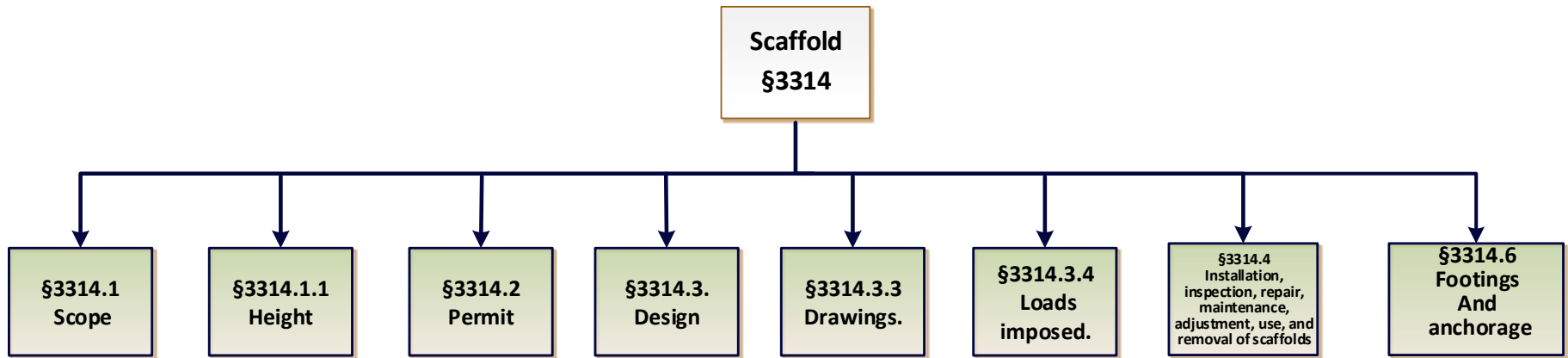
# NOTABLE SCAFFOLD CODES

## SCAFFOLD TYPES & CATEGORIES

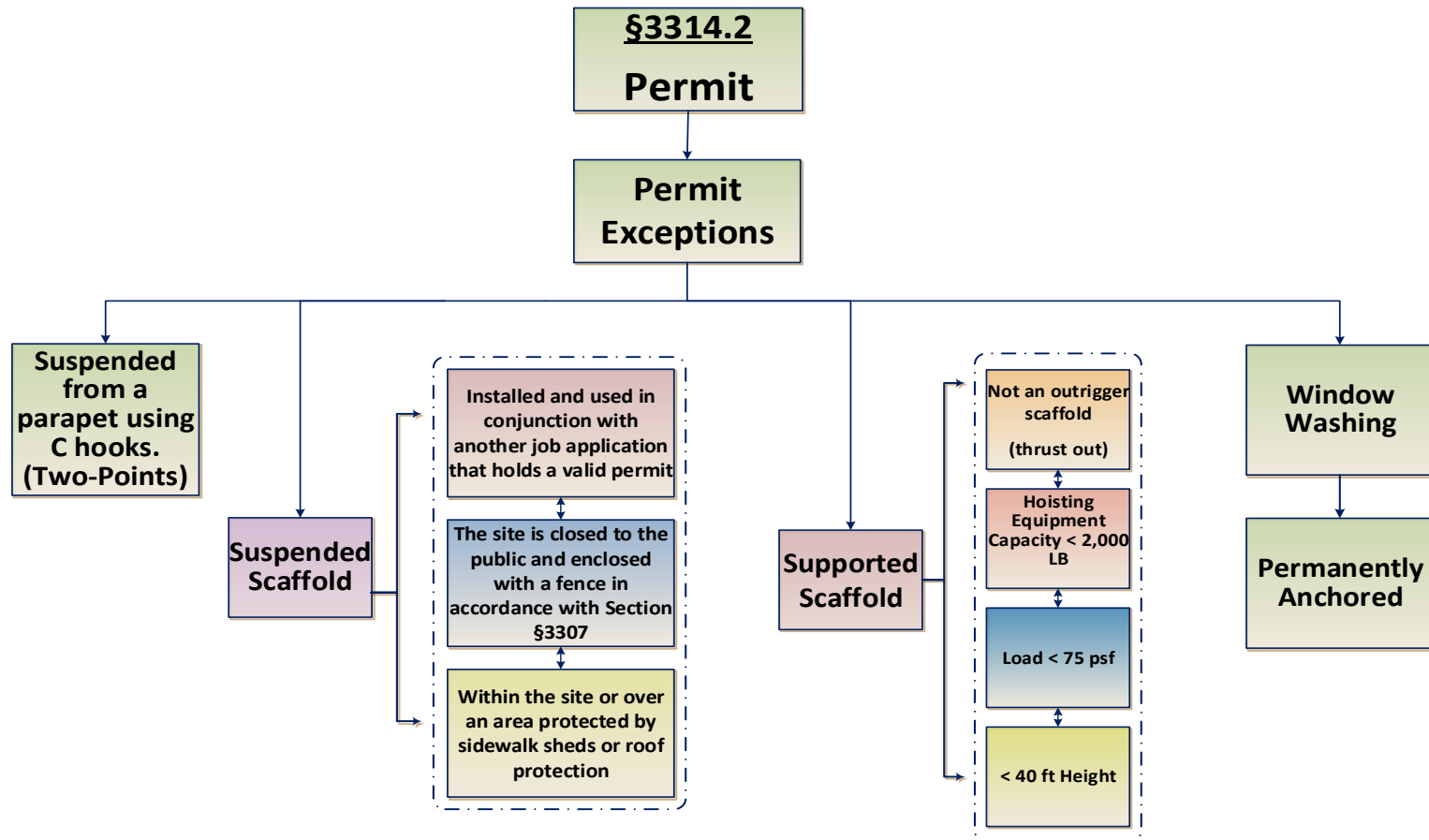




# NOTABLE SCAFFOLD CODES

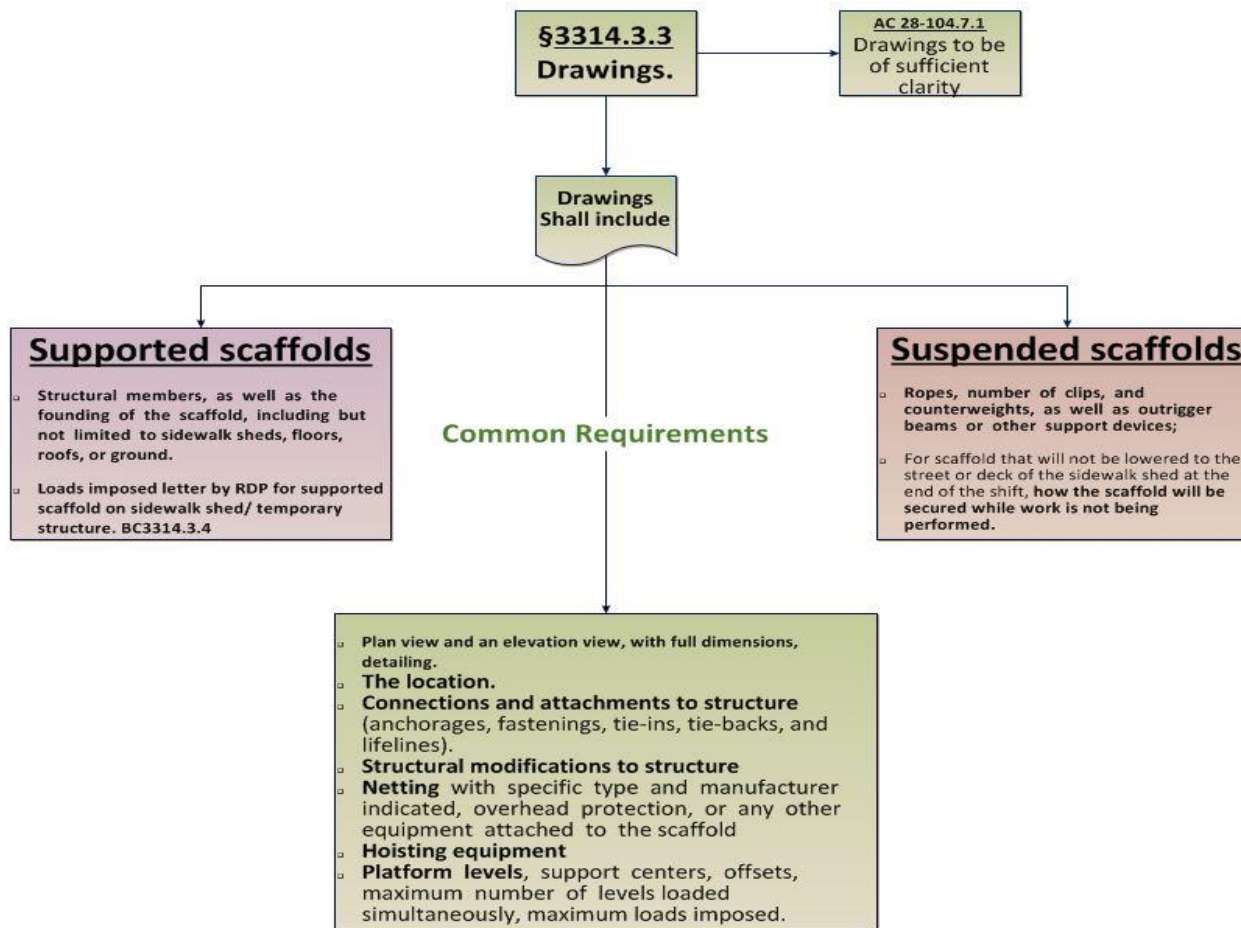


# NOTABLE SCAFFOLD CODE SECTIONS REQUIRED PERMITS



# NOTABLE SCAFFOLD CODE SECTIONS

## DRAWING REQUIREMENTS



# NOTABLE SCAFFOLD CODE SECTIONS

## §3314.4

Installation, inspection, repair,  
maintenance, adjustment, use,  
and removal of scaffolds

### §3314.4.1

Installation  
and  
removal.

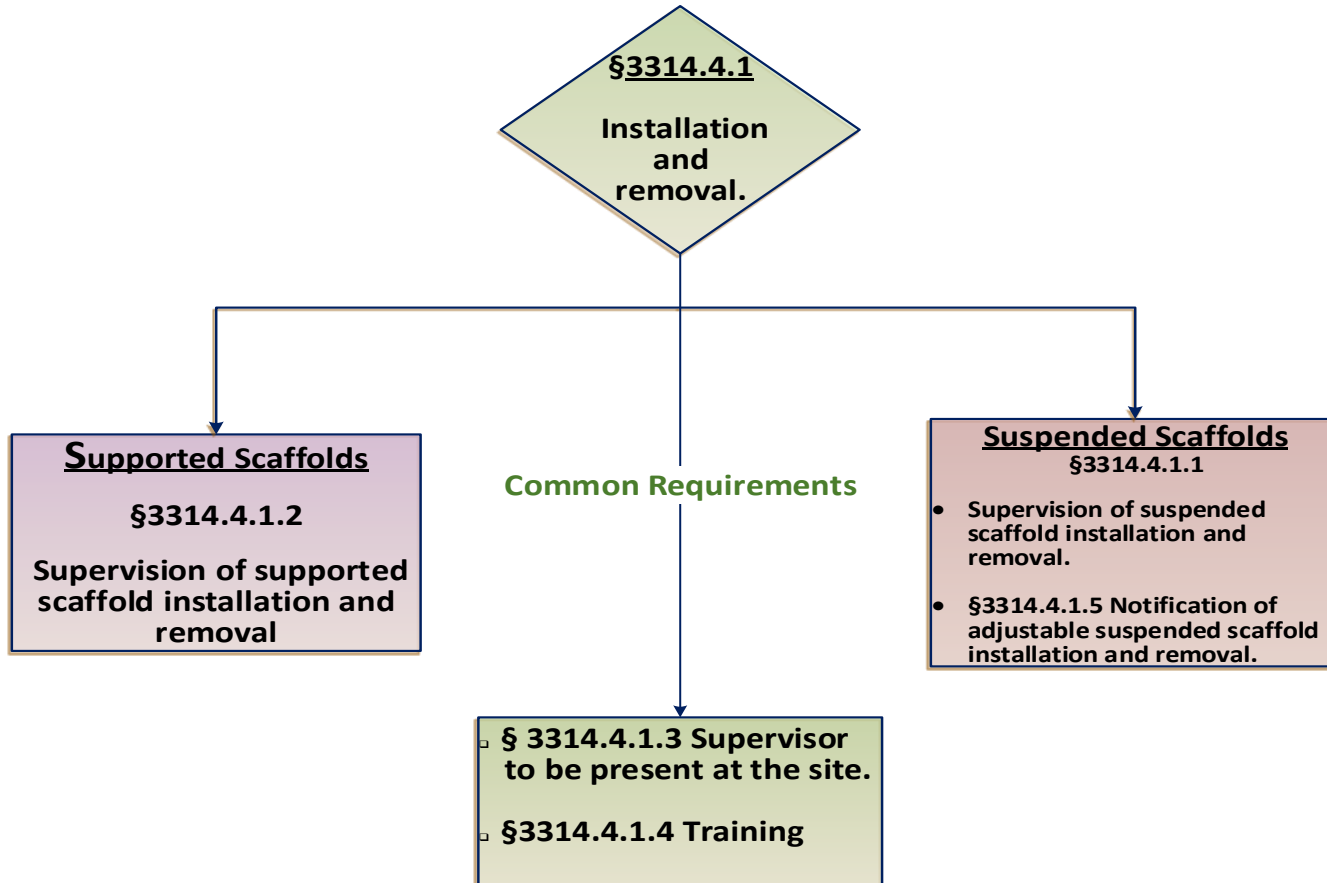
### §3314.4.2

Use of scaffolds.

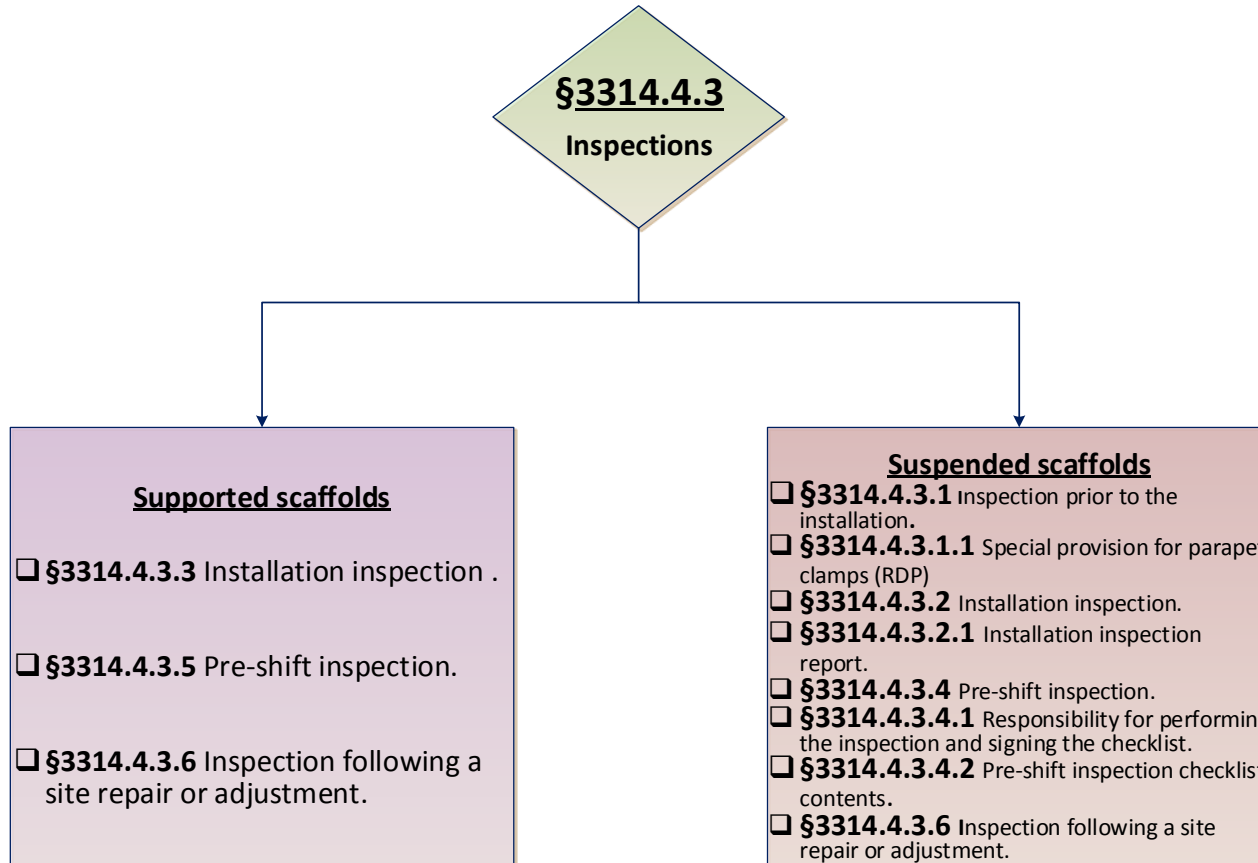
### §3314.4.3

Inspections

# NOTABLE SCAFFOLD CODE SECTIONS INSTALLATION & REMOVAL



# NOTABLE SCAFFOLD CODE SECTIONS INSPECTIONS



# SUPPORTED SCAFFOLD NOTABLE CODE SECTIONS

## BC 3314.4.4.3 Capacity

Each scaffold, and its components, shall be capable of supporting, without failure, its own weight and at least **four times** the maximum intended load applied or transmitted to it. Where applicable, scaffolds and their connections to the building or structure shall be designed to meet the anticipated loads during construction or demolition work, including wind loads as prescribed in Chapter 16.

# SUPPORTED SCAFFOLD NOTABLE CODE SECTIONS

## BC 3314.9.1 Height to Base Ratio

A supported scaffold with a height to base ratio (including outrigger supports, if used) of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing or equivalent means as follows:

1. Guys, ties or braces shall be installed at locations where horizontal members support both inner and outer legs.
2. Guys, ties, or braces shall be installed according to the manufacturer's recommendations, or as designed in accordance with Section 3314.3, or at a minimum, the first guy, tie or brace shall be installed at a horizontal member and not more than a distance 4 times the least plan dimension from the base support and be repeated vertically at locations of horizontal members every 20 feet or less thereafter for scaffolds 3 feet wide or less and every 26 feet or less thereafter for scaffolds greater than 3 feet wide...and at horizontal intervals not to exceed 30 feet measured from one end (not both) towards each other.



# SUPPORTED SCAFFOLD: COMMON VIOLATING CONDITIONS

## Permit Holder/Owner

1. Work contrary to approved plans – **AC28-105.12.2**
  - Greater number of working platforms than allowed.
  - Missing diagonal and cross bracing
2. Guardrails and debris netting not installed or maintained **§3314.8**
3. Working platform not fully planked **§3314.5**
4. Planks not tied down (dislodgement) **§3314.9.4**

# SUPPORTED SCAFFOLD: COMMON VIOLATING CONDITIONS

## Design Professional

1. Plans weren't project specific – **AC28-104.7.1**
  - Did not account for building geometry.
2. Scaffold support not coordinated with sidewalk shed - **§3314.3.3, #9**
3. Anchorage to compromised walls - **§3314.3.3, #2**
4. Anchorage to walls not tested - **§1704.32; BB2016-005**
5. Netting/enclosures not identified - **§3314.3.3, #4**

# SUPPORTED SCAFFOLD UNDOCUMENTED DESIGN: CASE STUDY 1

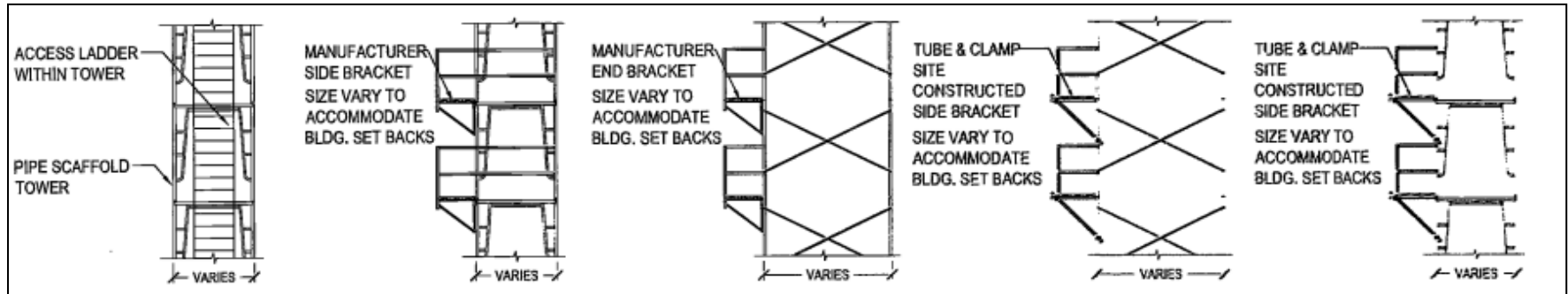


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# SUPPORTED SCAFFOLD

## UNDOCUMENTED DESIGN: CASE STUDY 1

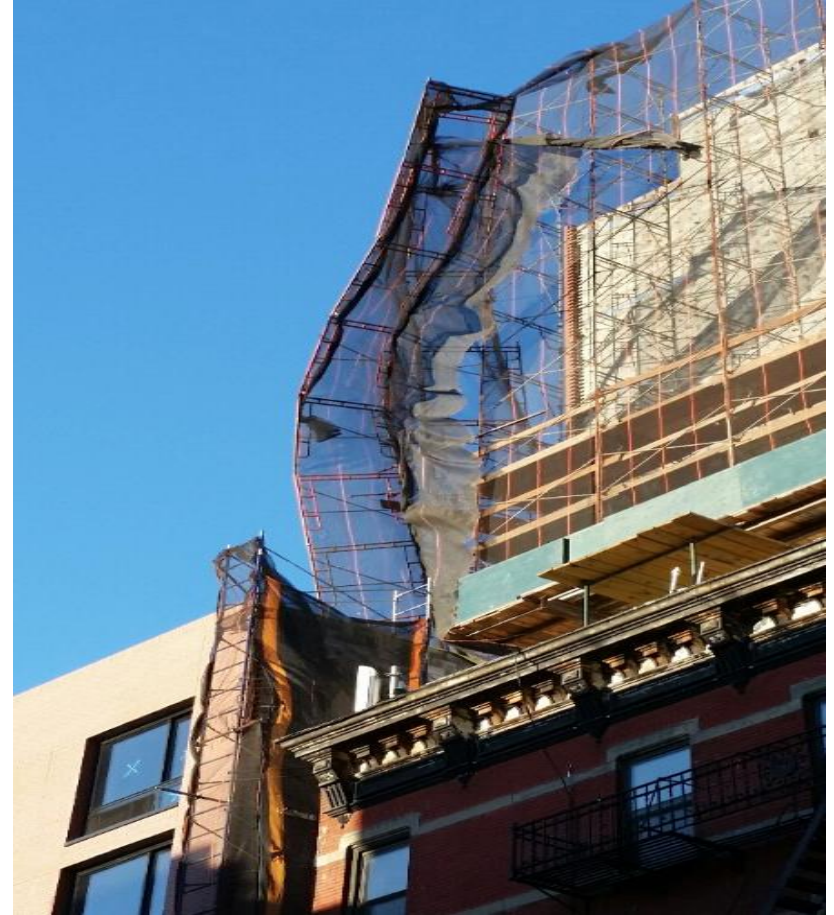
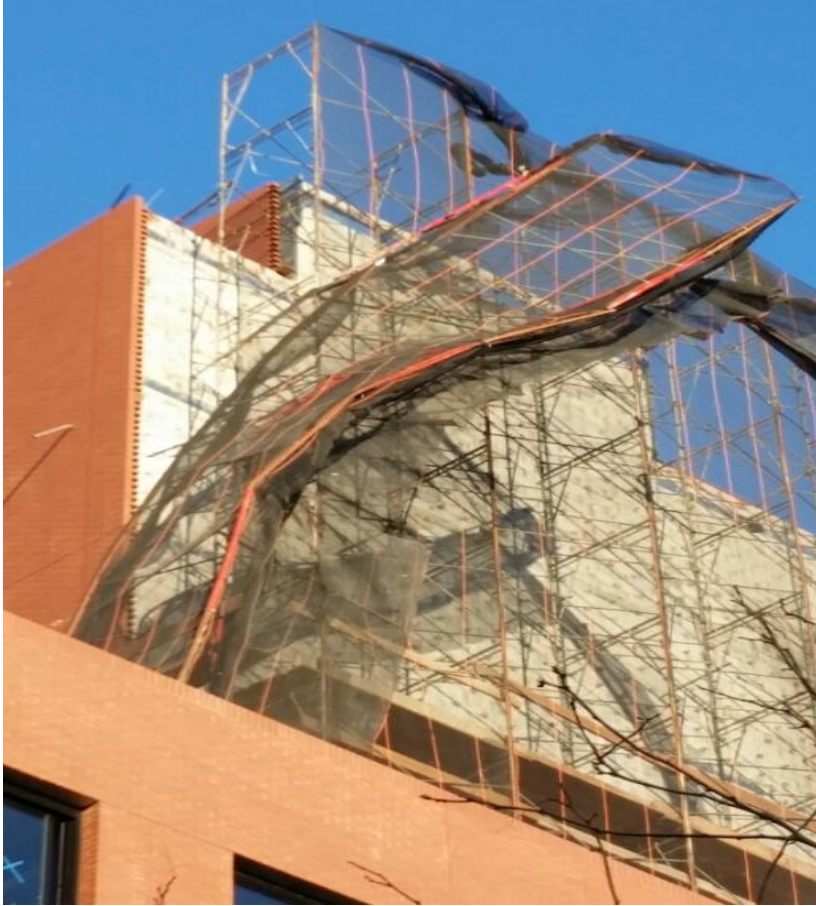


### Errors and Omissions

Work contrary to approved plans:

- Plans weren't project specific – **AC28-104.7.1**
  - Did not detail building geometry and the need for custom side bracket (bicycles) **§3314.13.3**
- Contractor fabricated custom side brackets without inspection or documentation. Frame not designed for additional forces/stresses. Additional overturning (height to base aspect ratio) not accounted for

# SUPPORTED SCAFFOLD DISLODGE/MENT/ ANCHORAGE: CASE STUDY 2



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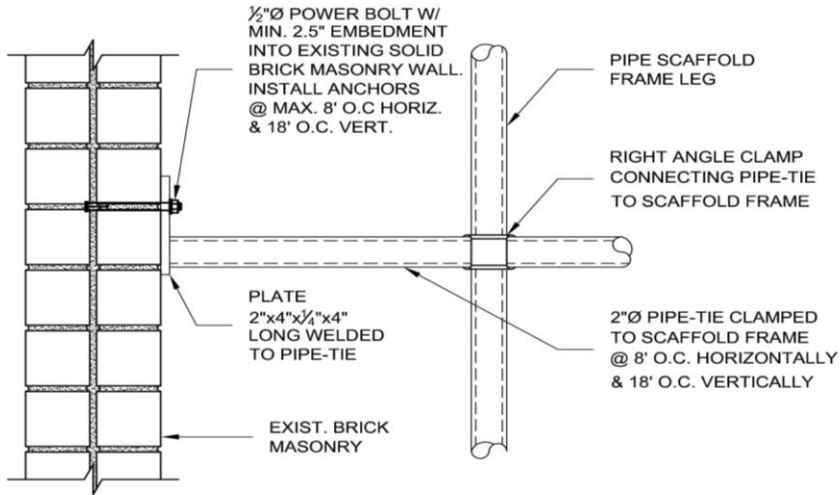
# SUPPORTED SCAFFOLD

## DISLODGE/ ANCHORAGE: CASE STUDY 2

### Errors and Omissions

- Plans weren't project specific – **AC28-104.7.1**
  - Did not detail building geometry
  - Did not have sufficient anchorage information – **BC 3314.6**
- Minimum bracing to prevent tipping was not provided – **BC 3314.9.1**
- No load imposed letter was provided – **BC 3314.3.4**
- No documentation for post installed anchorage and testing – **§1704.32; BB2016-005**
- The scaffold did not have sufficient capacity as per code (4:1) – **BC 3314.4.4.3**

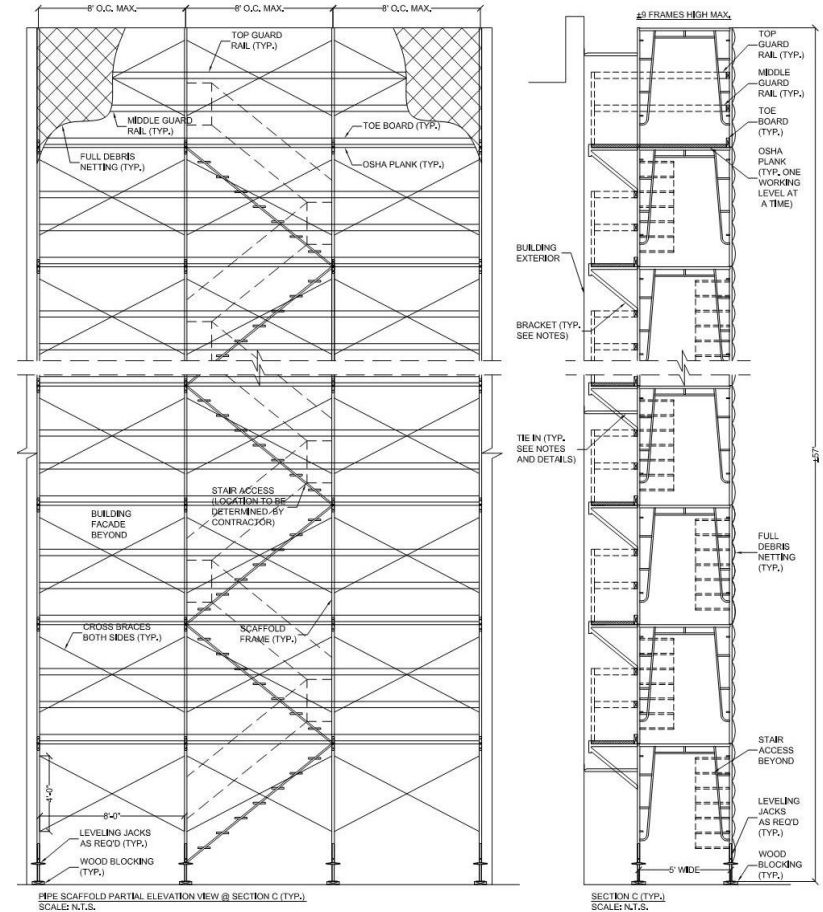
# SUPPORTED SCAFFOLD BRACING & ANCHORAGE: CASE STUDY 3



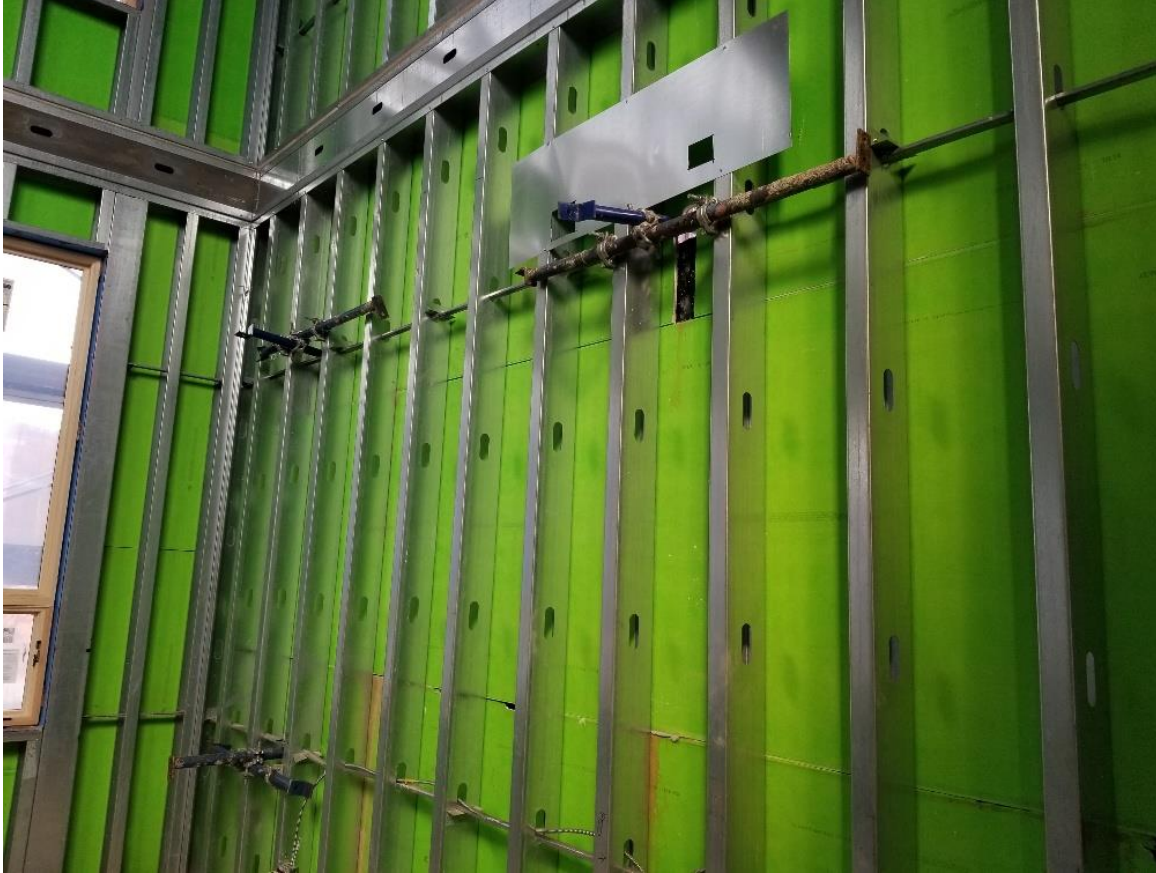
PIPE SCAFFOLD ANCHORING DETAIL  
OPTION 1: SOLID BRICK WALL  
N.T.S.

## BC 3314.9.1 Height-to-base ratio

First brace installed at four (4) times the least plan dimension repeated every 26ft. vertically, minimum 30ft. horizontally (Scaffold is 5ft. wide with a height of 57ft.)



# SUPPORTED SCAFFOLD BRACING & ANCHORAGE: CASE STUDY 3



The PE/Applicant specified anchorage into brick masonry, not cold-formed metal studs.

The Contractor attached to the metal studs.

Work performed contrary to the drawings.



# SUPPORTED SCAFFOLD BRACING & ANCHORAGE: CASE STUDY 3



Insufficient anchorage. Horizontal braces through drywall with no positive connection. Resting on electrical conduit.

# SUSPENDED SCAFFOLDING



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# SUSPENDED SCAFFOLD CODE SECTIONS

## **BC 3314.10.2 Support**

All suspended scaffold support devices, such as outrigger beams, C-hooks, parapet clamps, and similar devices shall be supported by surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the rated load of the hoist. The support shall be inspected prior to installation in accordance with the requirements of Section 3314.4.3.1

## **BC 3314.4.4.2 Loads**

At no time shall a scaffold be loaded beyond the capacity of the scaffold or the ground or structure upon which it rests or is supported. Loads shall not be concentrated so as to cause stresses in excess of the allowable values designated for the applicable material described in the code

## **BC 3301.1.3 Manufacturer Specifications**

All equipment shall be used in accordance with the specifications of the manufacturer, where such specifications exist, and the requirements of this code. Where there is a discrepancy, the stricter requirements shall apply

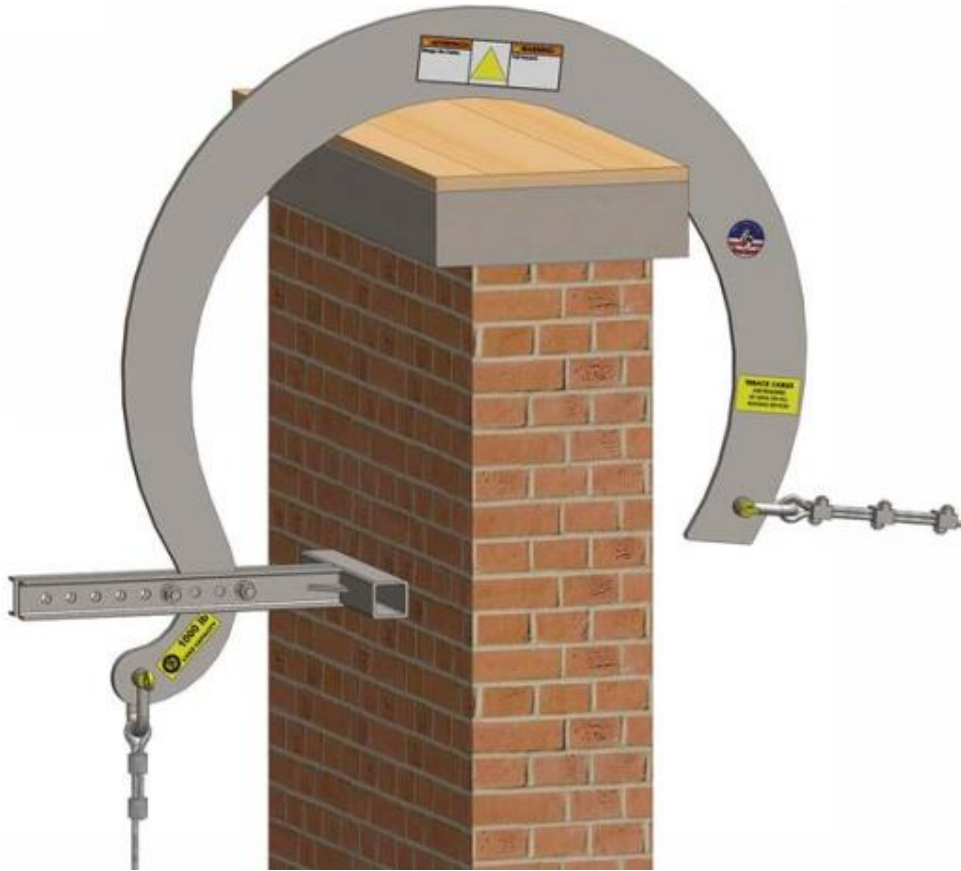
# SUSPENDED SCAFFOLD CODE SECTIONS

## BC 3314.4.3.1 Inspection prior to the installation of a suspended scaffold

Prior to the installation of a suspended scaffold, all suspended scaffold support devices, including but not limited to outrigger beams and C-hooks, along with the support surface upon which they rest, shall be inspected by a qualified person. The qualified person shall:

1. Where the installation or removal occurs under the direct and continuing supervision of a licensed rigger or sign hanger, be designated by such licensee: or
2. Where the installation or removal does not occur under the direct and continuing supervision of a licensed rigger or sign hanger, be designated by the designer of the scaffold.

# SUSPENDED SCAFFOLD C-HOOK & STAND-OFF BRACKET ASSEMBLIES



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# SUSPENDED SCAFFOLDING STAND-OFF BRACKET ASSEMBLY MANUFACTURER'S SPECIFICATIONS

## Stand-off Bracket for Cornice Hooks

### Installation Instructions

#### Tools Required:

- Torque wrench with 3/4" deep socket
- 3/4" or adj. wrench

#### NOTE:

1. Assembly and installation must be performed or supervised by a trained and competent person. Read and fully understand these instructions before proceeding with assembly/installation.
2. Install all lock nuts to make sure the locking part is still functional.

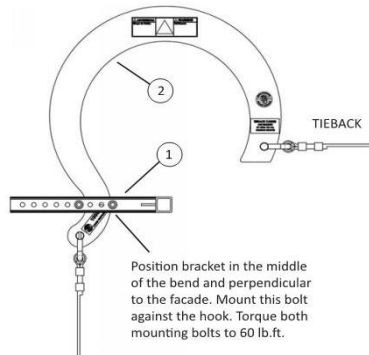
#### Installation Instructions:

1. Determine the outreach desired, this bracket is capable of 12 to 17" outreach. Verify that the hook size/parapet width combination is properly matched. Review figures 4 to 10 on pages 8 and 9 for samples of approved applications. Make sure the suspension point is well below the horizontal line of the tieback hole. DO NOT let the rear point of the hook touch the wall. Make sure the hook makes load bearing contact with the top rear of the parapet. Contact the factory for approval of applications that are different than shown.
2. Cribbing on top is optional and MUST NOT interfere with the top rear load bearing point of the hook onto the parapet wall and be securely fastened so no loose parts can fall off the parapet. Cribbing at the top rear (such as 3/4" plywood pieces screwed to a 2x6 in an L-shape - see figure 2), is recommended to better distribute the point loads on the parapet.
3. Verify the parapet load bearing points and the hook reaction load "R" will support the working loads plus a 4:1 safety factor.
4. Attach the stand-off bracket (Item #1) to the hook (Item #2) on the roof at the desired distance (figure 1). DO NOT attempt to attach bracket with the hook installed on the parapet! Fasten to hook using (2) 1/2" grade 5 bolts. Position the bracket in the lower bend of the hook and make sure the mounting bolt closest to the facade touches the point of the hook bend closest to the facade. Fasten each bolt tightly and torque to 60 lb.ft.

#### ⚠ WARNING:

- Any installation of this equipment other than in strict accordance with these instructions shall be at the Operator's risk and may result in death or serious injury.
- It is the user's responsibility to ensure that the parapet on which the hook is mounted will support the load capacities as listed in the manual.
- Do not alter the product and never use it for purposes in which it was not intended.
- Inspect all equipment before use.
- Never use damaged equipment.

Figure 1



## ⚠ WARNING:

- Any installation of this equipment other than in strict accordance with these instructions shall be at the Operator's risk and may result in death or serious injury.
  - It is the user's responsibility to ensure that the parapet on which the hook is mounted will support the load capacities as listed in the manual.
  - Do not alter the product and never use it for purposes in which it was not intended.
  - Inspect all equipment before use.
  - Never use damaged equipment.
4. Attach the stand-off bracket (Item #1) to the hook (Item #2) on the roof at the desired distance (figure 1). DO NOT attempt to attach bracket with the hook installed on the parapet! Fasten to hook using (2) 1/2" grade 5 bolts. Position the bracket in the lower bend of the hook and make sure the mounting bolt closest to the facade touches the point of the hook bend closest to the facade. Fasten each bolt tightly and torque to 60 lb.ft.

# STAND-OFF BRACKET & C-HOOK FAILURE: CASE STUDY 1



Coping stone on masonry parapet wall. The forces and stresses from the c-hook and standoff bracket assembly must be checked and verified that the support surface can resist at least four (4) times the anticipated load or as required by the manufacturer.

# STAND-OFF BRACKET & C-HOOK FAILURE: CASE STUDY 1



Bolts were not tightened to the manufacturer's specifications (approximately 60 ft.-lbs.).

Bolts can loosen overtime and must be checked as per the pre-shift inspection checklist and based on the manufacturer's requirements.



# STAND-OFF BRACKET & C-HOOK FAILURE: CASE STUDY 1

## Errors and Omissions

- The capacity of supporting surface must be capable of resisting four (4) times the maximum intended load applied or transmitted to the surface – **BC 3314.10.2 & BC 3314.4.4.3**
- Pre-shift inspection for a suspended scaffold including checklist - **BC 3314.4.3.4**
- Pre-shift inspection checklist contents based on the manufacturer's requirements - **BC 3314.4.3.4.2**

# STAND-OFF BRACKET INSTALLATION: CASE STUDY 2



Installation contrary to manufacturer's specifications (stand-off bracket installed at an angle).

Stand-off brackets must be installed perpendicular to the face of the support as per the manufacturer's specifications and requirements.

Experience and opinion do not override the manufacturer's requirements (not a suggestion).

# SUSPENDED SCAFFOLD: COMMON VIOLATING CONDITIONS

## Permit Holder/Owner

1. Work contrary to approved plans – **AC 28-105.12.2**
2. Inadequate anchor points being used (plumbing/ exhaust vents) – **BC 3314.6 & BC 3314.6.1**
3. Horizontal tiebacks at angles without opposing lines – **BC 3314.10.9**
4. Stirrups installed at wrong locations on the platform (contrary to manufacturer specifications) – **BC 3314.15.2**
5. Failure to adequately clear and lower/ secure – **BC3314.10.11**

# SUSPENDED SCAFFOLD: COMMON VIOLATING CONDITIONS

## Design Professional

1. Plans are not project specific and do not account for exact building geometry – **AC 28-104.7.1**
2. Deficient Drawings – **BC 3314.3.3**
  - a. Structural modifications to the base structure not indicated or contrary to that shown on the drawings (anchorage support, tiebacks, etc.)
  - b. Connections and attachments to the base structure not sufficiently detailed (schematic and general)
  - c. Method of securement while work is not being performed for all scaffolds not lowered to the deck of the sidewalk shed not specified
3. Anchorage testing not specified in compliance with – **BC 1704.32;**  
**BB2016-005**

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