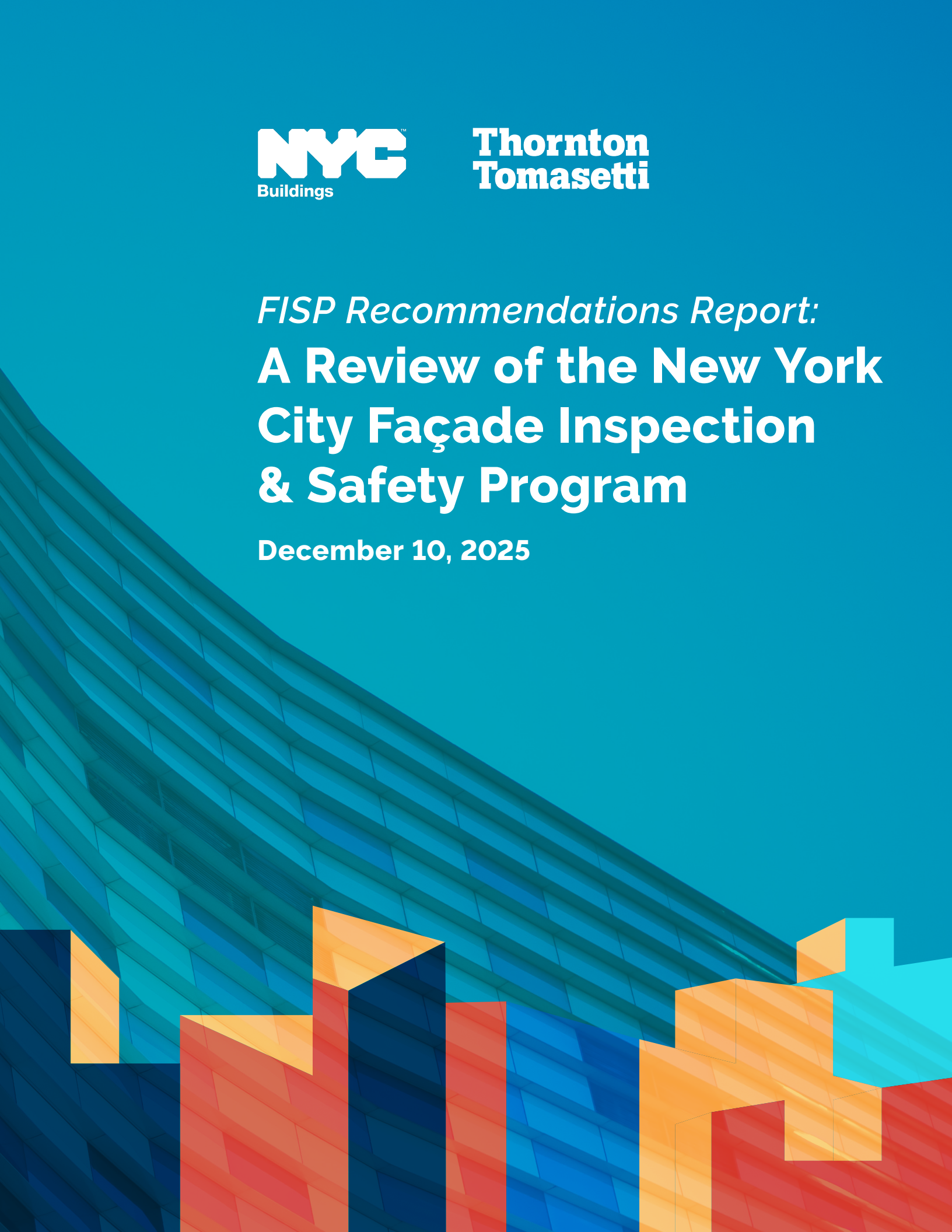
NYC Buildings

Thornton Tomasetti

FISP Recommendations Report:

A Review of the New York City Façade Inspection & Safety Program

December 10, 2025



“FISP has endured for 45 years, contributing to a safer New York. Now, with input from stakeholders and advancements in technology, the program is poised to evolve – balancing safety, regulation and cost for the next generation.

Courtesy Empire State Realty Trust

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Introduction & Background

This report summarizes the results of a consulting engagement by Thornton Tomasetti, Inc., for the New York City (NYC) Department of Buildings (DOB) to perform a comprehensive review of the current NYC Façade Inspection and Safety Program (FISP).

First implemented in 1980 and amended over the past 45 years, FISP has the overriding goals of minimizing the risk of façade hazards caused by deterioration and ensuring façades are brought into a safe condition. FISP is mandated by Article 302 (Maintenance of Exterior Walls) of Title 28 of the NYC Administrative Code and specified in 1 RCNY 103-04. The program requires that the façade of every building taller than six stories be inspected by a registered design professional (New York State licensed professional engineer or registered architect) every five years and that the resulting technical report be filed with DOB (online via the DOB NOW: *Safety* portal). Registered design professionals, who are evaluated and certified by DOB to provide inspection and reporting services under FISP, are designated as Qualified Exterior Wall Inspectors (QEWIs). The overall process is augmented with oversight and review by DOB. During the current filing cycle (Cycle 10), about 17,000 of the approximately one million buildings throughout NYC's five boroughs are subject to FISP.

When a technical report is filed, the designated QEWI must classify the façade conditions into one of three categories: SAFE, Safe With a Repair and Maintenance Program (SWARMP), or UNSAFE. The building owner is obligated by law to perform the necessary repairs to address any SWARMP or UNSAFE conditions identified. In addition, public protection (such as a sidewalk shed) is required for UNSAFE conditions. A sidewalk shed is also required during execution of the façade repairs.

Since its inception, NYC's façade ordinance has treated all qualifying buildings essentially the same. Very few distinctions are made for building characteristics such as age, height, materials or systems. Over the years, the combination of enhancements to the FISP rules and increasingly conservative interpretations by QEWIs (to address liability concerns and DOB's rigorous standards) has lowered the threshold for UNSAFE findings and immediate erection of sidewalk sheds.

This study involved soliciting comprehensive feedback from multiple stakeholders, including QEWIs, public and private property owners and building code officials/regulators from other jurisdictions. It also included an evaluation of façade inspection ordinances in several other comparable cities, an analysis of several filing cycles of prior FISP inspection reports, and an examination of published research on the performance of the building materials and façade assemblies.

Some of the issues that were examined include whether inspection frequency can be adjusted without compromising safety, whether changes can be made to the inspection process to make FISP more efficient, whether distinctions can be made in the requirements for certain material or construction types, and possible scenarios in which installation of a sidewalk shed might not be necessary.

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It is important to point out that essentially all stakeholders surveyed for this study agreed that FISP works and that it proactively protects the public from potential hazards. They also agreed that the current provisions of FISP are generally appropriate and necessary, as they have evolved and improved over time to conform to the specific needs of NYC and the significant number of buildings that fall under the program.

Insights From Other Jurisdictions

In addition to NYC, at least 12 other U.S. cities have implemented their own version of a façade inspection and maintenance ordinance. For this study, we selected, with DOB's concurrence, five U.S. cities with façade ordinances enacted between 1995 and 2021 (Chicago, Boston, Philadelphia, San Francisco and Jersey City). Cities were selected based on several comparative characteristics, including urban density, building types, commonly used façade materials and systems, and climatic conditions. We also selected one jurisdiction outside the U.S. – Singapore – because of its robust façade ordinance and endorsement of technology in its program. We supplemented our evaluation by conducting interviews with the respective code officials.

By necessity, NYC's façade ordinance is among the most rigorous and prescriptive. For perspective, it's critical to understand that NYC's rule covers approximately 10 times more buildings than the second largest U.S. jurisdiction (Chicago). In addition, NYC has a considerable density of pre-war, high-rise masonry building stock, along with weather and seasonal cycles that are conducive to the deterioration of façade materials.

Our study revealed several requirements common to all jurisdictions, including 100% visual observations, some degree of hands-on assessment, and conditions classifications that include "UNSAFE." However, variations exist in the specified inspection intervals or "cycles" (varying between two and 10 years), the degree of hands-on assessment, and in the role of building officials in tracking and enforcing required repairs.

Our comparative review indicated that the objectives of maintaining safe building façades could still be preserved with a slightly more targeted program that benefits from some of the approaches used by other municipalities.

Insights From Property Owners & QEWIs

Property owners and QEWIs overwhelmingly agreed that periodic façade inspections provide clear benefits and are necessary for protection of the public, and that necessary preventive maintenance and repairs would likely not be performed regularly without a program like FISP. They agreed that it is appropriate for NYC to maintain a more prescriptive approach to façade inspection than other cities do, given the greater risks posed by its dense urban environment and immense building stock. Nevertheless, many stakeholders identified aspects of FISP that might be candidates for improvement.

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Interviewed building owners acknowledged that, while compliance might be costly, it is necessary for pedestrian safety. This includes all components of FISP compliance, including inspections, engineering design, repair labor and material, pedestrian protection, façade access/rigging, and legal expenses. For some private owners, particularly those managing smaller buildings, the inspection protocol itself appears daunting. For owners of larger buildings, a major concern is the UNSAFE classification, which can impact insurance costs, borrowing capacity and their ability to attract prospective tenants. Owners with ground-floor retail tenants also expressed concern about the potential negative impacts of sidewalk sheds. Public owners expressed a unique concern that their ability to address façade conditions relies on government budgeting processes for capital projects, maintenance budgets and contract awards that are often unconnected to the FISP compliance timetable.

QEWIs expressed their opinions through select interviews and an online survey. They identified several common concerns regarding certain approaches in the current rule, including the difficulty of assessing the severity of a condition based on a timeline for repair, and the repercussions of automatically reclassifying unrepaired SWARMP conditions as UNSAFE in the subsequent cycle. QEWIs recognized that such automatic reclassification to UNSAFE sometimes leads to the installation of sidewalk sheds for conditions that are not immediately hazardous. However, QEWIs also noted the importance of preventing SWARMP conditions from languishing unrepaired across multiple cycles. Some QEWIs expressed a desire to expedite the process for granting partial shed removal (PSR) requests where portions of a building's façades have been repaired but the entire project is not complete.

Additionally, many QEWIs acknowledged that technology such as drones should play a greater role in compliance and that the regulations would benefit from a more nuanced approach that treats buildings differently based on factors correlating with higher or lower risk. Historical evidence, material research and material testing data show that risk factors are identifiable and can be used to adjust the requirements. These risk factors include material susceptibility to deterioration, assembly and construction detailing, environmental exposure, age, and known performance history of certain materials and façade assemblies.

Performance of Façade Materials & Assemblies

NYC's building stock comprises a diverse array of façade materials and systems that have developed and evolved over the past 150 years. However, like many larger and older cities, many of NYC's structures were built in the first half of the 20th century, when façade construction used materials like brick, natural stone and terra cotta (a type of fired clay). These materials, while generally robust in isolation, become vulnerable to deterioration when incorporated into a façade assembly because of adverse interactions with adjacent materials that result from differences in their physical properties. For example, materials expand and contract differently under thermal

loading. In addition, most historic façade construction methods did not sufficiently account for stuctural building movements.

These shortcomings are exacerbated by NYC's markedly aggressive environment, which is characterized by weather extremes – hot, humid summers, damp springs and falls, and frequent freeze-thaw cycles throughout the winter. The migration of environmental moisture eventually leads to corrosion of embedded ferrous anchors, support angles, reinforcement and even a building's primary structural framing. The expansive forces of corrosion cause cracks in brittle materials like brick, stone and terra cotta, which are worsened by the normal movements of the building frame. These conditions are intensified by the repeated freezing and thawing of trapped moisture during winter. Cracks widen, and materials weaken, eventually leading to delamination and spalls that can become hazardous to the public.

After World War II, "modern" materials such as metal and glass, precast concrete and premanufactured panel systems began to gain popularity in façade construction. These assemblies were typically designed and constructed to better accommodate building movements, moisture, and other detrimental environmental factors.

Much of the published testing data is for individual materials and is of limited value in assessing overall building façade performance, as the same material will behave differently in specific assemblies, based on such factors as original detailing, moisture protection, construction workmanship, maintenance history, age and environmental exposure.

Lessons From Historical FISP Data

Historical FISP report data demonstrates that height does not have a significant impact on the façade condition filing status. The data also shows that older buildings are more likely to be filed as UNSAFE. Of the buildings that filed initial reports in Cycle 9 (2020–2024), approximately 10% of those built within 10 years of the cycle start date were filed as UNSAFE. Of the buildings constructed 10 to 20 years prior to the cycle start date, 14% were filed as UNSAFE. Buildings constructed more than 40 years prior to the cycle start date share a similar proportion of UNSAFE filings, at 28%.

Conclusions

The built environment is imperfect. It is subject to the forces of nature, which are only somewhat predictable. Regulation is imperfect as well. Whether a condition meets the legal definition – that it will "become hazardous if not repaired within five years" – is a subjective determination that must be made by a professional. Properties can economically sustain only so much regulatory burden, and the DOB has limited time and resources to inspect for compliance. Still, ongoing maintenance and repairs are critical, and when they are overdue, they can compromise public safety.

The public generally finds FISP confusing and is often exposed to misinformation. Most people outside the industry are unaware of the seriousness of hazardous conditions, the complexity of root-cause investigation and repair design, the

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time it takes to perform construction work, and the expense and disruption owners face in making repairs. They are also unaware of the role that DOB performs in regulating effectively while maintaining public safety.

FISP is a critically important program that has worked behind the scenes to help protect pedestrians for 45 years. Stakeholders agree that it has contributed to a safer NYC. This report is intended to help demystify FISP and provide readers with insights into the nuanced areas where FISP can be improved and unnecessary sidewalk sheds eliminated. In preparing this report, our intention is to formulate policy recommendations that will endure for another four decades and beyond.

> **"Most people outside the industry are unaware of the seriousness of UNSAFE conditions . . . and the expense and disruption owners face in making repairs.**

Recommendations

We are proposing the following recommendations based on the cumulative findings of the components of this study, including the analysis of historical FISP filing data, consideration of approaches from other jurisdictions, solicitation of key feedback from a wide range of stakeholders, review of published façade material studies and assessment of the impact of technology on developing better approaches that provide even more actionable data. Further details of each recommendation can be found in Section 8 of this report.

1. **Amend the FISP definitions of UNSAFE and SWARMP.** We propose modifying the definitions of UNSAFE and SWARMP to reflect the severity of the condition rather than the repair time frame. Clarifying the definition of "UNSAFE" can reduce the number of buildings that are required to erect sheds immediately following the examination, rather than when a repair project begins.

2. **Differentiate conditions filed as UNSAFE due only to unrepaired SWARMP conditions from the prior cycle.** The goal of this recommendation is to reduce the number of sidewalk sheds by more clearly differentiating actual unsafe or hazardous conditions from SWARMP conditions that have been automatically reclassified as UNSAFE (commonly referred to as "Administrative UNSAFE") but are not deemed to be unsafe or hazardous.

3. **Extend the baseline FISP filing frequency from every five years to every six years and change the required first filing for new buildings from five years to six years from the date of the first TCO or CO.** Over the course of its 45-year history, NYC's façade ordinance has evolved into an increasingly robust and prescriptive program. Qualifications for registered design professionals have increased, inspection procedures have become more intense, and many reporting requirements have been added. However, one basic parameter that has not changed since its inception is the five-year inspection frequency originally created by the City Council by Local Law 10 of 1980.

   Based on the cumulative findings of this study, these changes would enhance the program and would not compromise pubic safety.

4. **Create an Abbreviated Filing program for certain qualifying buildings.** The Abbreviated Filing (AF) program is intended for newer, well-maintained façades and will permit eligible buildings to have a twelve-year cycle for hands-on inspections, if they complete visual-only inspections every three years. A regular "full filing" will be required every other cycle.

5. **Create an Enhanced Inspection option for certain higher-risk façades.** The Enhanced Inspection and Filing (EI) option is intended for buildings with façade materials, assemblies and maintenance history that point to patterns of chronic deterioration or failure that need to be assessed more often than every 6 years. Implemented on a case-by-case basis, EI consists of a visual-only examination at the midpoint between and in addition to regular hands-on examinations. This would allow other buildings to have a longer time frame, while increasing scrutiny of buildings with a faster deterioration profile.

6. **Create a Reduced Hands-On option that increases the 60-foot drop spacing requirement to 100 feet for certain buildings.** The Reduced Hands-On (RHO) option is intended for buildings for which the 60-foot drop spacing requirement would result in more effort than reasonably necessary to provide actionable data on the façade conditions. To qualify, a building must be short enough to be readily observable with binoculars from the street level and have a relatively unornamented facade

7. **Develop and conduct a pilot program to explore the potential use of drones to qualify buildings for further exemptions from FISP.** The goal of this pilot program is to perform several real-world test cases that explore the potential for drones to further exempt certain buildings from FISP hands-on requirements beyond the exemption provided in the Abbreviated Filing program. The program will also include evaluating AI tools such as computer vision technology that could enhance the analysis of image data.

8. **Create a legal alternative for property access agreements.** While we recognize that this is not in DOB's purview, we recommend the creation of a streamlined, structured legal process for neighbor access agreements. This may include statutory license terms for

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access. Currently, negotiations over property access agreements can take months or even years, preventing repair projects from being completed and leaving sidewalk sheds in place unnecessarily.

9. **Improve DOB's help-desk system for QEWI inquiries.** The goal of this recommendation is to implement a more robust help-desk ticketing system that allows QEWIs to submit filing-specific questions, which can be answered directly by the assigned examiner when needed.

10. **Improve the presentation of "failure to maintain" façade violation notices.** The format of "failure-to-maintain" façade violation notices should be modified to require DOB inspectors to clearly identify and convey the location of the conditions noted.

11. **Develop and publish a QEWI Guide.** Our QEWI and owner interviews revealed the need for a QEWI Guide, which would serve as a resource documenting consistent best practices and as a companion to the FISP rules.

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2.1 Introduction to FISP

The Façade Inspection and Safety Program (FISP) is a set of regulations administered by the New York City (NYC) Department of Buildings (DOB). Its overriding goal is to protect the public by minimizing the risk of façade hazards resulting from deterioration and bringing façades into a safe condition. FISP originated in response to the tragic 1979 death of a Manhattan pedestrian, who was struck by a piece of falling masonry.[1] Subsequently, Local Law 10 of 1980 was enacted, marking the first time periodic façade inspections had been required in NYC. Other tragedies, including a 1974 fatality in Chicago, occurred around the same time, sparking nationwide discussion around building façade regulation.[2]

Local Law 10 of 1980 was substantially amended by Local Law 11 of 1998. The latest amended version of the law is Article 302 (Maintenance of Exterior Walls) of Title 28 of the NYC Administrative Code.[3] [4] The law is complemented by a rule, which was first promulgated by DOB in 1999 (concurrent with Local Law 11) and has been amended multiple times over the past 45 years (including significant modifications in 2007 and 2021). The current version of the rule is 1 RCNY 103-04.[5] The law and rule together set forth the applicable regulatory requirements for FISP. DOB issues periodic interpretation and guidance through presentations and technical bulletins. The program is still often referred to colloquially as "Local Law 11."

> **"During the latest filing cycle, about 17,000 of the approximately one million buildings . . . were subject to FISP.**

The program currently requires that the façades and appurtenances of all buildings over six stories in height be inspected by a registered design professional (a New York State licensed engineer or architect) at least every five years and that the resulting technical report be filed with DOB.[6] [7] Registered design professionals, who are evaluated and certified by DOB to meet certain knowledge and experience requirements, with a minimum of seven years of experience in façade inspections, as covered in 1 RCNY 101-07, are designated as Qualified Exterior Wall Inspectors (QEWIs).[8] [9] The overall process is augmented with oversight and review by DOB. During the latest filing cycle, about 17,000 of the approximately one million buildings throughout NYC's five boroughs were subject to FISP.[10]

1 www.nytimes.com/2014/04/27/realestate/a-law-and-the-face-of-the-city.html
2 www.nytimes.com/1976/04/04/archives/decaying-facades-a-latent-hazard-to-pedestrians-the-new-york-times.html
3 codelibrary.amlegal.com/codes/newyorkcity/latest/NYCadmin/0-0-0-157991
4 In addition to 28 NYCAC § 302, 28 NYCAC § 301 may also be used by DOB for Failure to Maintain violations for certain façade conditions (enacted through Local Law 99 of 2005).
5 codelibrary.amlegal.com/codes/newyorkcity/latest/NYCrules/0-0-0-2825
6 An appurtenance is defined as follows: "Appurtenance. An exterior wall element including, but not limited to, fire escapes, exterior fixtures, ladders to rooftops, flagpoles, signs, parapets, railings, copings, guardrails, window frames (including hardware and lights), balcony and terrace enclosures, including greenhouses or solariums, window guards, window air conditioners, flower boxes, satellite dishes, antennae, cell phone towers, and any equipment attached to or protruding from the façade." (1 RCNY 103-04)
7 www.nyc.gov/site/buildings/safety/facade-local-law.page
8 codelibrary.amlegal.com/codes/newyorkcity/latest/NYCrules/0-0-0-2347
9 This report will generally refer to professional engineers (P.E.) and registered architects (R.A.) as "registered design professionals" or QEWIs when specifically referring to P.E. and R.A. professionals who hold the NYC DOB designation of Qualified Exterior Wall Inspector.
10 There are approximately 17,000 covered buildings under FISP ("FISP universe") as of the latest Cycle 10, which began on 2/21/25. In the previous cycle (Cycle 9) only about 13,300 of the eligible 16,000 buildings filed one of the three accepted SAFE, SWARMP or UNSAFE categories. The remainder of the buildings are listed as "No Report Filed," which is addressed in a later section of the report. www.nyc.gov/assets/buildings/html/Facade_Filings_Cycle.html

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Building façades are inspected on a schedule determined by their NYC block number. This "critical examination," in addition to a 100% visual examination, also requires a specified amount of hands-on assessment. The designated QEWI must classify the façade conditions into one of three categories: SAFE, Safe With a Repair and Maintenance Program (SWARMP) and UNSAFE.[11]

A report is filed online using the DOB NOW: *Safety* portal, describing the conditions and recommended repairs (with time frames) of any SWARMP or UNSAFE conditions.

A building owner is obligated by law to perform the necessary repairs to address all SWARMP and UNSAFE conditions identified. If any UNSAFE conditions are found during a FISP inspection, the regulations require the installation of public protection, such as a sidewalk shed, canopy or netting.

SAFE: A condition of a building wall, any appurtenances thereto or any part thereof not requiring repair or maintenance to sustain the structural integrity of the exterior of the building and that will not become unsafe during the next five years.

SWARMP (Safe With a Repair and Maintenance Program): A condition of a building wall, any appurtenances thereto or any part thereof that is safe at the time of inspection but requires repairs or maintenance during the next five years, but not less than one year, in order to prevent its deterioration into an unsafe condition during that five-year period.

UNSAFE: A condition of a building wall, any appurtenances thereto or any part thereof that is hazardous to persons or property and requires repair within one (1) year of completion of critical examinations. In addition, any condition that was reported as SWARMP in a previous report and that is not corrected at the time of the current inspection must be reported as an unsafe condition.

Source: 1 RCNY §103-04

In addition, when a registered design professional classifies a building as UNSAFE, DOB automatically issues a violation for not complying with 28 NYCAC §302 Maintenance of Exterior Walls. DOB may also impose civil penalties if the UNSAFE condition persists without the required filing.[12] The DOB violation is dismissed when an Amended report is filed and civil penalties are paid.[13] If the required requests for time extensions are not filed, a summons is typically issued. DOB summonses are heard by the NYC Office of Administrative Trials and Hearings (OATH) division of the Environmental Control Board (ECB).[14]

As sidewalk sheds must remain in place until all UNSAFE conditions are corrected, shed structures may linger for many years because the owner does not have the financial means to perform the required repairs in a timely manner.

While sidewalk sheds are intended to keep pedestrians safe, they also impact quality of life,

[11] When referring to the defined filing status options (SAFE, SWARMP and UNSAFE), this report capitalizes these names.

[12] UNSAFE filings are allowed to exist without penalty as long as an "amended" report is filed with DOB within 90 days and extensions are requested every subsequent 90 days under § 28-302.5. Owners will not accrue penalties as long as extension requests are filed on time.

[13] Three types of FISP report can be filed: Initial, Subsequent and Amended. A building can have only one Initial report. Generally, a Subsequent report is filed when SWARMP conditions are repaired and the building status becomes SAFE (other circumstances may also merit a Subsequent report filing). An Amended report is filed when UNSAFE conditions are repaired and the building status becomes SWARMP or SAFE. These terms are defined in 1 RCNY 103-04.

[14] www.nyc.gov/site/oath/hearings/about-ecb.page

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What Is a Sidewalk Shed?

Sidewalk sheds are temporary structures erected adjacent to buildings, usually over sidewalks and entrances, to protect pedestrians and other property from potential hazards. Sheds are also sometimes referred to as "scaffolding," "bridges" or "canopies." However, the term "scaffolding" is typically used to refer to temporary protection that extends to the entire height of a building, normally erected during construction. There are several reasons for erecting a sidewalk shed in NYC. These include new-building construction, façade repairs in progress, or the existence of UNSAFE conditions as identified in the context of FISP.[16]

creating a potential environment for crime, unsanitary conditions, and diminished curb appeal to retail businesses. NYC's Get Sheds Down initiative was introduced in 2023 to identify measures to reduce their number without adversely affecting public safety.[15]

Over its 45-year history, FISP has evolved to become more comprehensive and prescriptive. It has developed more stringent qualifications for the registered design professionals who perform inspections, amended the definition of the UNSAFE condition, adopted additional fines for noncompliance, begun requiring additional inspections for cavity walls, and increased the requirements for hands-on critical examinations.[17] [18] The combination of these enhancements and the increasingly conservative interpretations of the rule by QEWIs (in response to liability concerns and DOB's rigorous standards) has led to a growing number of FISP buildings undergoing repair and maintenance programs. This, in turn, has led to an increase in UNSAFE classifications and a resulting increase in sidewalk sheds.

However, interestingly, since its inception, NYC's façade ordinance has treated all qualifying buildings essentially the same, allowing very few distinctions for building characteristics such as age, height, materials, systems or maintenance history.

2.2 Scope of This Study

Thornton Tomasetti was selected in May 2024 to provide consulting services for a comprehensive review of the current requirements of FISP and provide recommendations for potential improvements.[19] The tasks were performed over the

[15] www.nyc.gov/content/getstuffdone/pages/sidewalk-sheds

[16] Under 1 RCNY 103-04(c)(2)(vii), QEWIs, with DOB's approval, are responsible for determining the appropriate protective measures for UNSAFE conditions. Interviews and surveys from QEWIs show that most QEWIs default to recommending a sidewalk shed in most UNSAFE circumstances. Chapter 33 of the NYC Building Code governs sidewalk shed requirements during construction, which includes during façade repair work. www.nyc.gov/site/buildings/codes/nyc-code.page

[17] Local Law 10 of 1980 did not define the term "unsafe" and left the interpretation to the registered design professional. Rule changes to 1 RCNY 32-03 (later 1 RCNY 103-04) in 1999 (following Local Law 11) defined UNSAFE as "dangerous to persons or property and require prompt remedial action." Further amendment of the rule in 2020 defined UNSAFE as "requires repair within one (1) year of completion of critical examination."

[18] "Hands-on" or "critical" examinations are façade inspections that are performed via a variety of methods. These include, but are not limited to sus pended swing-stage ("window-washing") platform, boom lift/bucket truck, industrial rope access rope rappelling system, or permanently installed building maintenance units (BMU).

[19] The recommendations in this report have been developed independently of Local Law 49 of 2025, legislated by the NYC Council. Local Law 49 of 2025 amended 28 NYCAC 302.2 to require inspections "between 6 to 12 years." The law also requires that the "initial examination for a new building shall be conducted in the eighth year following the erection or installation of any exterior wall or appurtenances as evidenced by the issuance date of a temporary or final certificate of occupancy or as otherwise prescribed by rule." (legistar.council.nyc.gov/LegislationDetail.aspx?ID=6557984&GUID=3DC87BEC-F376-44C2-B1AF-D59EFBD5DB60)

course of approximately 16 months, culminating in the compilation of this report.

The study involved soliciting comprehensive feedback from multiple stakeholders, including QEWIs, public and private property owners, and building code officials/regulators from other jurisdictions. It also included an evaluation of façade inspection ordinances in several other comparable cities, an analysis of several filing cycles of prior FISP inspection reports, and an examination of published research on the performance of the building materials and façade assemblies.

Some of the issues that were examined include whether inspection frequency can be adjusted without compromising safety, whether changes can be made to the inspection process to make FISP more efficient, whether distinctions can be made in the requirements for certain material or construction types, and possible scenarios in which installation of a sidewalk shed might not be necessary. The recommendations at the end of this report propose changes to the FISP rules and program that could streamline the administration of the program and reduce the number of sidewalk sheds throughout NYC without compromising public safety.

It is important to point out that essentially all stakeholders surveyed for this study agreed that FISP works and that it proactively protects the public from potential hazards. They also agreed that the current provisions of FISP are generally appropriate and necessary as they have evolved and improved over time to conform to the specific needs of NYC and the significant number of buildings that fall under the program.

2.3 Overview of the NYC Building Stock

To understand the general characteristics of the NYC building stock, we analyzed the Primary Land Use Tax Lot Output (PLUTO) dataset compiled by the NYC Department of City Planning (DCP). This is the most comprehensive dataset available for buildings throughout NYC and is used as the basis for the analysis below. Note that PLUTO counts tax lots, not individual structures, and since more than one structure (or, in some instances, no structures at all) may exist on a tax lot, it likely underreports the total number of buildings, which is the primary reason it does not match the DOB's overall count of buildings in the FISP universe. However, we believe this approach does not have a meaningful impact on the data trends presented below for buildings in the FISP universe.

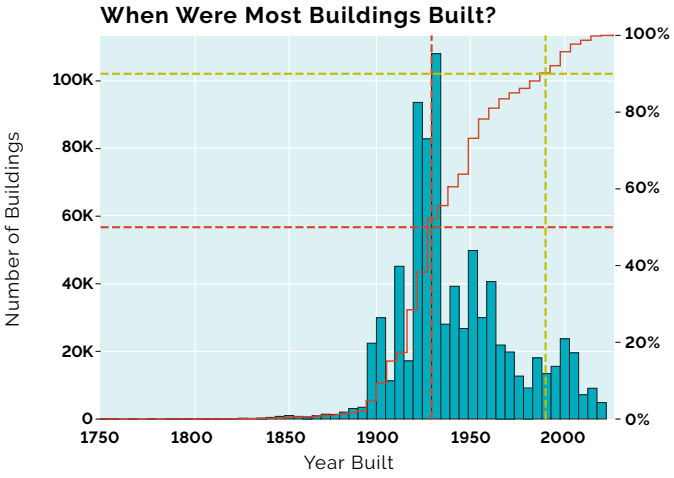

Figure 1: **Buildings Built by Year, with 50% and 90% Intervals and Cumulative Total Displayed**

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According to the PLUTO data, as of Q3 2024, NYC contains 858,276 tax lots.[20] DOB typically estimates that NYC contains one million individual buildings.[21] According to the PLUTO dataset, the median year of construction for all buildings in NYC is 1930. 90% of the buildings in NYC were built prior to 1992.

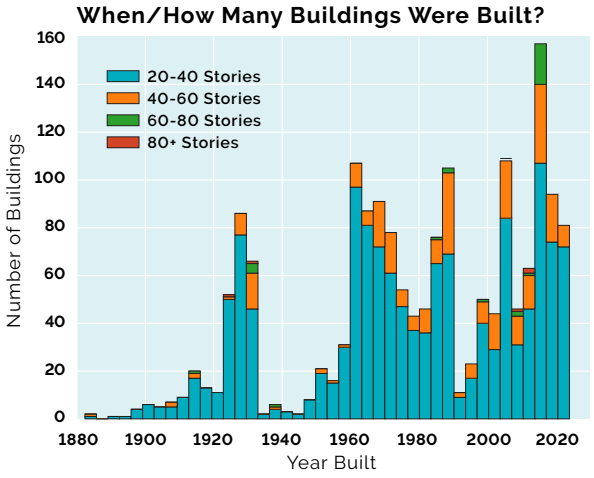

Figure 2: **Building Height Trends by Number of Buildings Built per Year**

The city's largest building boom, by number of buildings, occurred between 1910 and 1940, a period often referred to as the "pre-World War II" era. The 1950s ("postwar") as well as the early 2000s were both periods that experienced a marked increase in the pace of building construction in NYC.

During some periods of sustained construction, the correlation between age and height appears to have been consistent, especially for buildings with fewer than 40 stories. Prior to World War II (the 1920s and 1930s), between 1960 and 1990, and again from 2000 to present, many 20- to 40-story buildings were constructed. Significantly more buildings above 20 stories were built after 1950 than before. A significantly greater number of buildings above 40 stories were built after 2000 than before.

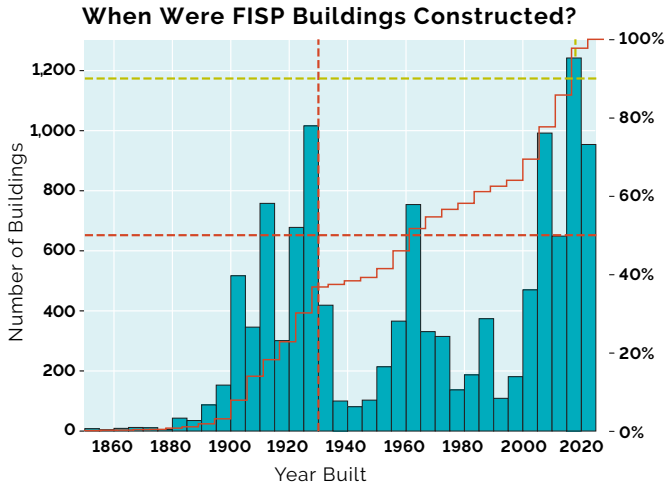

Figure 3: **Buildings Built by Year (>Six Stories Only), With 50% and 90% Interval Displayed**

Generally, newer buildings are taller. However, a significant number of tall buildings were constructed during the boom between 1910 and 1940. This trend holds as well when this data is filtered for buildings of six or more stories. Buildings over 40 stories tall are a relatively small fraction of the NYC building stock (approximately 340, or 0.04% of all buildings and 3% of FISP buildings).

The vast majority of buildings in NYC are six or fewer stories tall, meaning they are not subject to FISP regulation. Fewer than 2% of buildings in NYC are subject to FISP. Eighty-five percent of buildings in the FISP universe are under 20 stories tall.[22] [23] [24] Approximately 80% of buildings in the FISP universe were built between 1900 and 1980.

[20] PLUTO rel 24v3.1. Tax lots may include lots of vacant land, although those would be excluded from analysis of fields such as "Year Built."

[21] www.nyc.gov/site/buildings/safety/inspections.page

[22] These percentages are calculated using the PLUTO data and therefore may not reconcile with the 17,000 buildings under Cycle 10 that fall under FISP based on DOB's total FISP Universe requirements. The "number of floors" field in the PLUTO data is used, and we believe that the percentage calculations are accurate within the PLUTO dataset.

[23] DOB has periodically issued clarifications to the inclusion requirement of "greater than six stories," specifically as it relates to buildings that are six stories and have a cellar. This is covered in 1 RCNY 103-04(c)(4)(i). Because PLUTO data makes no distinction between half floors, cellars or basements, the number provided in the PLUTO dataset is taken as the nominal height of the building. This is not expected to significantly impact the findings.

[24] Because the law specifies the inclusion criteria in "stories," as opposed to a nominal height measurement (for example, in feet), there may be a class of buildings that have very tall stories but are not subject to FISP. This may include buildings with tall spires that are not considered a "story."

2.4 Evolution of FISP & the Five-Year Cycle

This study reviewed core components of the FISP program, some of which (including the cycle frequency of five years) have not changed since the program's enactment by the City Council in 1980. The five-year time frame was created in anticipation of the original Local Law 10 going into effect, without the benefit of knowing what would be found, how the repair and enforcement process would develop, or what future changes would be incorporated into the law.

A transitional masonry building in NYC.

While certain core components of the FISP program have remained unchanged, many others have evolved significantly. These include the required number of close-up inspections ("drops"), probe requirements for certain wall types, mandatory repair-by dates for identified conditions, more prescriptive requirements related to means of inspection, enhanced requirements for pedestrian protection, and stricter qualifications for QEWIs. Also, since 1980, DOB has enhanced the level of review of FISP filings and has increased enforcement of regulations governing hazardous façade conditions. Moreover, since 1980, there has been considerable advancement in technology available for façade inspection, including drones, borescopes and nondestructive testing methods.

The QEWI and owner interviews, as well as our own professional experience, reveal that a significant percentage of larger buildings (notably commercially owned properties) undergo comprehensive repair programs with long durations, resulting in a registered design professional performing inspections much more frequently than required by FISP. This is especially true as NYC's building stock continues to age and façades require more maintenance and repairs to remain safe. The result is that many façades are undergoing regular ongoing scrutiny via hands-on inspections far more frequently than was the case for practically any building prior to 1980.

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3

Comparison of NYC to Other Jurisdictions

3 Comparison of NYC to Other Jurisdictions

Our goal for this part of the study was to evaluate the regulatory framework in several comparable jurisdictions to understand notable differences between their approaches and that of NYC, including the criteria for inclusion in the façade program, frequency of inspection/reporting, inspection methodology, condition categories and time frames for repairs. We evaluated whether and to what extent factors like building height, age and façade construction materials and systems dictate the inspection criteria. This study also attempted to identify legal or other mechanisms that enable the timely implementation of required repairs.

At least thirteen U.S. cities aside from NYC have implemented their own façade inspection and maintenance ordinances. For this study, we selected, with DOB's concurrence, five U.S. cities with façade ordinances enacted between 1995 and 2021 (Chicago, Boston, Philadelphia, San Francisco and Jersey City), based on several comparative characteristics, including urban density, building types, commonly used façade materials and systems, and climatic conditions. We also selected one jurisdiction outside the U.S. – Singapore – because of its robust façade ordinance and endorsement of technology in its program. We supplemented our evaluation by conducting interviews with the respective code officials of five of the six jurisdictions reviewed.[25] In Appendix B we have provided a summary table comparing key components of the façade ordinances reviewed in this study.

Our study revealed several notable differences in approach between the jurisdictions reviewed and NYC.

3.1 Size of Other Jurisdictions

Most jurisdictions (including those not included in this study) have fewer than 1,000 buildings covered by their façade programs. Among the jurisdictions reviewed, the number of included buildings ranges from several hundred in Boston and Philadelphia to approximately 1,500 in Chicago, which – with fewer than one-tenth of the 17,000 buildings covered under FISP – is a distant second to NYC. Singapore, with approximately 30,000 buildings under its façade ordinance, is the only one with more than NYC. This higher number is primarily due to Singapore's lower height threshold for inclusion (13 meters or 43 feet, roughly the equivalent of a three-to-four-story building).

3.2 Filing Review Process

Each of the six jurisdictions we reviewed has a formal filing process for the façade inspection report and performs a basic administrative check to confirm that all the required report fields have been completed. However, only Boston, San Francisco and Singapore indicated that, like NYC, they also conduct a substantive technical review and provide comments to the professional. In Chicago and Philadelphia, the only requirement is that the professional file the report consistent with the rule, law or reference standards. We were unable to interview Jersey City officials, so we were not able to confirm their current approach.

[25] Officials from Jersey City were not available to be interviewed.

3 Comparison of NYC to Other Jurisdictions

A technical review provides an additional layer of scrutiny to potentially identify inconsistencies or omissions in a report. When this higher level of review is not performed, the jurisdiction relies on the registered design professional's obligation to perform to the standard of care.

Since a contractual and business relationship usually exists between the registered design professional and the building owner, concerns may arise that the professional will be compelled to bias the assessment in the owner's favor, potentially compromising public safety. However, because professionals are bound by an ethical code of conduct and legal standard of care, such tactics risk damaging their reputation, jeopardizing their license to practice and even exposing them to legal consequences. The jurisdiction representatives we interviewed generally agreed that these risks are sufficient to deter unethical behaviors.

3.3 Prescriptive Requirements

ASTM International is an organization that develops and publishes voluntary consensus technical standards for a range of materials, products, systems and services. In 2003, ASTM published its first standard for façade inspection: *ASTM E2270 Standard Practice for Periodic Inspection of Building Façades for Unsafe Conditions*.[26]

This serves as a national standard practice for façade inspection and was informed by NYC's existing façade ordinance. As a result, many basic requirements are common to the façade ordinances enacted by most U.S. jurisdictions, whether implied or explicitly mentioned. These include:

- Minimum height requirement for buildings covered by the ordinance.
- Performance of the inspection under the supervision of a registered design professional.
- Use of the professional standard of care for performing the work.
- Review of previously filed reports and confirmation that prior conditions have been addressed.
- Specification of 100% visual inspections and some degree of hands-on assessment.
- Assessment of appurtenances.
- Classification of conditions into categories that include "UNSAFE" and some variation of "requires repair/stabilization."
- Photos and sketches as needed to document conditions.

While most jurisdictions directly or indirectly require 100% visual observation (i.e., binocular inspection), only Philadelphia leaves the inspection methodology to the discretion of the registered design professional.

All jurisdictions also specify a minimum height for buildings covered under their rule, which varies from greater than four stories (Jersey City masonry façades) to greater than six stories (Philadelphia and Jersey City). Chicago, Boston and Singapore instead specify minimum height in feet (80', 70' and 43', respectively) rather than stories.

NYC currently mandates a five-year inspection frequency, regardless of façade construction materials. The other jurisdictions studied exhibit

[26] store.astm.org/e2270-14r19.html

3 Comparison of NYC to Other Jurisdictions

a broad range of inspection and filing intervals, ranging from two years in Chicago (for certain buildings) to 10 years in San Francisco. Singapore has a seven-year interval. However, among all U.S. cities with façade ordinances, a five-year interval is most common, likely due to the influence of ASTM E2270 and potentially having its origins as far back as the five-year cycle first implemented by Local Law 10 of 1980 in NYC.

Chicago's façade ordinance is unique among those studied because it bases the frequency of inspections on the presence and type of metals embedded in the wall system and requires more frequent inspections for façades containing corrodible metals. Cincinnati's façade ordinance, which was not part of this study but appears to be based on Chicago's rules, is the only other one in the U.S. that specifies a range of inspection intervals. All other reviewed jurisdictions specify a single inspection interval, which is applicable to all buildings.

Chicago's rules stipulate that any building classified as UNSAFE in the prior filing requires a hands-on "critical" examination every four, eight or 12 years (depending on the category), plus a visual-only (also known as "short form") inspection at the midpoint between hands-on examinations. For all other buildings (those classified as SAFE or SWARMP in the prior filing), Chicago permits the option of a short-form only program consisting of "ongoing" visual-only (in lieu of hands-on) inspections every two years until such time that an UNSAFE or hazardous condition is identified.

NYC currently mandates that a newly constructed building undergo its first FISP inspection in the next filing window that occurs five years after the first Temporary Certificate of Occupancy (TCO) or Certificate of Occupancy (CO). All the jurisdictions studied also specify a time frame for the initial façade inspection, which varies from two years after initial occupancy (Chicago) to 30 years after issuance of the final CO (San Francisco). Boston and Philadelphia specify 10 years after the CO, and Singapore specifies 20 years after construction.

There is also less consistency across jurisdictions with regard to the specification of physical or hands-on inspections. Boston and Philadelphia denote a "representative sample" as determined by the registered design professional. Chicago specifies a minimum of one drop per street façade. San Francisco requires hands-on inspection of only the areas where UNSAFE conditions were identified. Singapore specifies 10% of the façade surface. Jersey City does not require any hands-on inspections.

3.4 NYC's Prescriptive Approach

NYC boasts one of the most comprehensive and robust façade inspection ordinances in the world. DOB's filing, review and enforcement approaches are all hallmarks of the strength of the FISP program. We found that these approaches are more rigorous and prescriptive than those of most other municipalities that we studied. Since NYC's initial façade ordinance was enacted in 1980, the rules have evolved to incorporate substantially augmented inspection and investigation methodol-

ogies (including wall probes), enhanced repair requirements (including the stipulation of time frames) and increased enforcement and oversight by DOB. Current FISP rules impose a level of diligence that clearly exceeds what was envisioned when the original five-year inspection cycle was chosen 45 years ago.

NYC's more prescriptive approach is appropriate and necessary due to a unique combination of factors.

In NYC, UNSAFE conditions require pedestrian protection to remain in place until they are repaired. Also, SWARMP conditions are tracked with repair time frames within the cycle, so for many buildings, ongoing work and inspections occur throughout the cycle. The QEWI's assignment of repair time frames in response to a building's specific conditions is an important part of the current bespoke approach that ensures a continual and sufficient level of ongoing inspections and is less dependent on solely the FISP inspection interval.

We believe NYC's more prescriptive approach is appropriate and necessary due to a unique combination of factors: substantial quantity of prewar building stock, prevalence of masonry construction, immense urban density and pedestrian population, and environmental factors that take a toll on façade materials nearly year-round (including frequent winter freeze-thaw cycles, moist and humid seasons and proximity to open water). This combination of factors creates significant inspection and compliance challenges for owners, registered design professionals and regulators. The prevalence of conditions requiring repair and maintenance is clear evidence that the DOB's approach is necessary and that NYC would be less safe without it. Without the program in its current form, many potentially hazardous conditions would go unchecked and unrepaired.

Several of our interviewees expressed the opinion that, although their municipality has fewer and less-prescriptive façade inspection requirements than NYC, their system is adequate to protect public safety there. They also explained that more prescriptive requirements, such as performing additional drops and follow-up reporting, would create an additional expense for property owners and that administrative oversight would become unmanageable for building officials without additional staff.

It is uncertain whether having fewer or less-prescriptive requirements in other jurisdictions results in greater potential hazards to public safety, as incident data is often not reported. Hazards are difficult to quantify because they are typically identified subjectively rather than represented numerically. Additionally, no control group exists for comparing how the same building population would have performed in the absence of the program.

Based on our comparative review of other ordinances, as well as our conversations with regulators overseeing their inspection programs, we believe that NYC can benefit from a slightly more targeted program without compromising its objective to maintain public safety.

3 Comparison of NYC to Other Jurisdictions

3.5 Use of Drones

Drones yield high-quality close-up images that can cover a larger portion of the building façade and produce significantly more accurate and complete visual data than traditional approaches do, at a fraction of the cost.

However, like the other U.S. jurisdictions reviewed, NYC currently maintains a relatively agnostic approach regarding the use of specialized tools and technologies for conducting inspections. In 2021, DOB conducted a study and issued a comprehensive report on the feasibility of using drones in FISP. The report's conclusions cautiously favored consideration of drones for enhancing visual façade data and opened the door to the possibility of further studies. The drone study is discussed in a later section of this report.

Interviewed representatives from all the jurisdictions indicated they would welcome the use of technology, including drones, that could improve image quality. They currently accept drone imagery the same way they do any other photographic images. In Boston's rule, drone technology is specifically mentioned as a method of visual data acquisition for consideration. None of the interviewees indicated that they had considered reducing inspection requirements if drone technology was used.

Singapore is unique because its program has included and encouraged the use of drones for compliance since its inception in 2022, making it a recognized leader in adopting drone technology for façade inspection compliance.[27] In 2020, the Singapore Standards Council, in conjunction with the municipal Building Control Authority, released Technical Reference 78-1 (*Building Façade Inspection Using Uncrewed Aircraft Systems [UAS]*).[28] This document details how to perform a façade inspection by drone. A companion reference (78-2) details the application of AI computer vision technology in analyzing drone images.

Drones are a promising technology for inspections.

In Singapore, drone use satisfies the program's 100% visual inspection requirement. A hands-on inspection is still required for 10% of the building façade.[29] Singapore's well-defined and standardized process for the use of drones for façade inspection has increased drone use to over 80% of inspections. Singapore reported that drone technology provides a much more comprehensive visual inspection than a traditional binocular survey. Of course, as no façade inspection program was in place prior to the adoption of Singapore's drone standard, it is would be difficult to compare or quantify the impact of drone usage.

[27] The Singapore Building Control Amendment Act of 2020 created the Periodic Façade Inspection (PFI) program. The PFI program was effective starting in 2022. sso.agc.gov.sg/Acts-Supp/12-2020/Published/20200511?DocDate=20200511#top

[28] www.singaporestandardseshop.sg/Product/SSPdtDetail/cd12a4dd-10db-4f34-b1b2-e7ed574393ba

[29] www1.bca.gov.sg/regulatory-info/building-control/periodic-fa%C3%A7ade-inspection-pfi

3.6 Enforcement Methods

For reports filed as UNSAFE, all the jurisdiction interviewees indicated that their programs prescribe standard mechanisms for enforcement, such as issuance of violations and corresponding fines. However, unlike NYC, they currently have no system for tracking or confirming whether the designated repairs were completed. For reports filed as SWARMP (or equivalent), all interviewees indicated that their programs do not have a mechanism to track or enforce the required repairs designated by the registered design professional or to enforce time frames.

All reviewed jurisdictions impose some type of penalty involving monetary fines for noncompliance with their façade inspection rules, including failure to file a report and failure to maintain (for UNSAFE conditions). Fines range from $200 to $2,000 per day. If a building is filed as UNSAFE, that usually represents a building code violation. Jersey City's rule states that if the specified repairs are not completed within the required timeline, the code official has the authority to "shut down" the building if it poses an imminent threat to safety.[30] For other jurisdictions, failure to correct a violation is typically taken out of the hands of the building code officials and addressed by the court system. The primary difference between NYC and other jurisdictions is that FISP provides a mechanism for correcting filing violations through subsequent DOB filings rather than resorting to judicial procedures.

Chicago's approach to addressing UNSAFE conditions involves a combination of administrative enforcement and judicial intervention. The Chicago Department of Buildings sends an inspector to the site to verify the condition and confirm that safety measures are in place. This may result in the issuance of a violation to the owner, requiring that the owner install public protection measures. In addition, if the owner fails to address the UNSAFE conditions, the Chicago Department of Buildings may issue a summons and may assess additional fines.

None of the reviewed jurisdictions have a regulation comparable to NYC's provision automatically reclassifying a SWARMP building as UNSAFE if the prescribed repair and maintenance plans are not implemented within a specified time frame or cycle.

[30] The term "shut down" used in the Jersey City ordinance is not further defined. cityofjerseycity.civicweb.net/document/51463/Ordinance%20Enacting%20Building%20Inspection%20Requirem.pdf

3 Comparison of NYC to Other Jurisdictions

Comparison to Other Jurisdictions – Recommendation References

NOTE: This reference box reviews the report recommendations that are supported by the preceding section. The full text of the recommendations can be found in Section 8.

Recommendation 3: Extend Filing Frequency to Six Years

FISP requirements have become more prescriptive over time, far exceeding the level of what was envisioned when the original five-year inspection interval was chosen.

Recommendation 4: Abbreviated Filing Program

We believe a variation of Chicago's Short Form "visual only" program is appropriate for NYC. However, instead of automatically starting and keeping a building on the program, DOB can make an exception to the hands-on provision for a particular cycle if the building meets certain parameters.

Recommendation 6: Reduced Hands-On Option

NYC's rules regarding the spacing of hands-on inspections and wall probes are more prescriptive than those of other jurisdictions. NYC should consider increasing the spacing of hands-on inspections for certain buildings under specific circumstances. This would allow the city to continue to have the most prescriptive requirements for drop spacing but would enable the flexibility enjoyed by other jurisdictions.

Recommendation 7: Drone Study

Singapore has made drone technology a core component of its façade inspection process, which has enhanced the quality and quantity of visual data collected. We propose to study the potential use of drones for façade inspections in NYC, building on the conclusions from DOB's 2021 study. The results can inform the development of initial policies for drone use in connection with FISP and would place NYC at the forefront of adopting technology for façade inspections in the U.S.

4

Insights From Stakeholders

4 Insights From Stakeholders

Property owners and QEWIs overwhelmingly agreed that periodic façade inspections are necessary for the protection of pedestrians and provide a clear benefit, and that necessary repairs would not be performed without the FISP program. They agreed that it is appropriate for NYC to maintain a more prescriptive approach to façade inspection than other cities do, given the city's greater risks to public safety. Nevertheless, many stakeholders identified aspects of FISP that might be candidates for improvement.

4.1 Insights From QEWIs

We conducted interviews with a select group of 26 QEWIs over the course of several weeks. In addition, DOB contacted all registered QEWIs with an online survey, seeking input on a variety of topics related to FISP. Many of the survey questions were similar to the talking points used during our interviews. Of the 484 registered QEWIs contacted, 245 (approximately 50%) responded to the survey. QEWIs expressed many common themes, which are summarized below.

1. **Education.** It was generally agreed that the entire FISP community (QEWIs, DOB examiners, DOB inspectors, contractors, property owners and managers) could benefit from focused education and clarification on interpretations and requirements of the rules and laws that constitute FISP. Specific topics include 1 RCNY 103-04 definitions of FISP filing status, proper filing status designations for specific types of conditions (e.g., surface cracking in glazed terra cotta), cavity wall probe placement and exemptions, when pedestrian protection is and is not required, alternative pedestrian protection options, and the partial shed removal (PSR) process.

   It was also agreed that education could potentially result in faster FISP filing turnarounds, quicker issue resolution, and fewer buildings filed as UNSAFE – which can translate into a reduced number of sidewalk sheds. This education could take a variety of approaches, including QEWI industry outreach or a publicly issued guide that clarifies a variety of misconceptions and consolidates other current DOB guidance issued in similar formats throughout the history of FISP and its predecessors.

2. **Clarification from DOB.** On the theme of education, many responses from the QEWI community discussed the DOB interpretation of various components of FISP. Inconsistencies of interpretation were mentioned numerous times – for example, the definition of a SWARMP crack versus an UNSAFE crack by different DOB reviewers. In some cases, this may be caused by a lack of understanding of FISP requirements, but in others, it could be due to an inconsistency in interpretation.

   In addition, many QEWIs indicated that "failure-to-maintain" (FTM) façade violation notices are often missing critical information that allows owners and their consultants to readily understand the location of the conditions cited.

3. **Differing Definitions of SWARMP and UNSAFE.** In some cases, professional judgment must be considered above and beyond the strict definitions laid out in FISP. For example, although UNSAFE is defined as a condition requiring repair within one year, 31% of QEWIs surveyed indicated that they classify conditions as UNSAFE even when they do not meet this definition. Several QEWIs expressed their frustration with the definition of UNSAFE, which is based on the time limit (repair within one year) rather than on the severity of the condition (i.e., posing an "imminent" hazard as specified in ASTM E2270 or in the Chicago façade ordinance).[31] Currently, the QEWI cannot call for repairing a condition within one year without invoking all the implications that UNSAFE status carries for the owner, including fines and the requirement to provide protection, along with enhanced scrutiny, reporting requirements and potential costs.

QEWIs may also classify some conditions as UNSAFE that do not need to be repaired within one year because they deem them significant enough to err on the side of caution. Or they might do so because they doubt that DOB will accept the condition as SWARMP. It is not possible to predict with scientific accuracy at what point a condition will fail. It is more realistic to assign a level of severity as part of a process to prioritize repairs that considers the immediate hazard potential and the consequential damage to which the condition may contribute. For example, a weathered mortar joint may not present a risk of failure in the foreseeable future, but it may allow moisture to penetrate and contribute to corrosion of concealed steel components and freeze-thaw damage of masonry, eventually leading to UNSAFE conditions. For this reason, a QEWI may choose to specify that it must be repointed as soon as possible to prevent a much larger scope of work from being required in a few years. But being forced to classify the condition as UNSAFE would trigger requirements for a sidewalk shed, etc. Instead, the QEWI should be able to classify it as SWARMP but assign a priority repair time frame of less than one year without the need for a sidewalk shed. This change of interpretation would refocus the UNSAFE classification on only conditions that pose an imminent hazard.

It is not possible to predict with scientific accuracy at what point a condition will fail. It is more realistic to assign a level of severity as part of a process to prioritize repairs.

Similar situations appear to exist for SAFE vs. SWARMP, in which QEWIs may classify certain conditions as SWARMP even if they recognize that these conditions would not become hazardous if not repaired within five years. This was the case for 43% of QEWIs surveyed.

[31] The definition of "UNSAFE" in ASTM E2270 is "a condition identified at the time of inspection of a component or system that presents an imminent threat of harm, injury, damage or loss to persons or property" (ASTM E2270-14R19 § 3.2.13.1). Chicago defines "Unsafe and imminently hazardous condition" as "a condition in an exterior wall or enclosure that has no reliable means of structural support, and that is dangerous to people or property."

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QEWIs interviewed indicated that factors contributing to the progression of deterioration should be taken into consideration when determining condition status. In the weathered mortar example described above, for instance, it's possible in some scenarios that the issue would not result in an UNSAFE condition for 10 or more years. But if the QEWI does not report it as a SWARMP condition, there is no other option for requiring that the work be performed. If this type of work is recommended but not required, it could go unrepaired for years. In such circumstances, it would be more practical to define SWARMP as scope that should be required to maintain the façade in safe condition rather than defining it as a condition that will become UNSAFE if not repaired within five years.

How Does a Building End up Getting Filed as "UNSAFE?"

The definition of "UNSAFE" under 1 RCNY 103-04 is:

UNSAFE: A condition of a building wall, any appurtenances thereto or any part thereof that is hazardous to persons or property and requires repair within one (1) year of completion of critical examinations. In addition, any condition that was reported as SWARMP in a previous report and that is not corrected at the time of the current inspection must be reported as an unsafe condition.

The determination of UNSAFE is made by the QEWI, subject to DOB review. An UNSAFE building is either:

A. A building with <u>any</u> condition that the QEWI determines meets the definition of "is hazardous to persons or property and requires repair within one (1) year"

OR

B. An unrepaired SWARMP condition from the last cycle. This may include conditions that are not immediately hazardous to pedestrians. This is sometimes colloquially referred to as "Administrative UNSAFE."

Even if only one condition found on the building meets these requirements, the entire building filing status will be filed as UNSAFE.

Once an UNSAFE condition is found, the QEWI is responsible for informing DOB of the appropriate pedestrian protection (such as sidewalk sheds):

(vii) Upon discovery of any unsafe condition, the QEWI must immediately notify the Department and the owner of the building. The QEWI must identify the location of any unsafe condition, advise the owner on the appropriate protective measures to be taken, and include the recommended type and location of public protection in the notification to the Department.

All QEWIs interviewed noted that, because any condition for which a repair time frame is specified as less than one year must be identified as UNSAFE, and unrepaired SWARMP conditions are automatically reclassified as UNSAFE, the term "UNSAFE" no longer means that the building necessarily poses an imminent hazard to pedestrians. QEWIs remarked that many owners are unaware of this difference in definition, leaving QEWIs with the responsibility of explaining the legal definition of UNSAFE from that in the FISP rule. QEWIs also noted that this means that pedestrian protection is erected in circumstances where no imminent hazard to pedestrians exists.

4. **QEWI Discretion.** Since the initial creation of a façade inspection program (Local Law 10 of 1980), a trend has developed toward more detailed specifications around required inspection and reporting means and methods. This has resulted in a general reduction in the overall level of discretion allowed for the QEWI to determine inspection drop locations, testing methods (e.g., probes), certification of job completion for sidewalk shed removal, and more.

QEWIs expressed varying perspectives on the costs versus benefits of QEWI discretion. On one hand, reducing discretion may have the positive effect of eliminating areas where it's tempting to cut corners. On the other hand, it could increase the number of situations in which tight regulation does not account for circumstances where different treatments, such as the placement of probes or the locations of close-up examinations, might be more beneficial.

5. **Business Implications to Property Owners (QEWI Perspective).** Building owners and managers naturally seek to reduce operating costs. These reductions often target expenditures that don't directly increase the value or desirability of a property. Unfortunately, façade repairs and maintenance usually fall into this category. And while many property owners acknowledge that performing façade repairs and maintenance reduces the long-term costs of deferred maintenance, QEWIs generally believe that a subset of owners consistently underinvests in this aspect of their property to reduce short-term costs. Several QEWI respondents also mentioned that when an owner intends to sell a building within the current FISP cycle, it results in pressure to reduce the scope of façade repair and maintenance to less than what is required under FISP. QEWIs expressed a general concern that when discretion about additional inspection (frequency, location, methodology, tests, etc.) was left entirely up to the QEWI, owners would seek out the lowest-cost option among registered design professionals (sometimes referred to as "shopping around").

Generally, respondents agreed that there is a need for building owners to maintain better capital budgeting for façade repair. Some owners need to better understand when long-term repairs (vs. "band-aid" maintenance programs [32]) are needed. QEWIs also expressed concern that many buildings (particularly residential cooperative and condominium buildings) often do not have appropriate capital reserves allocated for necessary and sometimes unexpected façade repairs. Several proposed the con-

[32] These types of programs are also referred to as "sawtooth," "patch-and-repair," or "make-safe" repairs.

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sideration of a law requiring at least five years of capital reserves or demonstrable access to credit. This approach, which would require further exploration, would likely need to be a legislative initiative that considers the most appropriate way to impose the requirements in a demonstrable and enforceable manner that does not impose an unmanageable financial burden. Of course, such programs may still not address the dilemma of building owners with little or no available funds.

Lenders sometimes require property owners to maintain specified capital reserve amounts based on FISP filing status. Filing status is used as a proxy for the extent of repair work needed, and capital must be set aside for performing the repairs. Failure to maintain the required reserves can restrict building owners from borrowing or refinancing. This can also ultimately have a negative impact on the equity value of the property and impair salability.

6. **Accurate Scope of Work for Repair.** FISP repair projects are well known for going over budget. Often, this is due to inadequately defined scope of repair and the discovery of unexpected underlying conditions during work. QEWIs expressed a general sentiment that a more robust façade condition assessment (and more comprehensive assessment, including the use of drones) would yield a more complete repair scope, resulting in fewer change orders and more accurate expectations of schedule and cost. This would improve the owner's process of planning and financing. This was also mentioned by interviewed owners.

Insights from QEWIs – Recommendation References

NOTE: This reference box reviews the report recommendations that are supported by the preceding section. The full text of the recommendations can be found in Section 8.

Recommendations 1 and 2: Amend the FISP Definitions of UNSAFE and SWARMP

Differentiate Between UNSAFE and Prior Unrepaired SWARMP

Because repair time frames are intrinsic to the classification definitions in FISP, QEWIs often take a conservative approach, classifying high-priority SWARMP conditions as UNSAFE and conditions that they might not reasonably expect to become unsafe if not repaired within five years as SWARMP. The proposed changes better reflect the current industry practice and inevitably reduce the number of unnecessary sidewalk sheds.

Recommendation 4: Abbreviated Filing Program

QEWIs felt that FISP has room to adapt to the complex building landscape in NYC and that inspection intervals could be modified to consider building height, age, and façade materials and assemblies.

Also, 31% of QEWIs indicated that they currently use drones. Of those, almost everyone we interviewed agreed that drone technology provides superior data to traditional ground-level binocular inspections (especially for tall buildings) for the visual portion of the FISP examination. 61% of those surveyed believe that drones can at least be helpful in selecting the locations of close-up inspections.

We recommend that NYC adopt an abbreviated filing program that continues to allow for QEWI discretion and DOB oversight while permitting an extension of the filing frequency for certain buildings and taking advantage of technology, including drones.

Recommendation 9: Improve the DOB Help Desk

QEWIs reported that they often find it difficult to access DOB representatives when they have pressing questions related to specific filings. In the current system, it often takes too long to receive a response. QEWIs consistently expressed the need for a more responsive and streamlined DOB system for fielding, tracking and responding to questions, potentially using standard "help desk" software that monitors the DOB email inbox for façade-related questions.

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Recommendation 10: Improve DOB "Failure to Maintain" Violation Notices

FTM violation notices should clearly identify the location of the conditions noted. QEWIs interviewed noted that this will result in quicker correction and resolution.

Recommendation 11: QEWI Guide

All QEWIs interviewed noted the need for clarification in certain areas of FISP. One of the most frequently mentioned topics is the inconsistent implementation of SAFE, SWARMP and UNSAFE classifications. QEWIs reported that they often disagree with DOB on the appropriate category for certain conditions. We recommend developing a QEWI guide that addresses the common areas of confusion. The guide can be supplemented with an education program.

4.2 Insights From Property Owners

Regardless of occupancy, use or ownership, all buildings require monitoring and maintenance over time to remain safe and compliant with façade laws. However, public and private entities experience notable differences in approaches, challenges and needs. These differences commonly lead owners to have divergent perceptions of and relationships with FISP. This section discusses some of the key issues confronting public and private owners that came to light in the interviews.

4.2.1 Insights From Owners of Private Property

1. Financial and Schedule Implications. For this portion of the study, we conducted individual 90-minute video conference interviews with representatives of four major commercial property owners/operators. The selected firms manage portfolios of buildings that vary from smaller properties (approximately 100,000 sf.) to large ones (1M+ sf.) covering a wide range of age and façade typologies. In addition, we interviewed representatives of the Real Estate Board of New York (REBNY), which represents property owners throughout NYC, and the New York Apartment Association, which represents NYC's rental residential (nonpublic) market.

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Cost planning for repair programs varies depending on building size and ownership structure. Nearly all property owners strive to plan maintenance on a regular schedule with an understanding of long-term issues. However, some owners take a more reactive approach to façade repairs, responding only to the FISP examination results.

Exterior maintenance represents a significant operating expense for most property owners. The primary driver of this expense usually varies by building size. For smaller buildings, mobilization, scaffolds/rigging and probes required for conducting the inspection typically represent an outsized proportion of costs. For larger buildings, the repair work itself (materials and labor) is often a more significant component.

Owners of smaller residential properties indicated that they are frequently required by contractors, QEWIs or insurers to install sidewalk sheds just to perform FISP inspection drops (as opposed to erecting sheds only for UNSAFE findings or construction work). This practice is not typical for inspections of larger properties. This issue could potentially be resolved by more definitive guidance from DOB regarding pedestrian protection.

Owners of smaller residential buildings also commented that providing close-up façade access every five years, regardless of whether a suspended swing stage rig, boom lift or rope access is used, imposes a significant financial burden. These owners would like DOB to allow less costly approaches to façade inspection. This could entail fewer hands-on examinations supplemented by more visual inspections (including drone-based).

A boom lift is used to gain access to a façade in NYC.

Property owners always face some degree of cost unpredictability, and one of the typical contributors is unanticipated conditions identified during a FISP inspection. To make matters worse, some owners base their façade repair budget solely on the FISP examination and report, without sufficient extrapolation or allocation of a contingency in the budget to address underlying conditions revealed as the work is performed. Proactive repair programs and use of technology such as drones can help track maintenance needs and make budgeting more precise.

During our interviews, we found that certain owners seek to proactively address façade conditions before they deteriorate into more severe problems that lead to costly future repairs. This approach helps create more predictable budgets with fewer surprises. These owners suggested that DOB differentiate and incentivize “good actors” (owners who consistently and diligently maintain their properties in safe condition) by making the program less burdensome for them. This could mean reducing certain requirements for hands-on inspection drops for lower-risk building façades. Of

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course, objectively quantifying what constitutes a "good actor" would be challenging.

All types of owners expressed a predominant view that FISP is necessary and has been successful in enhancing public safety in NYC. Some felt that it would be helpful for DOB to provide more data and guidance for technical clarifications on identification and assessment of conditions, required protection and acceptable types of repairs. They are commonly faced with conflicting information from various sources, including some QEWIs they regard as overly cautious regarding aspects of FISP compliance, such as classification of conditions and public protection requirements.

2. Terra Cotta, Material Fabrication Lead Times and the Landmarks Preservation Commission. Certain owners expressed concerned that the NYC Landmarks Preservation Commission (LPC) requirements can delay projects, particularly those requiring the replacement of terra-cotta units, since material fabrication lead times are significantly longer than those for replacement materials. While this is an issue primarily during the construction phase, when sheds are required regardless, it may also impact the length of time sheds are in place prior to construction.

However, many terra-cotta repair projects in NYC, including those for landmarked properties, use replacement materials rather than new terra cotta. Replacement materials are typically approved during a staff-level review with a Certificate of No Effect, based on the quality of the application. Matching cast stone or glass fiber reinforced concrete (GFRC) can be fabricated with a relatively short lead time and is frequently approved by the LPC at most locations. While the LPC frequently requires replacement-in-kind below the sixth story on individual landmarks, measures for reducing the impact are in place, such as preordering, which is often done with long-lead-time items like windows and brick, or providing temporary shoring and weather protection while awaiting delivery so that other work can proceed. Depending on the circumstances, it may also be possible in some cases to reanchor and repair damaged terra-cotta units in situ.

3. Access Agreements. Owners expressed frustration with the difficulty of securing access agreements from neighboring properties. The process can take a considerable amount of time, sometimes delaying the completion of repair projects and removal of sidewalk sheds, increasing the cost of repairs and often requiring the owner to retain an attorney to represent them in protracted negotiations. Owners indicated they would welcome a more standardized and simplified process requiring neighbors to provide access with reasonable terms.

4. Historical Repair Data. Owners, particularly professional managers of commercial properties, noted a desire to organize inspection and repair data more methodically. Some proposed a system using drone surveys and AI or other means to record successive surveys, repairs and FISP data, which could serve as a usable record of conditions and repairs. Such a process, if initiated immediately after construction, could create a baseline record against which to measure subsequent performance of the façade and even compare the conditions to similar populations of buildings throughout NYC.

5. Negative Impact of Sidewalk Sheds and Alternatives. Private owners indicated that certain financial incentives motivate them to minimize the presence of sidewalk sheds at their properties. Rental costs are substantial, and the shed structures are unattractive, impair retail business and create potential security issues – both below the shed, where visibility is restricted, and above it, where trespassers could gain access.

Owners expressed frustration that sidewalk sheds are required to be erected immediately for conditions that have been classified as UNSAFE but which, they believe, pose no imminent hazard to the public. Owners recognize that public safety is paramount, but they feel that some sheds are required out of excessive caution on the part of the QEWI or DOB. Several indicated that they have opted for Partial Shed Removal (PSR), which was helpful in addressing the concerns of their ground-floor commercial tenants.

Alternative options, like cantilever catch-all systems, are generally considered more aesthetically and functionally attractive. However, they require structural engineering, not only for the system itself, but also for anchoring it to the building structure (which sometimes requires reinforcement to support the additional loads). No "off-the-shelf" solutions are currently available. These alternate protection methods are used much less frequently because they can be substantially more costly and complicated to erect than a traditional shed. Some in the industry have recommended creating a requirement in new construction to install standardized structural components on the perimeter of the building framing to accommodate and ease the future installation of cantilevered catch-all systems.

Another viable option in certain settings, if approved by DOB, is to temporarily anchor or net discrete UNSAFE conditions, essentially stabilizing them in-situ, rather than erecting a sidewalk shed below. Of course, in most circumstances, once the repair project begins, a sidewalk shed or other means of public protection must be erected. These alternative protection methods have been used by some owners – primarily larger commercial managers – and only in specific situations, such as over a roadway or pedestrian plaza. Some owners expressed low confidence in the effectiveness of netting and pointed out that it also typically requires design by an engineer.

6. Insight Into Filing Status and Approach. Several of the owners we interviewed noted that the program has shifted toward more conservative UNSAFE findings and increased reporting during the cycle, even for SWARMP conditions. The owners of smaller properties were the most concerned and found the system to be burdensome. No precise building size cut-off has been identified, but smaller properties generally bear a larger relative burden from the process's fixed-cost components. For owners of smaller properties, even the increased paperwork filings of extensions, subsequent reports, etc., represent a substantial cost.

Owners also expressed concern that the assessment criteria have tightened to the point where, in some cases, defects are identified even if they don't represent real safety issues. Some owners felt that the standard for an UNSAFE classification has changed and that QEWIs have less discretion than they had before. Some mentioned that they believe QEWIs receive pushback from DOB to reclassify as UNSAFE certain conditions origi-

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nally identified as SWARMP. They also suggested that the UNSAFE designation impacts other issues, such as refinancing, borrowing potential and insurance premiums. Some owners stated that some DOB inspectors issue Class 1 summonses for what the owner believes are minor defects.[33] This revealed the need for more consistent interpretation of conditions among QEWIs and DOB.

Some owners, particularly owners of tall commercial properties, have used drones to supplement FISP examinations. They expressed the expectation that more of this type of data collection will be used in the future and that it is superior to binocular inspection but agreed that it does not completely replace some elements of a hands-on inspection by a registered design professional.

Both QEWIs and private owners agreed that the quality of new construction is inconsistent. They felt strongly that a building's first FISP examination should not be postponed or skipped, as the effects of latent construction defects commonly begin to appear during the first several years after construction. In support of this, DOB reported that for Cycle 9, approximately half of new buildings were filed as SWARMP or UNSAFE in their first FISP report.

4.2.2 Insights From Owners of Public Property

For this portion of the study, we conducted individual 90-minute video conference interviews with representatives of five large NYC agencies that manage a very wide variety of public buildings, including K-12 schools, public residential housing, colleges and universities, and a broad range of office, municipal and cultural buildings. The agencies interviewed represent almost every age, size and façade type.

The approach to FISP is largely the same for private and public owners. Several common challenges – including site access and neighbor agreements, complications with older buildings and the negative impact of sidewalk sheds – face both groups. However, several specific considerations for public owners are addressed in this section.

NYC represents the single largest owner for sidewalk shed permits, with 59 out of a total of 380 miles (about 16%) of active sidewalk sheds.[34] If all the repair work required on city-owned buildings were performed on the schedule required by the

Who Complies With FISP?

Most properties over six stories tall in NYC are required to comply with FISP. Buildings owned by the City of New York are obligated to comply with FISP, although they are not subject to penalties and fines for noncompliance, late filing and UNSAFE conditions, as well as the legal process for correcting violations. Buildings owned by government agencies other than NYC (for example: New York State, Port Authority of NY & NJ, U.S. federal government, or foreign governments) are normally exempt from FISP, although some of these owners comply voluntarily.

[33] Three classes of OATH summons are issued by DOB. Class 1 (Immediately Hazardous) is the most severe level. www.nyc.gov/site/buildings/dob/resolve-a-summons-or-violation.page

[34] This figure is calculated by cross-referencing two datasets: the NYC Sidewalk Shed Map and the city-Owned Properties public dataset. This was as of 9/9/2025. www.nyc.gov/assets/buildings/html/sidewalk-shed-map.html data.cityofnewyork.us/City-Government/City-Owned-Properties/xhig-e2g7/about_data

FISP rules, there would be a notable reduction in the overall number of sidewalk sheds across the city.

1. Public Agency Costs and Financial Considerations. The responsibilities for retaining a QEWI and responding to DOB requirements (such as erecting a shed, retaining a professional design consultant to prepare repair documents, and hiring a contractor to perform the repairs) are typically divided among multiple entities or agencies. Each has its own scheduling, budgeting and contracting procedures.

Portions of the work, like the FISP inspection and report filing itself, may be the responsibility of the building or tenant agency, depending on the lease agreement. Eligibility of a façade repair project to receive capital funding is usually determined by a combination of the Office of Management and Budget (OMB) and the Comptroller's office, so a project may end up including only a portion of the required repairs, based on capital project eligibility and funding. Repairs that are not funded as capital projects must be performed as maintenance work, but since no dedicated funding for façade repairs is typically included in maintenance budgets, this represents a significant unfunded obligation. Also, as NYC does not fund FISP repair and maintenance budgets for unoccupied buildings, these can languish indefinitely without FISP repairs being implemented.

Because of this complicated procurement process, although a sidewalk shed may be installed when UNSAFE conditions are identified, years may pass before a consultant receives notice to proceed with the repair design, and additional years may pass before a contractor actually mobilizes. All this happens without any connection to the schedule mandated in the FISP regulations. Eventually, management of the construction project could then be turned over to other agencies, such as the NYC Department of Design and Construction (DDC).

This complex set of procedures prevents many public entities from being responsive to DOB requirements in the time frame to which private owners are held. For these reasons, some city-owned buildings end up with sidewalk sheds in place for many years without any repair work taking place.

2. Comparison With Private Funding. In contrast, some large private real estate property management organizations divide responsibilities between individual building management, central groups that manage capital construction projects, separate teams that manage residential and commercial properties, and offices that manage leasing. Yet they still coordinate their operations according to the same timeline, based on FISP regulations. Private owners, when faced with repair costs that don't fit into their annual budgets, work with their design consultants to phase projects so that they dovetail with their ability to generate funding.

Some agencies that do not struggle with funding for façade repairs are able to maintain their buildings as SAFE or at least SWARMP, recognizing that doing so is consistent with the intent of FISP and helps mitigate the risk of large and unexpected maintenance costs. Other agencies do not have the ability to do this and, therefore, may attempt to sustain a certain level of maintenance, while some may not be able to allocate any budget to

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repair certain buildings. Some agencies receive their budgets entirely through the NYC budget process, while others (NYCHA, for example) may have allocations from municipal bonds or federal or state funds.

Some public agencies engage in minimal coordination with FISP deadlines beyond the filing of the initial report and erection of a shed. These agencies often have no funding for façade maintenance and FISP compliance for their aging building stock, so they are forced to triage any capital funds they have for priority repairs and leave sidewalk sheds up indefinitely. Agencies with considerable financial struggles acknowledged that leaving buildings UNSAFE for multiple cycles results in a larger cost to repair when budget is eventually allocated.

Interviewees shared that their maintenance and repair costs are higher for older masonry buildings – especially those with façades constructed of materials like terra cotta, which require special expertise and a high cost per square foot to maintain. Much of the historic public housing stock is mid-century brick cavity-wall construction, and probes frequently reveal lack of brick ties, among other problems. Newer public building façades are typically constructed with metal and glass curtain walls, panelized wall systems or rain screens, which tend to present less complicated maintenance challenges.

Like private owners, public owners also run into cost unpredictability. However, the impact is less manageable than in the private sector because specific sums are allocated in annual budgets, and an unforeseen condition in construction terms is perceived as a cost overrun in public budgeting terms if insufficient contingency is allocated. Proactive repair programs and use of technology (e.g., drones) are strategies that can potentially keep costs within budget. Public owners mentioned the desire to improve the accuracy of bid quantities, as funding for projects is typically based on extrapolated estimates, and adding a substantial

What Is a Cavity Wall?

Cavity walls with metal ties trace their modern origins to the late 19th century. Their use in taller construction became popular in the 1950s as a quicker method of façade construction.

1 RCNY 103-04(a) defines a cavity wall as follows:

An exterior wall system consisting of an exterior veneer with a backup wall whereby the exterior veneer relies on a grid of metal ties to the backup wall for lateral stability. The two layers of wall are separated by an air cavity, which may or may not be filled with insulation.

In 2020 (Cycle 9), DOB amended 1 RCNY 103-04 to require probes of all cavity-wall construction. Probes are currently required for walls that are more than 10 years old and have not undergone a repair of the metal ties within the past 10 years. Probes can be performed by removing sections of the wall or by using less invasive techniques such as borescope cameras, but must be sufficient to confirm the presence, condition and spacing of the wall ties.

percentage of cost to a project during construction can be far more challenging than in the private sector. Scope may also increase because of continuing façade deterioration during the protracted time period between the FISP examination and implementation of repairs.

3. Potential Changes in NYC Funding and Procurement Process to Conform to FISP Requirements. We recognize that citywide capital and earmarked maintenance budgeting is beyond DOB's control and would require coordination with the City Council, OMB and the Comptroller's office. Nevertheless, addressing this budget shortfall can lead to improvement in quality of life around city-owned properties. We believe it would be beneficial for NYC to modify the funding and procurement process to allow work to be planned according to the FISP requirements and divided into capital and maintenance budgets in a way that can be combined into one construction project. There is a point when repair work has maximum cost efficiency; delaying it until building elements fail and cause corrosion or damage to other parts of the assembly ultimately results in much higher repair costs. So funding repair projects in this manner would save money in the long run.

4. Agency Highlight: New York City Housing Authority (NYCHA). NYCHA is by far the single largest owner (public or private) of buildings filed as UNSAFE in Cycle 9, with 281 of their 541 Initial reports filed as UNSAFE (52%). In addition, only 39% of the estimated 1,400 NYCHA buildings that are subject to FISP have even filed an Initial Cycle 9 report.[35] NYCHA buildings currently account for approximately 25 miles of sidewalk sheds throughout

A NYCHA development in NYC.

NYC's five boroughs, with no prospect of significantly reducing that number with current funding. No modifications of the FISP rules or DOB policy, short of rescinding façade maintenance requirements, would eliminate NYCHA's funding problem for facade compliance.

To mitigate the impact of sidewalk sheds on NYCHA properties, it may be useful to consider alternative means of public protection, which could prove practical in campus settings where most buildings don't face the street. Such options may include cordoning off areas with fencing, creating standoff distances, and providing shed protection for specific walkways rather than entire building perimeters.

5. QEWI Selection Criteria – Government Contracting. Public agencies address procurement of FISP QEWI inspection services through prequalified or "requirements" contracts. Familiarity with the buildings and agency procedures and a record of past success are prioritized.

Interviewees representing public agency owners also felt that QEWIs are increasingly erring on

[35] As explained in a later section on the Historical Analysis of FISP Data, this is as of 10/9/2024. Later data shared by DOB indicates that the percentage of NYCHA buildings filed as UNSAFE may be as high as 70%. This data indicates that up to 45% of the 1,400 buildings having filed a Cycle 9 report.

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the side of caution, leading to the installation of unnecessary sidewalk sheds. This may be due to QEWIs interpretation of the FISP rules or QEWIs' experience with DOB's acceptance of their interpretation of similar types of façade conditions. For example, some public owners have no alternative to letting SWARMP conditions remain unrepaired at the end of cycles and have extensive sidewalk sheds under "Administrative UNSAFE" conditions that they do not believe to be any more hazardous to the public than when they were initially classified as SWARMP. It appears that many QEWIs specify sidewalk sheds in those situations without evaluating whether each unrepaired SWARMP condition truly requires public protection.

Insights From Property Owners – Recommendation References

NOTE: This reference box reviews the report recommendations that are supported by the preceding section. The full text of the recommendations can be found in Section 8.

Recommendation 1 and 2: Amend the FISP Definitions of UNSAFE and SWARMP Differentiate Between UNSAFE and Prior Unrepaired SWARMP

Both public and private owners felt the standard for classifying conditions as UNSAFE has become too conservative. In addition, owners expressed the opinion that automatic reclassification of unrepaired SWARMP conditions to UNSAFE has negative consequences for owners and no positive impact on public safety.

Recommendation 4 and 6: Abbreviated Filing Program Reduced Hands-On Option

Private owners felt that consideration should be given to reducing the burden for certain less-risky building types and differentiating buildings consistently maintained in a SAFE condition.

Recommendation 7: Drone Study

Building owners who had experience using drones shared that they were very useful for determining the extent of repair and maintenance. Owners advocated for the increased use of drones along with associated exemptions or adjustments to the FISP requirements.

Recommendation 8: Alternative for Property Access Agreements

Owners shared that access agreements with neighboring properties are difficult and unpredictable and can cause façade repair project schedules to lengthen unnecessarily. A legal framework, such as a statutory license law, would address this concern.

Recommendation 11: QEWI Guide

Owners expressed a desire to make the process more predictable, as they felt that judgments vary from one QEWI to another and determinations by DOB inspectors and examiners do not always seem consistent. Owners generally felt that the program has, over time, become more conservative due to an overabundance of caution. More clarification from DOB around condition classification would help owners have a more predictable and consistent FISP experience.

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5

Performance of Façade Materials & Assemblies

5 Performance of Façade Materials & Assemblies

5.1 Materials & Systems Selected for Review

A façade system is the combination of materials (such as brick, stone, terra cotta, metal and glass) fabricated into components that work together as an assembly to meet specific performance parameters. The primary façade systems that have been used in NYC include transitional masonry, brick cavity walls, and metal and glass curtain walls. The composition and construction of building façades has evolved over NYC's history, reflecting advancements in materials and construction technology over the past two centuries.

To understand the effects of weathering and degradation on façade assemblies, it is important to understand specific properties of materials and how they are affected by exposure to environmental elements.

As part of this study, we reviewed published literature on materials testing from a wide variety of sources and focused on the intrinsic properties that influence their performance when exposed to the environment. Below, we have listed the façade construction materials most commonly used in existing NYC construction over the past 150 years and identified their associated characteristics.

What Is a Transitional Masonry Wall?

With technical advances in the development of cast iron, wrought iron in the mid-1800s and eventually the mass production of structural steel, buildings no longer needed to rely on heavy masonry bearing walls for support. Steel framing (a system of beams and columns) provided the support structure, changing the role of the exterior wall to that of "skin" supported on the building frame's "skeleton" and ushering in the era of the skyscraper.

The earliest non-load-bearing masonry walls were termed "transitional" because they retained some of the elements of the earlier bearing walls. These systems were developed in the late 1800s and quickly became the prevalent type of commercial construction in NYC (and many other cities) through the 1940s. Unlike the lighter cavity wall and curtain wall construction that came later, the transitional wall was constructed of solid masonry that wrapped the perimeter steel framing (beams and columns). While transitional walls were not load bearing, their mass provided incidental lateral bracing of the building's frame.

As transitional walls evolved in the first half of the 20th century, they became increasingly adorned with mass-produced terra-cotta and cast stone elements (anchored with a network of embedded steel angles, rods and plates) to create the ornate façades that are visually representative of NYC's first major building boom.

- Brick and Mortar: water absorption, freeze-thaw durability, pollution resistance
- Concrete: resistance to carbonation, chloride diffusion, and the corrosion of embedded steel
- Natural Stone (e.g., limestone, marble): resistance to acids, weathering and erosion
- Terra Cotta: water absorption, mechanical strength
- Metal (e.g., aluminum, steel): resistance to corrosion and electrochemical degradation
- Glass: ability to block UV rays, thermal performance, impact resistance
- Sealants and Plastics: UV stability, adhesion, weathering resistance

Durability is the most important property associated with a material's surface, affecting its resistance to weathering against environmental stresses, including moisture, humidity, freeze-thaw cycles and cyclical stresses due to temperature changes. These stresses impact every material differently, based on a material's modulus of elasticity, coefficient of thermal expansion, porosity and several other characteristics. Nevertheless, some generalizations can be drawn for comparison. For example, materials with a high modulus of elasticity can accommodate cyclical stresses more effectively than other materials.

Materials with a high coefficient of thermal expansion need to be designed with tolerances that avoid creating unaccommodated stresses within a façade assembly. Highly porous materials absorb moisture more readily and can be vulnerable to freeze-thaw cycles.

5.2 Material Response to Degradation Agents: Material Factor

It is not possible to assign a single, all-inclusive deterioration rate to a particular type of construction material, the physical and chemical characteristics have been modified over time, environmental stresses are unpredictable, and deterioration is not a linear process. It is also not possible to determine with reasonable accuracy the time frame for a particular material to reach the point of failure. However, basic material properties, vulnerabilities and environmental factors leading to degradation generally remain consistent over time. Whether a brick was produced in 1850 or 2025, the conditions that lead to its degradation or failure have not changed: water adsorption, chemical exposure, freeze-thaw cycles, temperature changes, etc., remain the culprits. Of course, the deterioration rate of a brick with higher water absorption potential may occur in a shorter time frame than a denser brick with less porosity.

Therefore, it is possible to quantify the relative performance of different materials under a variety of conditions as demonstrated in Table 1 below to compare the relative impact of specific environmental factors on the deterioration of different façade material types. We first graded the relative vulnerability of each material to a particular degradation agent, using score values of high=3, medium=2, and low=1. We then computed a weighted average score for each material (the number of occurrences of each score multiplied by the score value, which we have termed the Cumulative Ma-

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Degradation Agent	Brick	Mortar	Concrete	Terra Cotta	Glass	Natural Stone	Sealant	Aluminum	Carbon Steel
UV Exposure	Low	Medium	Low	Low	Low	Low	High	Low	Low
Temperature	Medium	Medium	Low	Low	Medium	Low	High	Low	Low
Humidity	Low	Medium	Medium	Low	Low	Medium	High	Medium	High
Corrosion	Low	Low	Low	Low	Low	Low	Low	Medium	High
Salt Exposure	High	High	Medium	Low	Low	Medium	Low	Medium	High
Chemical Exposure	High	High	Medium	Medium	Low	Medium	High	Medium	Medium
Porosity	Medium	High	High	Medium	Low	High	Low	Medium	Medium
Absorption	Medium	High	High	Medium	Low	Medium	High	Low	Low
Permeability	Medium	High	High	Medium	Low	Medium	Medium	Low	Low
Erosion	Medium	High	High	Low	Low	Medium	Medium	Low	Low
Abrasion	Medium	Medium	Medium	Low	Low	Low	Medium	Low	Low
Aging	Low	Medium	Low	Low	Low	Low	Medium	Low	Low
Freeze-Thaw	Medium	High	High	High	Low	Medium	Medium	Low	Low
Thermal Cycling	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Low	Low
Impact Resistance	Low	Low	Low	Medium	Low	Low	Medium	Low	Low
Latent Defects	Low	Low	Medium	High	Medium	Low	Low	Low	Low
Multi-Material Interactions	Low	Low	Medium	High	Medium	Low	Low	High	High
Wind-Induced Stress	Low	Low	High	High	High	Low	Low	High	Medium
Occurrence of Each Degradation Score									
High (3)	2	7	6	4	1	1	5	2	4
Medium (2)	8	6	7	6	4	8	7	5	3
Low (1)	8	5	5	8	13	9	6	11	11
Cumulative Material Factor (CMF)	30	38	37	32	24	28	35	27	29

Table 1: Material Degradation Factors

terial Factor (CMF). This number represents the relative degradation potential of a material when compared to other materials.

A glass curtain wall façade.

5.3 Material Failure Modes

The ability to visually detect an impending failure is critically important because each material in a façade is part of a complex assembly and relies on other materials for its protection and performance. However, materials and assemblies perform in an environment that is sometimes difficult to predict.

Most modern construction materials are manufactured with well-defined performance properties that are published in data sheets, allowing us to understand expected behavior under various degradation agents. Published testing data is also available on some older and historic materials, and sample or in-situ testing is sometimes a viable option for determining a material's physical properties.

However, the behavior of an entire façade assembly, especially in older construction, is less consistent and not readily measurable solely from the characteristics of the individual materials. Yet one of the primary goals of a façade ordinance is to help prevent the occurrence of façade failures that can endanger the public by identifying and addressing potential failures. So it is important to create predictability where possible.

We have identified four categories of façade material failure modes:

1. **Instantaneous Unpredictable**
2. **Instantaneous Semi-Predictable**
3. **Instantaneous Predictable**
4. **Progressive Predictable**

Within a given façade assembly, individual materials and components will likely have different possible failure modes with different timelines.

1. An **instantaneous unpredictable** failure is characterized by materials or components that can fail suddenly without any prior indication. It is commonly caused by material or construction flaws and possibly triggered by an environmental event. Examples include spontaneous glass breakage due to a nickel sulfide inclusion or the collapse of a wall panel due to missing anchors.

2. In contrast, an **instantaneous semi-predictable** failure, although also characterized by a sudden occurrence, is typically caused by weathering over time and exacerbated by environmental stressors. These types of failures are often caused

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Degradation Agent	Brick	Mortar	Concrete	Terra Cotta	Glass	Natural Stone	Sealant	Aluminum	Carbon Steel
UV Exposure	Progressive	Progressive	N/A	N/A	Progressive	Progressive	Progressive	N/A	N/A
Temperature	Progressive	Progressive	Progressive	Progressive	N/A	Progressive	Progressive	Progressive	N/A
Humidity	Progressive	Progressive	Progressive	Progressive	N/A	Progressive	Progressive	Progressive	Progressive
Corrosion	Progressive	Progressive	Progressive	N/A	N/A	Progressive	N/A	Progressive	Progressive
Salt Exposure	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive
Chemical Exposure	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive	Instantaneous	Instantaneous	Progressive
Porosity	Progressive	Progressive	Progressive	Progressive	Instantaneous	Progressive	N/A	N/A	N/A
Absorption	Progressive	Progressive	Progressive	Progressive	Instantaneous	Progressive	Progressive	N/A	N/A
Permeability	Progressive	Progressive	Progressive	Progressive	N/A	Progressive	N/A	N/A	N/A
Erosion	Progressive	Progressive	Progressive	Progressive	N/A	Progressive	Progressive	Progressive	Progressive
Abrasion	Progressive	Progressive	Progressive	Progressive	Instantaneous	Progressive	Progressive	Progressive	Progressive
Aging	N/A	N/A	Progressive	N/A	Progressive	N/A	Progressive	N/A	N/A
Freeze-Thaw	Instantaneous	Instantaneous	Instantaneous	Instantaneous	Progressive	Instantaneous	Progressive	N/A	N/A
Thermal Cycling	Progressive	Progressive	Instantaneous	Instantaneous	Instantaneous	Progressive	Progressive	Progressive	Progressive
Impact Resistance	Progressive	Progressive	Instantaneous	Instantaneous	Instantaneous	Progressive	Instantaneous	Progressive	N/A
Latent Defects	Instantaneous	Progressive	Instantaneous	Instantaneous	Instantaneous	Progressive	Instantaneous	Instantaneous	Instantaneous
Wind-Induced Stress	Both	Progressive	Instantaneous	Both	Both	Instantaneous	Both	Progressive	Both
Multi-Material Interactions	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive	Progressive
Progressive	15	16	12	11	7	15	12	10	9
Instantaneous	3	1	5	5	7	2	4	2	2
Failure Risk Factor (FRF)	0.17	0.06	0.28	0.28	0.39	0.11	0.22	0.11	0.11
Cumulative Material Factor (From Table 1)	30	38	37	32	24	28	35	27	29
Degradation Value	5.00	2.11	10.28	8.89	9.33	3.11	7.78	3.00	3.22
Degradation Ranking	5	9	1	3	2	7	4	8	6

Table 2: Material Failure Mode and Degradation Value

by underlying conditions that are not readily visible, such as corroded anchors or rebar (hence "semi-predicable"), but root causes of the conditions leading to such failures can usually be assessed with probes or other investigative means. Examples include spalls of terra cotta, stone and concrete.

The challenge lies in predicting the exact timing, as the failure depends on a confluence of factors. For example, in the case of detachment of a façade panel due to long-term corrosion of its steel fasteners, while the ultimate failure is sudden and catastrophic, the underlying corrosion occurred progressively due to ongoing moisture infiltration, which caused the likelihood of failure to increase slowly over time, until it became 100%.

3. An **instantaneous predictable** failure is caused by gradual deterioration and weathering over a long period of time, causing degradation in the material's physical properties and strength. For example, long-term moisture infiltration into hairline cracks in a stone or concrete that eventually causes a spall to occur. The conditions that led to the failure are usually readily visible.

4. A **progressive predictable** failure is caused by gradual deterioration over time and will normally show readily visible "warning signs" such as cracks, erosion, delamination and rust stains, giving ample opportunity to assess and perform repairs long before the materials reach the end of their useful life. Examples include mortar erosion, step cracks in brick and concrete delamination.

Materials and assemblies that are more likely to fail without warning should undergo more frequent inspections, including a hands-on investigation of underlying conditions.

5.4 Failure Risk Factor & Material Degradation

Following on the discussion in the section above, in addition to understanding a material's response to a variety of degradation factors, it is essential to understand its likely mode of failure. Many materials deteriorate slowly over time in a progressive manner that is visible and trackable. However, some materials can fail very quickly and without warning under certain environmental factors. For example, terra cotta may spall instantaneously with almost no tell-tale signs after being exposed to repeated freeze-thaw cycling.

In Table 2 below, we assigned a characteristic failure mode of either "progressive" or "instantaneous" to each material in response to a particular deterioration factor. A Failure Risk Factor (FRF) was then computed as the ratio of the number of instantaneous failure modes to the total number. The product of the Cumulative Materials Factor (Table 1) and the Failure Risk Factor (Table 2) is what we have termed the Degradation Value (DF) – essentially a computed number meant to convey a relative rating of the material's overall degradation potential or risk. The Degradation Ranking (1 through 9) at the bottom of Table 2 indicates the relative priority for inspection of these materials.

5 Performance of Façade Materials & Assemblies

The Degradation Ranking of each material can assist in establishing inspection intervals or protocols for different façade materials and assemblies.

5.5 Façade Assembly Cumulative Deterioration Potential

The environmental exposure of a particular material in a façade assembly depends on where it is located within the assembly – see Figure 4. Materials directly exposed to the elements will be subject to the strongest degradation potential. Materials in an intermediate location within the assembly have less exposure, since they are protected by other materials, like sealants or face brick. The innermost materials have the least exposure to the elements and are affected only when other lines of defense fail.

> **Many construction materials can last almost indefinitely in isolation. However, in façade assemblies . . . they interact with other materials.**

We can assign relative Exposure Factors to different parts of the assembly: 0.6 for the most exposed materials, 0.3 for the intermediate materials, and 0.1 for the least exposed materials. We can use these factors to help compare façade assemblies to each other with respect to their potential for deterioration. Multiplying the Cumulative Material Factor (Table 1) for each material by the Exposure Factor (EF) corresponding to where that material is located in a particular assembly, we can calculate a Deterioration Potential (DP) for each material in the assembly. By summing each material's DP, we can compute the assembly's Cumulative Deterioration Potential (CDP) and compare it to different façade systems.

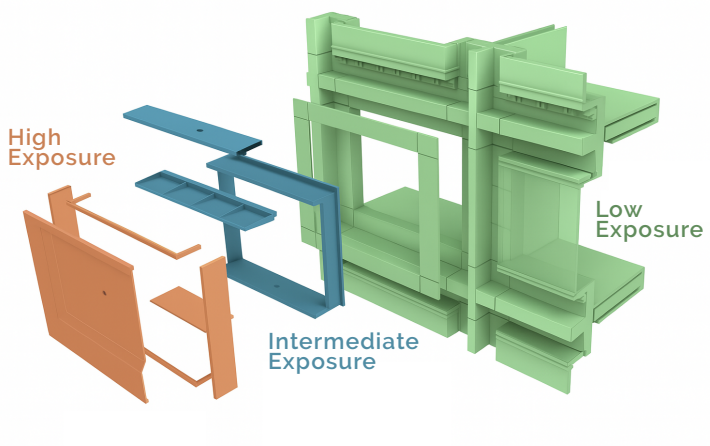


Figure 4: **Components of a Façade Assembly**

By way of example, we provide this calculation for a typical curtain wall, cavity wall and transitional wall in Tables 3, 4 and 5 respectively. Note that computing a CDP is simply one approach for providing relative comparisons between assemblies, and the values should not be assigned an absolute meaning outside this context.*

Curtain Wall	Sealant	Aluminum	Glass
Degradation Value (DV)	7.78	3.00	9.33
Exposure Factor (EF)	0.3	0.1	0.6
Deterioration Potential (DP)	2.3	0.3	5.6
Cumulative Deterioration Potential (CDP)			2.7
Sum			8.2

Table 3: Typical Curtain Wall – Cumulative Deterioration Potential (CDP)

Cavity Wall	Brick	Mortar	Glass	Mild Steel	Brick/Backup
Degradation Value (DV)	5.00	2.11	9.33	3.22	5.00
Exposure Factor (EF)	0.6	0.6	0.6	0.3	0.1
Deterioration Potential (DP)	3.0	1.3	5.6	1.0	0.5
		Cumulative Deterioration Potential (CDP)			2.3
			Sum		11.3

Table 4: Typical Cavity Wall – Cumulative Deterioration Potential (CDP)

Transitional Wall	Brick	Mortar	Glass	Terra Cotta	Mild Steel
Degradation Value (DV)	5.00	2.11	9.33	8.89	3.22
Exposure Factor (EF)	0.6	0.6	0.6	0.6	0.6*
Deterioration Potential (DP)	3.0	1.3	5.6	5.3	1.9
		Cumulative Deterioration Potential (CDP)			3.4
		Sum			17.1

Table 5: Typical Transitional Wall – Cumulative Deterioration Potential (CDP)

* In some cases, it may be necessary to refine the Exposure Factor to account for moisture that is commonly trapped in the interior portions of an assembly. We increased the Exposure Factor for steel in the transitional wall to account for the fact that trapped moisture results in steel corrosion and "rust jacking" that damages the surrounding masonry and terra cotta.

5 Performance of Façade Materials & Assemblies

In the comparison on the facing page, transitional walls (Table 5) are shown to have the highest CDP, indicating that these wall types should be considered a higher priority for inspection.

5.6 Maintenance & Repair Programs

Many construction materials can last almost indefinitely in isolation. However, in façade assemblies where they interact with other materials and are continually exposed to environmental factors (moisture, temperature variations, freeze-thaw cycle, pollution, etc.), progressive wear causes materials to deteriorate and fail.

In addition, corrosion of embedded steel anchors commonly used in older and historic façade assemblies can increase the likelihood and unpredictability of failure. Therefore, while well-maintained older buildings often perform well, more frequent inspections are generally necessary for older building façades.

This is why many industry studies and guidelines emphasize the positive impact of ongoing preventive maintenance on the longevity of façade materials and assemblies. Most well-maintained buildings can operate on a "progressive predictable" path of weathering, proactively addressing conditions before they become much larger problems that lead to failure.

Performance of Façade Materials & Assemblies – Recommendation References

This reference box reviews the report recommendations that are supported by the preceding section. The full text of the recommendations can be found in Section 8.

Recommendation 5: Enhanced Inspection Option

Certain materials and façade assemblies are inherently more durable than others. As they age, many façade assemblies undergo a progressive, predictable path of weathering. However, certain façades have underlying hidden conditions that can result in unpredictable and instantaneous failure, or conditions that chronically form at a faster rate than accounted for in the FISP cycle. These should undergo more frequent inspections.

6

Use of Technology for Façade Inspection

6 Use of Technology for Façade Inspection

Tools such as drones can dramatically improve the quality and extent of image data capture, and recently developed AI technology can enhance the analysis of such data, making it more valuable and actionable for façade assessments. This technology enables QEWIs to perform their work more effectively, provides owners with more accurate information about their property and allows regulators to improve the way data is incorporated into their compliance regimen.

Although FISP does not currently mandate the use of drones or AI, these technologies are clearly being considered. NYC has greatly streamlined the process for the approval of drone permits, paving the way for their use in façade assessments. The industry has a clear appetite for the use of data to enable smarter decision making throughout many aspects of the built environment.

6.1 Drones

Small Uncrewed Aircraft Systems (sUAS), also known as drones, have advanced significantly in their capabilities, safety, ease of use, battery life, lifespan and camera resolution over the past few years. Drones are able to obtain substantially more comprehensive visual data more safely (no rigging hazards) and in a much shorter amount of time than traditional methods allow.

DOB previously addressed the use of drones in a study published in 2021 (*Using Drones to Conduct Façade Inspections*) required under Local Law 102 of 2020.[36] In 2023, NYC legalized drone flights throughout the city under a permitting program run by the NYPD under 38 RCNY 24.[37] While drone flight is now legal, it is not a substitute for hands-on FISP requirements. It can, however, enhance the hands-on requirements and help meet the visual ("binocular") inspection requirements under 1 RCNY 103-04(c)(2)(viii).

The 2021 DOB report concluded that "there is limited experience with the use of drones to conduct façade inspections in NYC." Four years later, this is no longer the case. In the survey sent to QEWIs by DOB, 31% of QEWIs indicated that they have experience with drones for façade inspection. Interviews with QEWIs also revealed that many QEWIs have experience with drones, and have successfully used them to perform visual façade inspections. The legalization of drone flights in NYC has also opened a market for drone inspection pilot services, which has decreased the cost.

> **"Drones far surpass the capabilities of the industry-accepted method of binocular inspection from grade level.**

The DOB study also concluded that "DOB recognizes drones may support the existing requirement to conduct façade inspections in a beneficial way and would invite further study on how this tool, with its accompanying technologies, can be employed."

[36] www.nyc.gov/assets/buildings/pdf/LL102of2020-DroneReport.pdf
[37] codelibrary.amlegal.com/codes/newyorkcity/latest/NYCrules/0-0-0-78596
www.nyc.gov/site/nypd/services/law-enforcement/permits-uas-permits.page

6 Use of Technology for Façade Inspection

What Is a Drone?

A drone, or small uncrewed aircraft system (sUAS), is a remotely piloted aircraft. Drones are regulated under federal law by CFR Part 107. As of July 2023, the use of drones in NYC is legal and is permitted by the NYPD under 38 RCNY 24. Any drone used for commercial operation, such as façade inspection, must, by federal law, be piloted by an FAA-licensed drone pilot.

Interviewees who have used drones agree that they significantly aid in the visual assessment of building exteriors. Drones far surpass the capabilities of the industry-accepted method of binocular inspection from grade level. Binocular inspections, which are required for 100% of the building envelope in all FISP cases, are of little value for buildings that exceed 10 stories, although in some cases, binocular inspections may be performed from adjacent roofs or interior floors of neighboring properties.

Drones are especially useful for focused, visual assessments of areas of concern. They can also be applied, with the appropriate visualization software, to a 100% building envelope investigation, providing a visual assessment that is far superior to those of traditional binocular inspections. This viewpoint is shared by nearly all registered design professionals who have used the technology.

All the registered design professionals we interviewed also agreed that this technology cannot fully replace critically important hands-on inspection and access for sounding[38] or other nondestructive evaluation. However, because the imagery is of such a high resolution and provides detailed views of 100% of the façade, DOB should consider allowing it to be used in certain settings to reduce the amount of required hands-on inspections.

6.2 Analysis of Drone Imagery

Various software solutions can analyze drone imagery as a part of a comprehensive visual façade inspection. The simplest solution is software that depicts the geographic location of the drone images.

A more advanced method is photogrammetry, a technique for deriving 3D features from a large dataset of 2D inputs, such as drone photographs. Its development was influenced by Leonardo da Vinci's 15th-century exploration of perspective, geometry, optics and visual representation, but its modern origins date back to 19th-century cartography. More recently, the advent of digital photogrammetry engines allows for the development of full digital 3D models from drone imagery. Research suggests that high-quality photogrammetry is as accurate as 3D scanning but somewhat less accurate than the highest-quality terrestrial-based laser scanners.

One useful feature of photogrammetric 3D models is the capability of deriving a 2D snapshot or "takeoff" view of a façade. These views (called "orthomosaics" or "orthophotos") are colorized and orthorectified to correct for perspective. An orthomosaic can be very helpful in assessing the building

[38] 'Sounding' is an accepted inspection technique for various materials used to determine whether or not the material has any hollow properties indicating instability. The technique involves tapping the material with a hammer or mallet to feel and hear any abnormalities in vibration or sound.

6 Use of Technology for Façade Inspection

façade, as it is essentially an as-built reality substitute ("digital twin") for a traditional to-scale line drawing. In some cases, discussed during the QEWI interviews, FISP condition analysis has been submitted to DOB overlaid on an orthomosaic instead of a line drawing. DOB should consider promoting this practice, as it identifies the exact "as-built" location of conditions rather than a representative location based on an architectural drawing.

In addition to the visualization tools available for processing large imagery datasets from drones, recently developed applications take advantage of AI computer vision for the automated analysis and detection of defects. The use of this form of technology has been addressed in the recent past by DOB.[39] However, while these tools can clearly be helpful to a professional in identifying façade damage, their use is not currently widespread. Often, they are integrated into comprehensive software packages that allow for the processing and visualization of imagery, photogrammetry and orthomosaics.

6.3 Potential Regulatory Impact of Drone Technology

The adoption of drone and other technology for FISP compliance represents an opportunity to amend the filing requirement format, or even the inspection methodology, to account for the benefits of this technology.

One example of this is the use of drones in lieu of certain hands-on inspections of suitable buildings. If DOB were to allow this approach, drone use would need to conform not only to the applicable safety and operational standards, but also to standards for image quality, appropriate software for analysis, and use of techniques like photogrammetry. For example, DOB may allow drones to be used only under standardized parameters such as:

- Minimum drone camera resolution.
- Maximum distance away from the façade.
- Desired percentage coverage of the façade.
- Required use of software that demonstrates the location of drone images.
- Use of photogrammetry software for analysis.
- Qualification of drone pilots to demonstrate experience with façade inspection (above and beyond NYPD requirements).
- Qualification of photogrammetry professionals and/or software suites that demonstrate proficiency and experience with building façades.

[39] www.nyc.gov/assets/buildings/bldgs_bulletins/bb_2021-012.pdf

Other Technology Used for Façade Inspection

In addition to drones, QEWIs sometimes use other technologies to complete both the visual and critical examinations required under FISP. These may include 360-degree cameras, 3D scanners and lidar, traditional digital cameras, digital inspection and construction management software (including tablet-based PDF drawing markups), nondestructive testing methods (including borescopes, sounding hammers, magnetometers, ground-penetrating radar, ultrasonic thickness testing/pachometers and sonar), as well as software programs to mark condition locations for the FISP report filing and for repair design and construction administration. These tools can also include more traditional nondestructive testing methods such as borescopes and ground-penetrating radar. All these technologies allow inspectors to obtain a more complete picture of the façade condition and more accurately and completely specify appropriate repairs. The stakeholder interviews did not broach the subject of potential changes to regulations based on the incorporation of any of these other technologies, except for using borescopes as a substitute for cavity wall probes in appropriate circumstances.

Future Technology & Robotics

While not widespread, robotic application of nondestructive façade inspection has received some preliminary research. This technology includes suspended or climbing robots that carry sensor payloads like GPR or ultrasonic thickness-testing probes. In addition, at least one academic project investigating the potential for robotic critical façade examinations is currently ongoing.[40] Given the early nature of this work, further proof is needed before it can be applied in NYC. DOB should consider sponsoring "proof-of-concept" demonstrations of robotic technology for façade assessments.

[40] c3robolab.mae.cuhk.edu.hk/projects/robotapper/

6 Use of Technology for Façade Inspection

Technology – Recommendation References

NOTE: This reference box reviews the report recommendations that are supported by the preceding section. The full text of the recommendations can be found in Section 8.

Recommendation 4: Abbreviated Filing Program

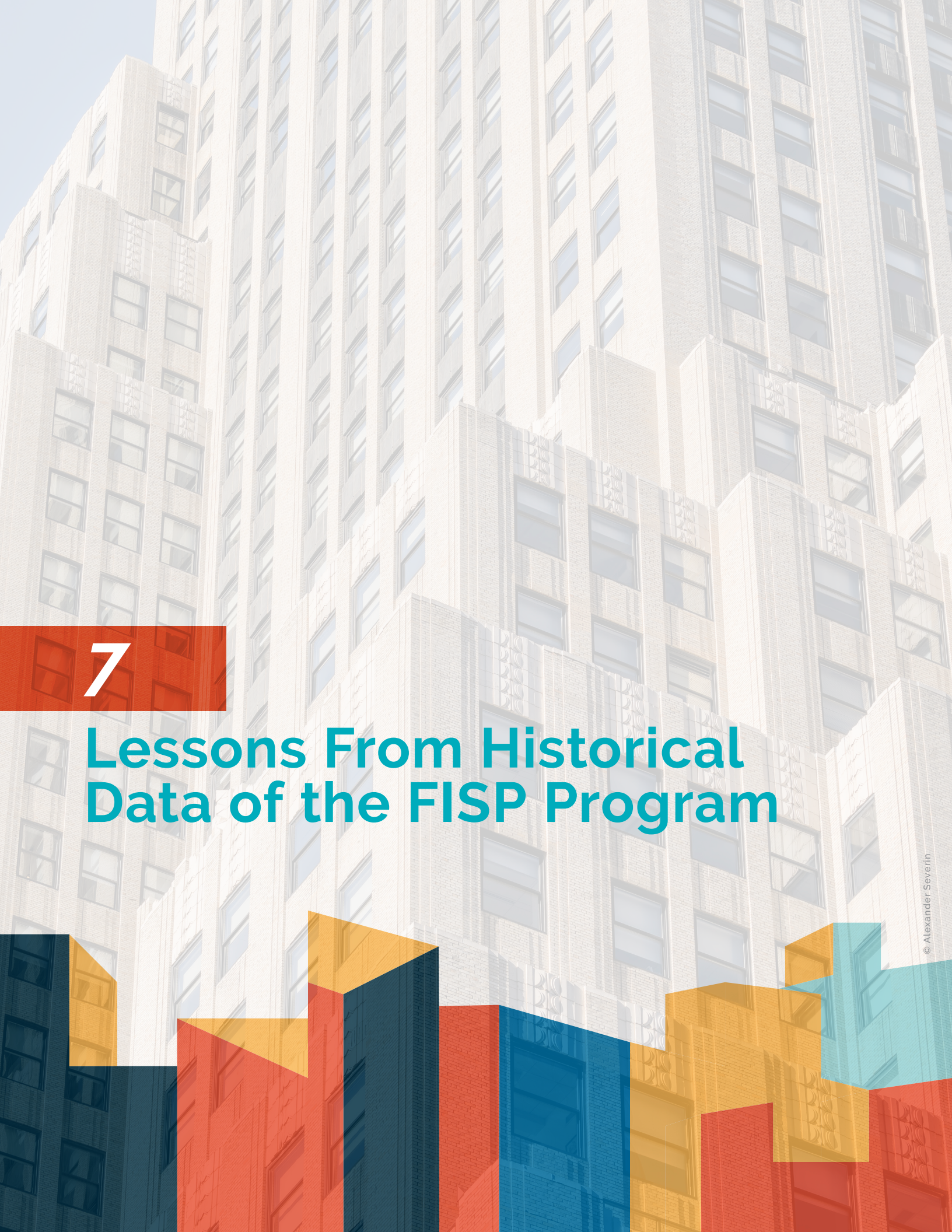
Recommendation 7: Drone Study

A review of technologies currently used in NYC demonstrates that drones are playing a role in façade inspection. They offer the ability to obtain substantially more comprehensive visual data more safely (no rigging hazards) and in a shorter amount of time.

NYC should embrace drone technology as a part of the proposed abbreviated filing program and sponsor an individual building pilot study with drone data to pave the way for their expanded use in FISP.

7

Lessons From Historical Data of the FISP Program



7 Lessons From Historical Data of the FISP Program

We conducted a comprehensive review of historical FISP filing data, including a dataset of all reports for FISP Cycles 6 through 9.[41] This represents the data available digitally from DOB. Reports submitted prior to Cycle 6 were not analyzed. This analysis encompasses only the data from the Technical Report 6 (TR6) *Periodic Inspection of Exterior Walls and Appurtenances*. It did not include analysis of data from any other filing types used in the FISP process.[42]

7.1 Filing Status

Filing Status by Cycle

For the approximately 13,000 buildings that filed initial reports in Cycle 9. Fifteen percent of buildings for which reports were filed are categorized as UNSAFE. Between Cycles 6 and 9, the number of buildings filed as SAFE has generally declined, while the number filed as UNSAFE has increased. Among the buildings for which an Initial report was filed, the percentage filed as UNSAFE increased from 6% to 15% between Cycle 8 and Cycle 9. Among all buildings at the time of this analysis (October 2024), including those with "No Report Filed" (NRF) status, the percentage of Initial reports filed as UNSAFE increased from 6% to 12%. Note that the actual total number of filings in Cycle 9 is higher due to reports received by DOB after our analysis of the data.

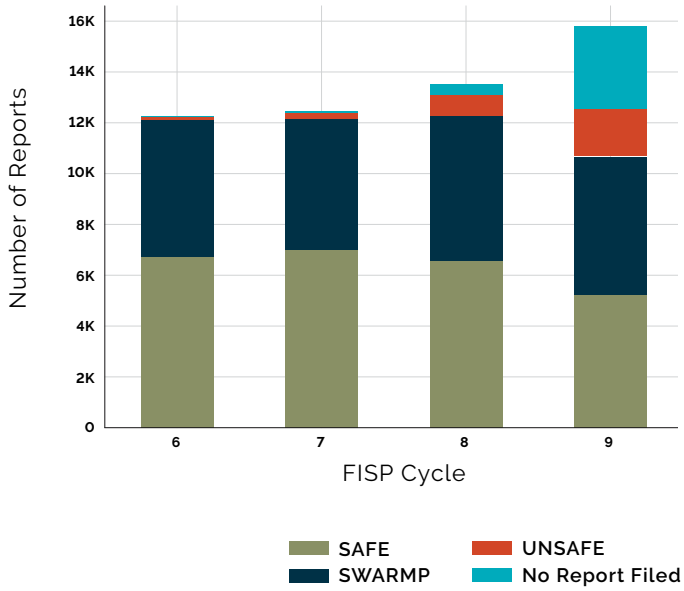


Figure 5: **Initial Report Status by Cycle (TR6 Data on 10/9/24, Source: DOB)**

FISP "Cycles"

Since its inception, FISP has been administered in five-year cycles. Within each five-year cycle, all covered buildings are grouped into one of three two-year sub-cycle windows (A, B and C), based on the last digit of the building's block number. The sub-cycle windows currently overlap by one year. FISP Cycle 10 began on February 21, 2025, and will close on February 20, 2030.

[41] TR6 (Technical Report: Periodic Inspection of Exterior Walls & Appurtenances). FISP data was provided by DOB on 10/9/2024 and represents filings statuses on the database query date. The initial filing deadline for all sub-cycles within Cycle 9 was 2/21/2024, which suggests that all initial filings would be completed. However, there may be exceptions. Between the 10/9/2024 dataset and a 6/13/2025 analysis of DOB online, data shows that the Cycle 9 "No Report Filed" number decreased 10%, from 3,246 to 2,922. However, this is not expected to have a significant impact on the analysis. Note that the data from the DOB public website reflects the current status of the building in the cycle rather than the initial status, which was used for this analysis. The classification status may change within the cycle if work was performed and a subsequent or amended type report was filed. DOB online data can be found at the links below. The data in this report may not reconcile with the links below due to subsequent changes in the dataset after the data query date. www.nyc.gov/assets/buildings/html/Facade_Safety_Report.html www.nyc.gov/assets/buildings/html/Facade_Filings_Cycle.html

[42] More information on the forms used for FISP compliance can be found at the following web page and are beyond the scope of this study: www.nyc.gov/site/buildings/dob/forms.page.

7 Lessons From Historical Data of the FISP Program

Cycle 9 Analysis

NRF status increased by six times, and UNSAFE filings doubled from Cycle 8 to Cycle 9. While the precise cause of these trends is not clear, they do coincide with several changes in FISP requirements. These include the requirement for more hands-on drops, which has increased the cost of performing FISP inspections for owners. This increased cost could lead some owners to not file any FISP report and instead endure the consequential penalties. The increase in UNSAFE filings also coincides with the implementation of the "Administrative UNSAFE" provision that automatically reclassifies unrepaired SWARMP conditions from the previous cycle as UNSAFE.

Reports filed					
Cycle	**No Report Filed**	**SAFE**	**SWARMP**	**UNSAFE**	**Total**
6	11	6,763	5,367	102	**12,243**
7	69	7,009	5,155	215	**12,448**
8	430	6,610	5,675	817	**13,532**
9	3,246	5,256	5,422	1,888	**15,812**

Percentages, Without NRF				
Cycle		**SAFE**	**SWARMP**	**UNSAFE**
6		55%	44%	1%
7		57%	42%	2%
8		50%	43%	6%
9		42%	43%	15%
Average		**51%**	**43%**	**6%**

Percentages				
Cycle	**No Report Filed**	**SAFE**	**SWARMP**	**UNSAFE**
6	0%	55%	44%	1%
7	1%	56%	41%	2%
8	3%	49%	42%	6%
9	21%	33%	34%	12%

Table 6: **Distribution of Filing Status Across FISP Cycles**[43]

[43] As explained earlier, these figures are as of the data analysis date. Subsequent changes to the filing data may result in adjustments to these figures. In particular, DOB has shared that the "No Report Filed" (NRF) numbers for Cycle 8 and Cycle 9 have decreased from 10/2024 to 9/2025.

7 Lessons From Historical Data of the FISP Program

7.2 NYC's Five Boroughs

Manhattan is home to many more FISP buildings than any other borough, with almost 9,000 reports. However, the proportion of buildings filed under each status is consistent from borough to borough.

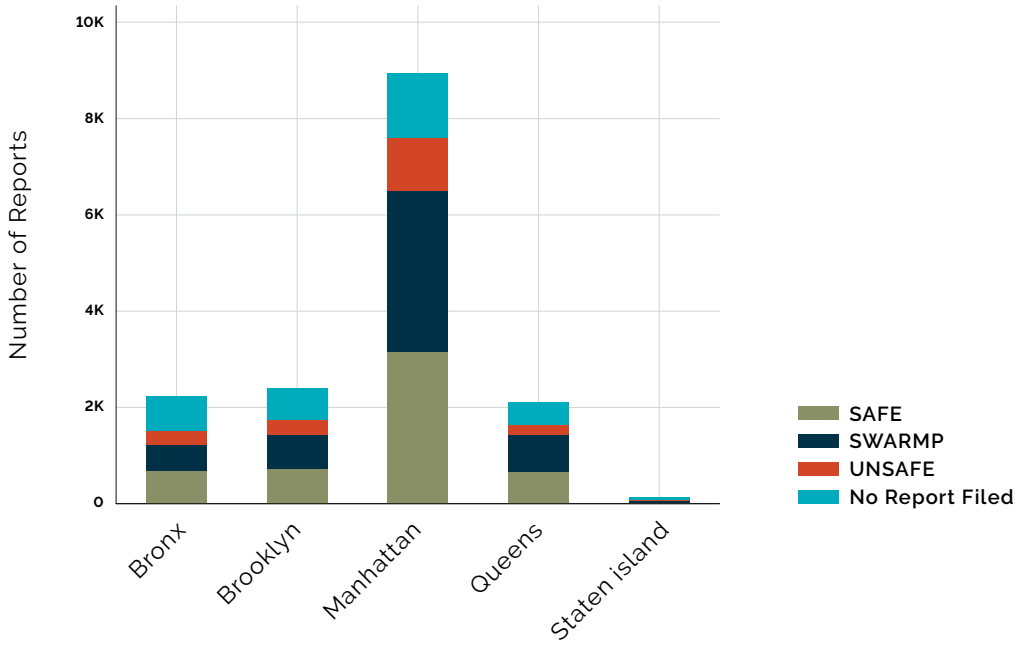


Figure 6: Report Status by Borough (Cycle 9)

Cycle 9 Filings by Borough					
Borough	**SAFE**	**SWARMP**	**UNSAFE**	**No Report Filed**	**Total**
BRONX	690	544	277	720	**2,231**
BROOKLYN	723	717	302	657	**2,399**
MANHATTAN	3,149	3,355	1,093	1,347	**8,944**
QUEENS	671	763	200	467	**2,101**
STATEN ISLAND	23	43	16	55	**137**

Table 7: Filing Status by Borough (Cycle 9)

7.3 Building Height

The majority of FISP buildings are under 20 stories tall. Across all building heights, distributions of SAFE (30-35%) and SWARMP (40-46%) are relatively consistent. This suggests that there is little correlation between height and filing status. The distribution of UNSAFE filing across height is between 24% and 30%, except for buildings over 40 stories tall, which have the lowest proportion of UNSAFE filings (19%).

	Number of Stories					
	6-10	10-15	15-20	20-40	40+	Total
SAFE	2,291	760	402	396	83	**3,932**
SWARMP	2,935	1,053	540	506	108	**5,142**
UNSAFE	,612	654	410	312	44	**3,032**

	Number of Stories				
	6-10	10-15	15-20	20-40	40+
SAFE	34%	31%	30%	33%	35%
SWARMP	43%	43%	40%	42%	46%
UNSAFE	24%	27%	30%	26%	19%

Table 8: **Report Status by Building Height (Cycle 9; Not Including NRF)**

7 Lessons From Historical Data of the FISP Program

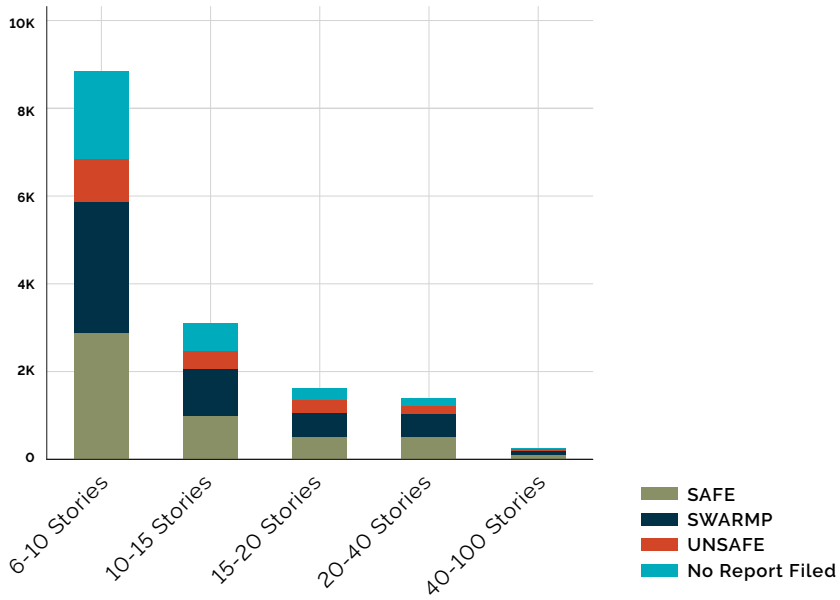


Figure 7: Number of Reports by Building Height (Cycle 9)

7.4 Building Age

Trends in filing status by age brackets mirror the trend for FISP buildings overall. However, when we examine the data more closely, further conclusions can be drawn about the relationship between age and status.

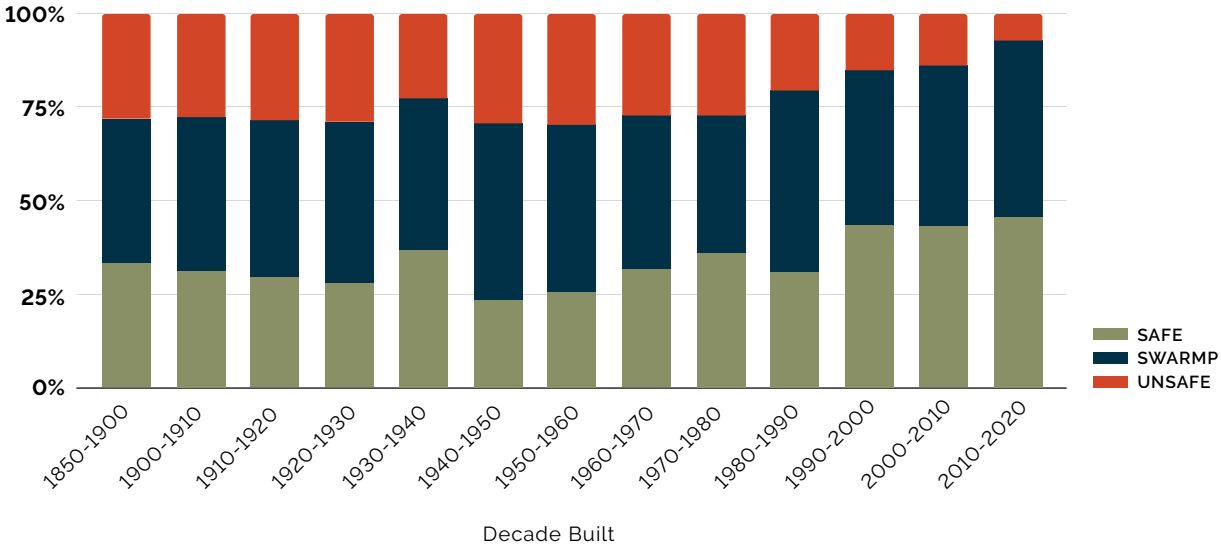


Figure 8: Report Status by Building Age, Percentage (Cycle 9)

7 Lessons From Historical Data of the FISP Program

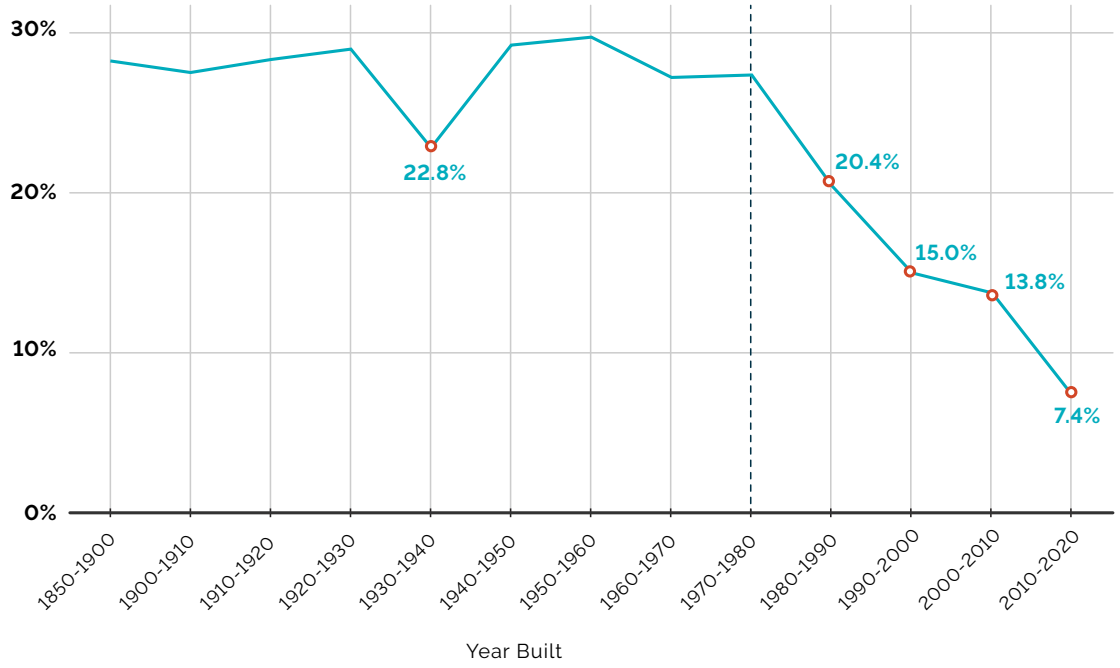


Figure 9: **Percent of UNSAFE Filings by Decade (Cycle 9)**

The proportion of UNSAFE filing to overall filings within an age bracket is higher for older buildings. However, at approximately the 40-year mark (1970-1980 for Cycle 9), the proportion of UNSAFE filings appears to level off and remains relatively constant for all buildings older than 40 years. This data shows no conclusive pattern when disaggregated into specific building types.

7 Lessons From Historical Data of the FISP Program

7.5 Building Façade Materials

There are certain building systems and materials that have a higher proportion of UNSAFE filings than others. Generally, masonry systems and buildings with terra cotta have a higher proportion of UNSAFE filings than curtain wall systems, which is also reflected in buildings with metal and glass materials.

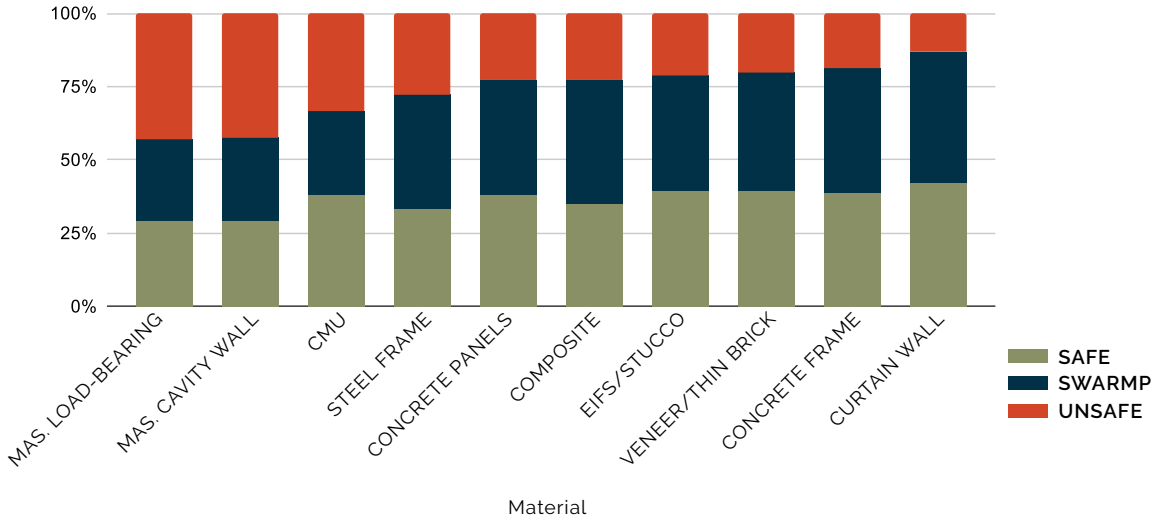


Figure 10: **Report Status by Façade System (Cycles 6-9)**

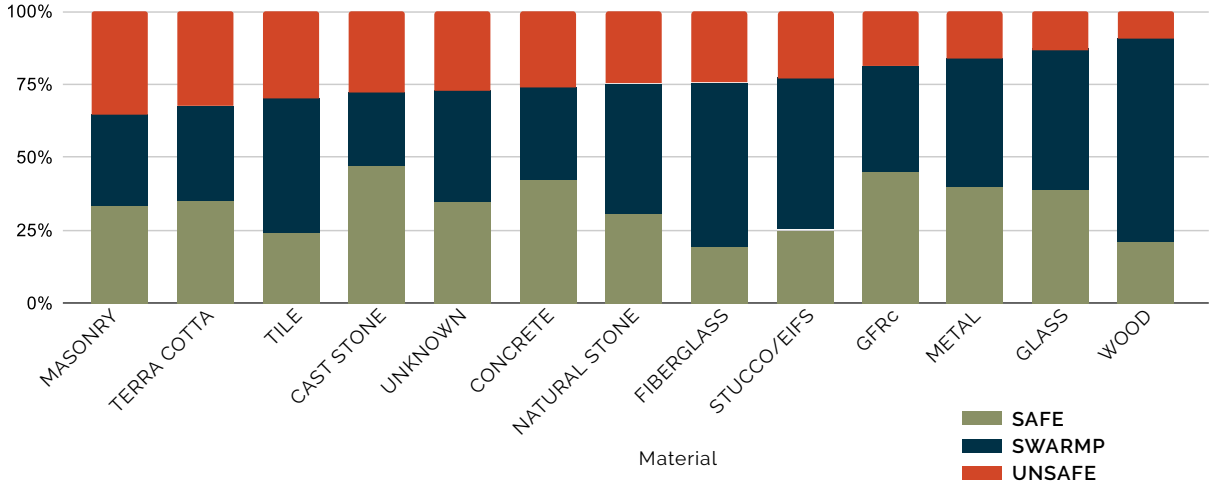


Figure 11: **Report Status by Façade Material (Cycles 6-9)**

Historical Data of the FISP Program Recommendation References

NOTE: This reference box reviews the report recommendations that are supported by the preceding section. The full text of the recommendations can be found in Section 8.

Recommendations 4 and 7: Abbreviated Filing Program Drone Study

The historical FISP data reveals several trends. Most notably, older buildings are more likely to be filed as UNSAFE. On average, 14% of buildings constructed between 0 and 40 years of the FISP cycle filing deadline are filed as UNSAFE, compared to 28% of buildings constructed more than 40 years prior.

Therefore, the historical FISP data analysis supports the recommendation that any adjustment to the filing program that seeks to create separate classifications or tiers of properties allow for relaxed criteria for buildings constructed within 40 years of the filing window. The data does not support any adjustment to the criteria based on building height.

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8 Recommendations

8 Recommendations

The following recommendations are based on the evidence acquired during this study, including stakeholder feedback, historical records and available published testing data on façade material and system performance. The sum of this information is reflected in these recommendations, which are designed to adjust FISP to incorporate technology, better address the varied performance of different building typologies, and reduce the number of unnecessary sidewalk sheds.

Throughout the course of this engagement, several common themes emerged from our discussion with the stakeholders discussed throughout this report:

- FISP currently works well and contributes to a safer NYC.
- FISP currently treats all building façades equally, regardless of height, age, or construction materials and systems.
- Certain aspects of the FISP rules and administration can be improved to better address the diversity of façade construction types in NYC.
- Within the stakeholder community, inconsistencies exist in the interpretation of FISP.

Our recommended improvements to FISP focus primarily on the following objectives:

- Make sidewalk sheds rarer without compromising public safety.
- Make FISP more flexible and bespoke where appropriate.
- Clarify gray areas for both QEWIs and owners through education and rule changes.
- Streamline administrative bottlenecks to speed up the compliance process.

The recommendations are organized into two broad categories:

- Recommended Policy Changes to Rule or Law (Recommendations 1 through 8)
- Recommended Administrative Changes to DOB Procedure (Recommendations 9 through 11)

These recommendations fall into the following categories:

Five New Requirements/Provisions

- Amend the FISP definitions of UNSAFE and SWARMP for all buildings (Recommendation 1).
- Differentiate "administrative" UNSAFE from actual UNSAFE for all buildings (Recommendation 2).
- Change baseline inspection frequency from every five to every six years for all buildings (Recommendation 3).
- Create an "Enhanced Inspection" option for certain higher-risk façades (Recommendation 5).
- Create a "Reduced Hands-On" option for certain lower-risk façades (Recommendation 6).

One New Program that Owner/QEWI needs to apply for

- Create an "Abbreviated Filing" program for lower-risk façades (Recommendation 4).

Five Recommendations for Further Study and Administrative Changes

- Develop and conduct a pilot program for use of drones (Recommendation 7).

8 Recommendations

- Create a legal alternative to property access agreements (Recommendation 8).
- Improve DOB QEWI help desk system (Recommendation 9).
- Improve presentation of "failure to maintain" violation notices (Recommendation 10).
- Develop and publish a "QEWI Guide" (Recommendation 11).

8.1 Recommended Policy Changes

Recommendation 1

Amend the FISP definitions of UNSAFE and SWARMP.

We propose modifying the definition of UNSAFE in RCNY §103-04 to reflect the severity of the condition rather than basing it on a failure or repair time frame. To make it more consistent with current industry practices, we propose the following definition:

UNSAFE: "A condition of a building wall, any appurtenances thereto or any part thereof identified at the time of inspection that is imminently hazardous to persons or property."

We also propose redefining the definition of SWARMP to include any conditions that require repair, regardless of the imposed repair time frame. In the current rule, conditions are classified as SWARMP only if they are deemed to become unsafe if not repaired within the next one to five years. We propose the following new definition for SWARMP: "A condition of a building wall, any appurtenances thereto or any part thereof that requires repairs or maintenance to prevent deterioration into an Unsafe condition."

This proposed change to the definition of SWARMP would still require that specific repair time frames be assigned to conditions. The specified date does not necessarily represent when the condition will fail or become UNSAFE, but instead indicates when, based on the QEWI's professional judgment, the repair should be completed to avoid causing consequential deterioration of underlying materials in the façade assembly or to avoid allowing the condition to worsen and eventually become hazardous or unsafe. Therefore, SWARMP conditions must still be repaired within the cycle. However, with these revisions, a SWARMP condition may be identified as requiring repair in less than a year without automatically reclassifying the condition as UNSAFE.

To further enhance the process, we propose adding a requirement to the rule that if a SWARMP date passes without completion of the repair, an owner shall request their QEWI to reinspect the condition(s) and file a Subsequent report. In that report, the QEWI will describe the status of the condition(s) and specify the new repair completion time frame(s). Although this is currently permitted within the program, it is not a requirement and is not consistently done.

The current provision would remain that SWARMP conditions must be repaired within the cycle or be reclassified as UNSAFE. The reclassification would be due to the expiration of the deadline, as clarified in Recommendation 2.

8 Recommendations

Recommendation 2

Differentiate conditions filed as UNSAFE due only to unrepaired SWARMP conditions from the prior cycle.

The goal of this recommendation is to reduce the number of sidewalk sheds by more clearly differentiating actual unsafe or hazardous conditions from SWARMP conditions that have been automatically reclassified as UNSAFE (commonly referred to as "Administrative UNSAFE") but are not deemed unsafe or hazardous.

When a new cycle begins, any unrepaired SWARMP conditions from the prior cycle will be evaluated by the QEWI to determine whether a sidewalk shed (or other means of public protection) is required.

Section 3 of the Initial report (TR6) form will be modified to include a checkbox for "UNSAFE (resulting only from unrepaired SWARMP)." This box must be checked if the UNSAFE classification results only from unrepaired SWARMP conditions from the prior report and no public protection is required. However, if the QEWI identifies any actual unsafe or hazardous conditions (either newly discovered conditions or those resulting from unrepaired SWARMP from the prior cycle), the "UNSAFE" box must be checked instead, and public protection installed. In addition, we propose adding two checkboxes on the FISP form for clarity: "Requires Pedestrian Protection" and "No Pedestrian Protection Required."

The benefit of the approach proposed in Recommendations 1 and 2 is that it allows more flexibility in assigning repair time frames to SWARMP conditions without automatically imposing an UNSAFE classification. This, in turn, may help reduce the number of unnecessary sidewalk sheds, potentially decreasing short-term costs as well as long-term repairs for owners.

Recommendation 3

Extend the baseline FISP filing frequency from every five years to every six years and change the required first filing for new buildings from five years to six years from the date of the first TCO or CO.

Since NYC's initial façade ordinance was enacted in 1980, the rules have evolved to incorporate more prescriptive inspection and investigation methodologies (including wall probes), enhanced repair requirements (including the stipulation of time frames) and increased enforcement and oversight by DOB. The current FISP rules impose a level of diligence that clearly exceeds what was anticipated when the five-year inspection interval was specified 45 years ago.

Under the changes proposed in this report, UNSAFE conditions will still require pedestrian protection to remain in place until they are repaired. And SWARMP conditions will continue to be tracked with repair time frames within the cycle, so for many buildings, work and inspection will be ongoing throughout the cycle.

Because certain materials and assemblies have inherently higher rates of deterioration than others, it is not possible to assign a single inspection interval that covers all possibilities. So the assignment of repair time frames by the QEWI in response to a building's specific conditions is an important part of the current bespoke approach that ensures a continual and sufficient level of

ongoing inspections and is much less dependent on the FISP inspection interval. Slightly longer repair-by deadlines for less critical SWARMP conditions would also allow building owners more time to finance and phase repair projects.

In addition, the recommendation for Abbreviated Filing (Recommendation 4 below) accommodates buildings with slower rates of deterioration, and the recommendation for Enhanced Inspection and Filing (Recommendation 5 below) accommodates buildings with higher rates of deterioration. For the baseline FISP schedule, the published data reviewed doesn't demonstrate or suggest a significant degradation of materials or systems from five to six years. However, in our experience – and as confirmed in discussions with several QEWIs – allowing more than six years to pass between inspections increases the risk of overlooking meaningful changes in the conditions.

We also recommend that newly constructed buildings continue to conform to the same inspection interval and cadence as existing buildings. During this study, both QEWIs and private owners expressed opinions regarding inconsistencies in the quality of new construction. There was broad agreement that the first FISP examination should not be postponed or skipped, as the effects of latent construction defects commonly begin to appear during the first several years after construction. DOB reported that for Cycle 9, approximately half of new buildings were filed as SWARMP or UNSAFE in their first FISP report.

This recommendation is expected to result in modest cost savings to owners and slightly reduce DOB's administrative burden. Most importantly, public safety would not be compromised.

Note that in March 2025, the City Council passed a local law amending Section 28-302.2 of the Administrative Code to modify the current five-year FISP inspection interval to "between 6 to 12 years" and to modify the initial examination for a new building to "the eighth year following . . . the issuance of a temporary or final certificate of occupancy." The effective date for these changes is October 1, 2026.

Recommendation 4

Create an Abbreviated Filing program for certain qualifying buildings

The Abbreviated Filing (AF) program is intended for newer buildings (less than 40 years old) with well-maintained façades and permit eligible buildings to have a 12-year cycle for hands-on inspections if they complete visual-only inspections every three years. The QEWI, at their discretion, may require more frequent visual examinations. A regular "full filing" will be required a minimum of every other cycle, i.e., a building cannot be on the AF program for two cycles in a row.

To be eligible for the AF program, a building needs to meet all the following criteria:

a. The building's first Temporary Certificate of Occupancy (TCO) or Certificate of Occupancy (CO) was issued within 40 years of the cycle filing deadline. If a TCO or CO is not available, the owner shall submit another form of evidence of the building's age to DOB for review.

b. The current filing status is SAFE.

8 Recommendations

c. The building has already undergone at least one FISP examination ("full filing").

By completing an application in DOB NOW, the owner and QEWI may request participation in the AF program for an upcoming cycle. DOB will review applications and may reject a submission for any reason, including the building's condition, façade materials or history.

The AF visual-only examination will consist of the following:

a. Buildings under 10 stories tall may be inspected from the ground, setbacks or other vantage points using binoculars or telephoto lenses.

b. Buildings 10 stories or taller will be required to use drone technology that is at least equivalent to eye-level observations performed at a distance no greater than six feet.

If a visual-only examination determines that the façades remain SAFE, the QEWI will file the report and nothing further will be required until the next visual-only or hands-on examination.

If a visual-only examination identifies SWARMP condition(s), the QEWI will assign time frames for repairs within the current full cycle. A QEWI may require a hands-on examination at their discretion if they identify any conditions during the visual-only inspection that warrant further investigation.

If a visual-only examination identifies UNSAFE conditions, the building will be reclassified as UNSAFE. It will then be removed from the AF program and revert to full filing status for the next cycle. It will be an UNSAFE building (i.e., a FISP3 will be issued, public protection will be installed, etc.).

The filing window for the visual-only examination and report will be one year. If an owner fails to file the visual-only report within the filing window for either the third or sixth year, the building will be removed from the AF program for that cycle and will be required to perform a regular FISP examination in the next normal full-filing cycle. If an owner fails to file the visual-only report within the filing window for the ninth year, they will become ineligible to apply for the AF program during the next normal full-filing cycle. Civil penalties will also be assessed for failure to file within the required time frames.

The TR6 form will be modified to include a checkbox indicating an AF visual-only report. The report will be filed in DOB NOW and will be in a shorter and simpler format than a normal FISP report. Approximately 40% of FISP buildings constructed in the past 40 years will qualify for the AF program (or approximately 9% of the total universe of FISP buildings). It is expected to result in a net cost savings for participating owners but will increase the DOB's administrative burden because visual-only reports will be filed every three years for participating buildings.

Recommendation 5

Create an Enhanced Inspection option for certain higher-risk façades.

The Enhanced Inspection (EI) option is intended to target buildings with façade materials or assemblies, or maintenance history that point to patterns of chronic deterioration that need to be assessed more often than every six years because they are deemed to have an elevated risk.

8 Recommendations

Implemented on a case-by-case basis, EI consists of a visual-only examination at the midpoint between (and in addition to) the regular six-year FISP cycle hands-on examinations. While such interim inspections are currently permitted, no specific provisions are cited in the rules. This recommendation will create a formal and consistent process. The EI option will be at the discretion of the DOB, based on site factors including but not limited to past FISP history, violation history, site-specific construction conditions and QEWI feedback. The TR6 form will be modified to include a checkbox identifying a building that has been proposed for EI.

The methodology for conducting the visual-only examination will be the same as that described in the Abbreviated Filing program above. If the visual-only examination reveals changes to the conditions of the façade that would require a change in classification (from SAFE to SWARMP or UNSAFE, or from SWARMP to UNSAFE), a Subsequent report must be filed with DOB, and all other normal procedures in the FISP rules must be followed. If no changes are observed in the conditions that would necessitate its reclassification, then no report needs to be filed with DOB. Regardless, a summary of the midpoint Enhanced Inspection findings will be included as part of the full inspection filing in the next cycle.

The EI option will potentially affect a small percentage of FISP buildings. The recommendation is expected to result in a modest increase in inspection costs for these owners and administrative burden for DOB. The benefit is that it will allow most buildings to have a longer cycle while directing the necessary monitoring of higher-risk buildings.

Recommendation 6

Create a Reduced Hands-On option that increases the 60-foot drop spacing requirement to 100 feet for certain buildings.

The Reduced Hands-On (RHO) option is intended for buildings for which the 60-foot spacing requirement would result in more effort than reasonably necessary to provide actionable data on the façade conditions. To qualify for this, a building must be short enough to be readily observable with binoculars from the street level and must entail a façade type that is repetitive and relatively unornamented.

To be eligible for reduced hands-on inspections, a building must meet all the following criteria:

a. The most recent regular full-filing status was SAFE OR SWARMP.

b. The building is no greater than 20 stories tall.

c. The façades are not constructed of terra cotta, natural stone, cast stone, precast concrete panels, cast-in-place concrete, EIFS or stucco.

d. The building does not contain balconies or exposed concrete "eyebrows."

At least one drop per façade shall be performed. A "drop" in the context of this recommendation is defined as access that permits at least 15 feet of hands-on inspection, regardless of the method used.

This recommendation is expected to slightly decrease inspection costs for participating owners.

8 Recommendations

Recommendation 7

Develop and conduct a pilot program to explore the potential use of drones to qualify buildings for further exemptions from FISP.

The goal of this DOB pilot program would be to perform real-world test cases that explore the potential for drones to further exempt certain buildings from FISP hands-on requirements beyond the exemption provided in the Abbreviated Filing program. The program will also include evaluating the current effectiveness of software tools (including photogrammetry and computer vision) for performing drone imagery analysis.

This pilot program is intended to build on the conclusions made in the 2021 DOB Study Using Drones to Conduct Façade Inspections. The results can inform the development of initial policies for drone use in connection with FISP.

DOB would select several test buildings of differing façade materials for this pilot program. Then a comprehensive 100% envelope drone inspection would be completed by one engineer, while another would oversee the traditional hands-on evaluation. It also may be possible to use existing drone imagery datasets to reduce the need to fly drones as part of this study.

The program would be designed to determine what percentage of critical conditions found during the hand-on inspection can be detected with a drone-based inspection. This will allow DOB to assess the capabilities of drone technology and camera resolution to determine if drone-based visual inspections are able to exceed the capabilities of hands-on human visual inspection.

The pilot study would also compare the difference in cost between the two approaches. We expect the study will be sponsored and funded by DOB or by a nonprofit technical standards organization or university.

Recommendation 8

Create a legal alternative for property access agreements.

While we recognize that this is not in DOB's purview, we recommend the creation of a streamlined, structured legal process for neighbor access agreements. This may include statutory license terms for access.

Currently, adjacent owners typically negotiate an access agreement with the neighboring property, andif they cannot come to terms within a certain amount of time, an owner can initiate a special proceeding under Section 881 of the New York State Real Property Actions & Proceedings law. Under these circumstances, sidewalk sheds may remain in place with no repair work occurring, wasting time, money, and resources.

The RPAPL 881 special proceeding is viewed as a measure of last resort and usually occurs only after attempts have been made to negotiate an access agreement. It can take time to obtain a court order to implement RPAPL 881, but there have been attempts to amend this law to make access simpler and faster. This recommendation would be consistent with these proposed amendments.

One appropriate model for may be the statutory license law in Massachusetts 266 MGL 120B , in which access to adjacent properties is permitted with requirements for notifying the neighboring

owner, demonstration of refusal to grant access, local police department notification, a bond requirement and a limitation on material and tool storage on neighboring property.

8.2 Recommended Administrative Changes

Recommendation 9

Improve DOB's help-desk system for QEWI inquiries.

Currently, QEWIs must submit questions about a FISP filing to an email address (façades@buildings.nyc.gov). Sometimes the questions cannot reach the plan examiner who is currently reviewing the submission related to the question being asked.

The goal of this recommendation is to implementat of a more robust help-desk ticketing system that allows QEWIs to submit filing-specific questions which can be answered directly by the assigned examiner when needed. QEWIs will not need to directly access the assigned plan examiner for all questions, but the help-desk system could allow for internal DOB triage and elevation of questions when appropriate.

Separately, DOB should consider adopting commercially available knowledge hub (FAQ) software that can automatically provide answers by scanning document repositories such as the slide presentations posted to the DOB website. Certain software provides automated responses to general questions, offering answers from the knowledge hub before escalating more complex questions to human representatives.

Recommendation 10

Improve the presentation of "failure to maintain" façade violation notices.

"Failure-to-maintain" façade violation notices should clearly identify and communicate the exact location and nature of the condition. Owners are often unable to understand where the locations in question are, and QEWIs who have had notices forwarded to them also commented that they are typically difficult to understand and that sometimes the location of conditions is not clear. The simple goal of this recommendation is a quicker resolution of hazardous conditions.

Recommendation 11

Develop and publish a QEWI Guide.

Our QEWI and owner interviews revealed the need for a QEWI Guide, which would serve as a resource documenting consistent best practices and as a companion to the FISP rules. The guide may include:

- A summary of the rule changes implemented because of this study.
- Best practices for the classification of certain SWARMP vs. UNSAFE conditions in specific materials.
- Best practices for communicating "maintenance" conditions in the FISP report.
- Best practices for use of drones for façade inspections.

8 Recommendations

- Approaches to public protection for various building configurations and FISP filing statuses.
- An FAQ section.

The guide should be viewed as a "living" document that can be supplemented by periodic updates. Its rollout is envisioned to be supported by webinars, presentations to stakeholder groups, and other forums for education and discussion.

9 Appendices

9 Appendices

9.1 Appendix A: QEWI Questionnaire Responses

Select Responses

General Statistics

- Total respondents: 245
- Average responses per question: 242
- Average free-text responses per question: 159

1. Do you ever classify conditions as SWARMP instead of SAFE even when you believe that they might not require repair within five years?

No	57%
Yes	43%
Total	**100%**

2. Do you ever classify conditions as UNSAFE instead of SWARMP, even when you believe that they do not require repair within one year?

No	69%
Yes	31%
Total	**100%**

3. What types of public protection for unsafe conditions other than sidewalk shed have you recommended before? Select all that apply.

Immediate removal of loose materials	94%
Structural netting	67%
Emergency stabilization	50%
Fence	44%
Vacate area	31%
Sidewalk closing	30%

4. A hypothetical defect was reported SWARMP in the previous cycle and not repaired at the time you filed the current cycle, thus requiring the building to be classified as UNSAFE. Having completed your critical examination, you determine the defect has not progressed at all since the previous cycle and does not present a safety hazard. What would you recommend for public protection?

Recommend a sidewalk shed be installed since the condition must now be classified as unsafe.	56%
Recommend containment netting until repairs can begin.	20%
State clearly in the report that the defect has not progressed since the previous cycle and therefore protection is not required.	44%

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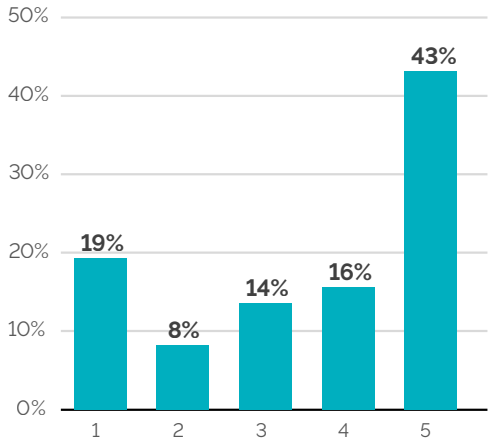
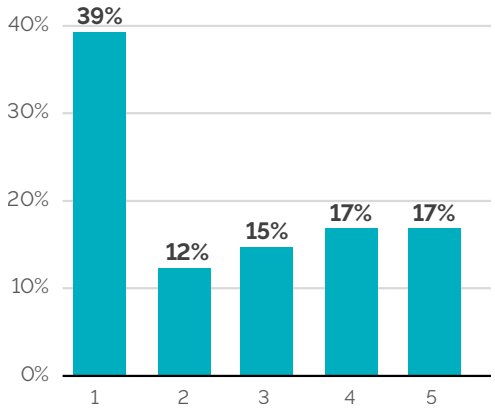
1. In an effort to reduce unnecessary pedestrian-level protection, rate the merit of the following proposed revision to 1 RCNY 103-04 from 1 (no benefit/detrimental) to 5 (very beneficial):

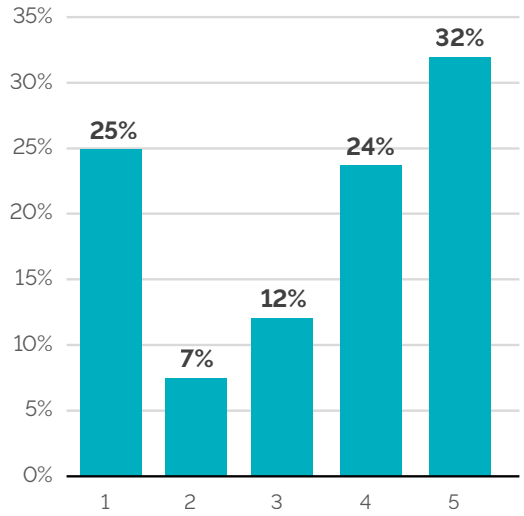
Create a new classification between SAFE and SWARMP for conditions that will not become UNSAFE within five years and do not require repairs prior to filing the next FISP report. (i.e. what is sometimes referred to now informally as "Administrative UNSAFE")



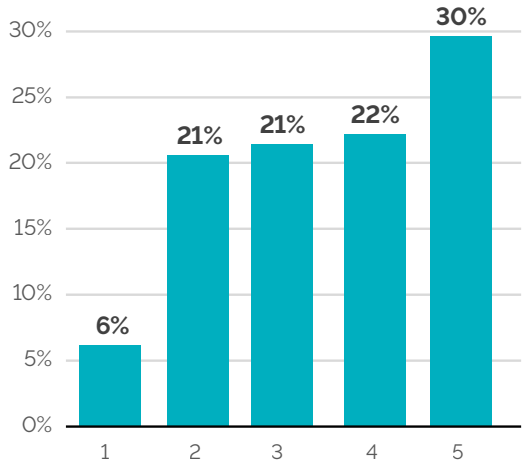
2. To what extent should the height of a building influence the minimum examination interval? Rank from 1 (not at all) to 5 (to a great extent).



3. To what extent should the age of the building influence the minimum examination interval? Rank from 1 (not at all) to 5 (to a great extent).



4. To what extent should the construction materials and systems of the building influence the minimum examination interval? Rank from 1 (not at all) to 5 (to a great extent).



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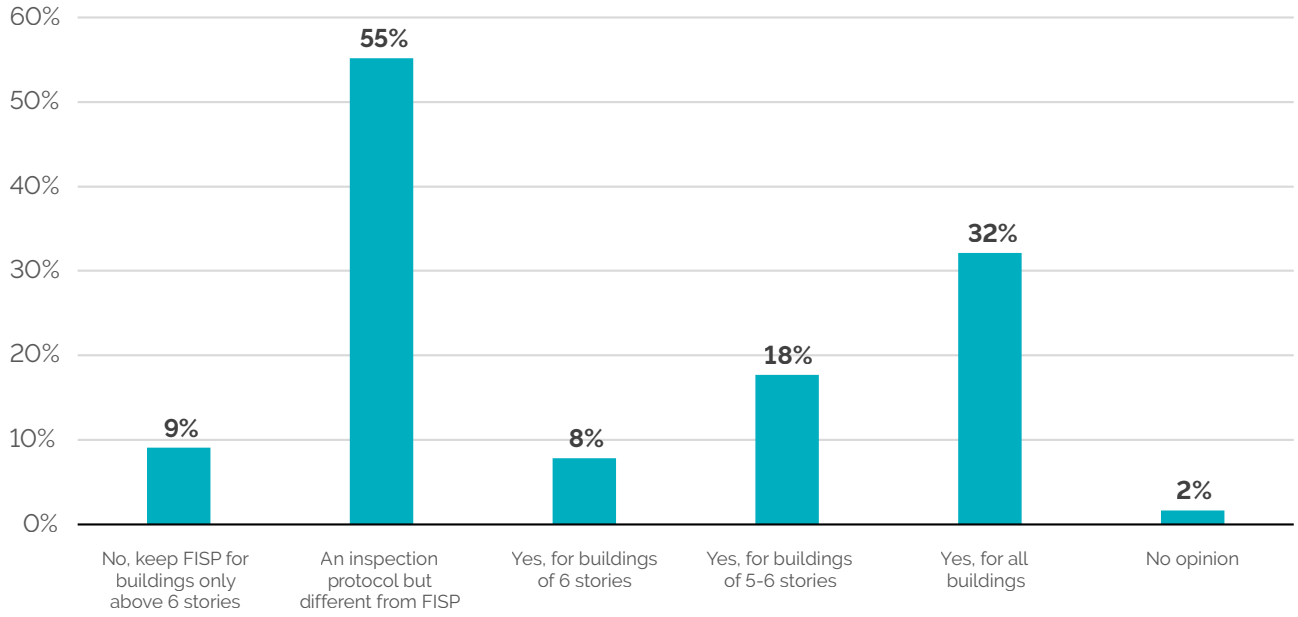
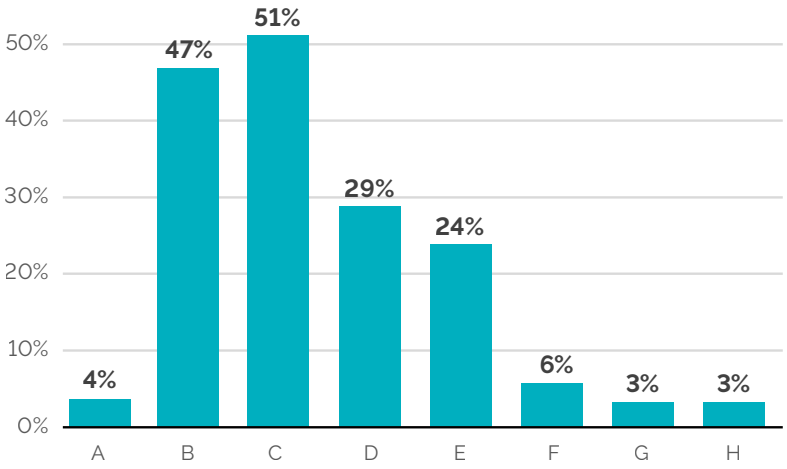
5. Should buildings equal to or less than 6 stories in height (not currently covered under FISP) also be subject to FISP?



6. What is your opinion of the current requirement in 1 RCNY 103-04 for close-up inspections every 60' (select all that apply)?



A	More drops than this should be required in the rule for all materials.	4%
B	More drops than this should be required for certain materials, such as architectural terra cotta, spaced at QEWI's discretion.	47%
C	It is appropriate for most buildings.	51%
D	Fewer drops than this should be allowed for certain materials, spaced at QEWI's discretion.	29%
E	Fewer drops than this should be allowed for certain materials, if substantiated by additional information such as drone photography.	24%
F	Fewer drops than this should be required in the rule for all materials.	6%
G	No drops should be required in the rule.	3%
H	Drops should be performed solely at QEWI's discretion.	3%

1. Starting in Cycle 9, the FISP rules require enhanced investigation of masonry cavity-wall construction (including probes). Which other construction types warrant a similarly prescriptive investigation methodology? Select all that apply.

Probes should be required on a case-by-case basis and where distress is apparent.	81%
Architectural terra cotta	36%
EIFS	19%
Metal panels	17%
None	6%

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2. What technologies are you currently using to perform façade examinations? Check all that apply.

Site inspection/drawing markup software	58%
Tablets	53%
Drones	31%
None of above	25%
360 camera (e.g., Insta360)	10%
3D scanner (e.g., Matterport)	8%
LiDAR	5%
Artificial intelligence software	4%
Photogrammetry, gigapixel imagery	3%
Borescope	2%

3. What types of access solutions do you use to perform the Physical Examination ("Close-Up")? Check all that apply.

Boom lift/bucket truck or equivalent	92%
Swing stage scaffolding	89%
Fire escape	86%
Building maintenance unit (BMU) or "house rig"	50%
Industrial rope access	41%

4. In your experience, drones and other technology

Can be used to determine location of close-up inspections.	61%
Should not be used to replace required close-up inspections.	54%
Can reduce the extent of close-up inspections prescribed in the rule.	39%
Can eliminate the need for any physical inspections.	2%

5. As a QEWI, what important data or documents could be valuable in better understanding the conditions of a particular building façade? Check all that apply.

Previous FISP reports.	98%
History of repairs and alterations.	96%
Original construction documents and detail drawings.	94%
Previous special and progress inspections.	68%
Original specifications and/or manufacturer's cut sheet.	60%
Material testing data.	50%

9.2
Appendix B:
Comparison of Façade Ordinances

City	Year Enact-ed	Most Recent Update	Code or Standard Based On	Building Height	1st Report Required	Frequency of Cycle	Subject Walls	Visual Inspections
New York, NY	1980	2020		> 6 stories	5 years after first TCO	Every 5 years (staggered in sub-cycles based on building's block number)	All walls except those < 12" from adjacent	100% visual in addition to hands-on requirements
Chicago, IL	1996	2016		> 80'	2 years after initial occupancy (regardless of Building Category) for buildings eligible for the "Short Form Only" program. 2 / 4 / 6 years after initial occupancy (depending on Building Category) for buildings not eligible for the "Short Form" program.	Hands-on Critical Examinations occur every 4, 8, or 12 years depending on Building Category, which is determined by the presence of corrodible metal in the façade. Visual-only Ongoing Inspections ("Short Form") are required every 2 years between Critical Examinations. Under the 2016 amendments, buildings previously filed as SAFE or SWARMP may qualify for the Short Form Only program, allowing visual-only inspections every 2 years with no hands-on Critical Examination requirement.	All walls except light courts enclosed by walls on all sides.	100% visual in addition to hand-on requirements during Critical Examination. Can do less than 100% visual for Ongoing Inspections conducted every 2 years between Critical Examinations. Can do less than 100% visual under the "Short Form Only" program.
Boston, MA	1995	2022		> 70'	10 years after CO	Every 5 years (occupied) Every year (unoccupied) If building "substantially improved" in prior 5 years, can go 10 years from CO	All exterior walls and appurtenances	For bldgs. < 125' height, visual only
Philadelphia, PA	2010	2014		Bldgs 6+ stories in general Bldgs w/appurtenances > 60' high Bldgs > 2 stories in specific locations	10 years after CO	Every 5 years (staggered 1 year by decade of construction). If building "substantially restored" in prior 5 years, Owner may request waiver of current cycle.	All walls except those < 12" from adjacent	Extent to be determined by registered design professional
San Francisco, CA	2016	N/A	ASTM E2270	5+ stories and of Construction Types I, II, III, or IV (essentially defined by combustibility)	Staggered by 2 years based on date of construction: Before 1910: 12/31/2021 1910-1925: 12/31/2023 1926-1970: 12/31/2025 After 1970: 12/31/2027 For buildings with construction permits filed after 1/1/1998, the first inspection is required 30 years after the final CO. If a building has had a comprehensive façade inspection or major façade work within the past 10 years, the owner may request a waiver of the initial inspection.	Every 10 years (staggered by 2 years based on date of construction).	All walls except those < 36" from adjacent and walls within enclosed exterior courtyard	General Inspection > 6' from façade. 100% of exterior walls and appurtenances on public ROW (not horizontal roof areas)

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City	Hands-on Inspections	Mandatory Probes	Classification Categories	Public Protection Requirements	Drones Specifically Mentioned	Adjacent to Water	Avg Freeze-Thaw Cycles Per Year
New York, NY	One drop at maximum interval of 60' on all facades on public ROW	Mandatory for cavity wall construction every other cycle	SAFE SWARMP UNSAFE	Upon finding an UNSAFE condition, the QEWI "must advise the owner of appropriate protective measures to be taken, and include recommended type and location of public protection."	Yes	Yes (Hudson River, East River, Atlantic Ocean)	30
Chicago, IL	One drop minium on each public ROW for buildings undergoing Critical Examination (a "drop" is defined as 24' wide section of building). No drops required for Ongoing Inspections.	One probe per elevation during Critical Examination if: - Bulding is >50 years old - Façade is masonry, stone or terra cotta - Façade has corrodible or corrosion-resistant metal fasteners.	SAFE SWARMP UNSAFE AND IMMINENTLY HAZARDOUS	No specific requirement for installing pedestrian protection is mentioned in the rule itself. However, the Municpal Code section 13-196-037 says that if a building is determined to be in an unsafe condition, the building commissioner may require the owner to "take appropriate precautionary measures, which may include the erection of a construction canopy."	No	Yes (Lake Michigan)	30
Boston, MA	For bldgs. > 125' height, a "representative sample" of exterior walls as determined by registered design professional	No	SAFE SWARMP UNSAFE	For an UNSAFE condition, an owner much take actions necessary to protect public safety (such as sidewalk shed, fences, safety netting) within 24 hours.	Yes	Yes (Atlantic Ocean)	15
Philadelphia, PA	"Representative sample" of exterior walls as determined by registered design professional. Separate fire escape inspection requirement (every 10 years).	No	SAFE SWARMP UNSAFE	For an UNSAFE condition, an owner much take actions necessary to protect public safety (such as sidewalk shed, fences, safety netting) within 24 hours.	No	Yes (Delaware River)	20
San Francisco, CA	Based on ASTM E2270 and ASTM E2841. Any areas identified as Unsafe during the General Inspection require a Detailed Inspection at representative locations—within 6 ft of the façade and tactile, including probes and NDT. Per ASTM E2270, the Detailed Inspection must include 25% tactile inspection of areas where the Unsafe condition was found visually.	No (optional)	UNSAFE Report Conclusions: Cat 1 - Requires repair / stabilization following temporary mitigation of UNSAFE conditions Cat 2 - Requires repair, stabilization, and maintenance Cat 3 - Requires ordinary maintenance	No specific requirement for installing protection is mentioned in the rule itself. However, the rule is based on ASTM E2270, which does mention the installation of public protection.	Yes	Yes (Pacific Ocean)	0

City	Year Enacted	Most Recent Update	Code or Standard Based On	Building Height	1st Report Required	Frequency of Cycle	Subject Walls	Visual Inspections
Jersey City, NJ	2021	N/A		> 6 stories in general > 4 stories for masonry facades		Initial inspection 12/31/2023, then every 5 years thereafter	All exterior walls and appurtenances	All exterior walls and apppurtenances
Singapore	2020	N/A	*Guidelines on Periodic Façade Inspections* (Published by Singapore's Building and Construction Authority)	Highest point of building (even if not roof) is > 13m (43ft) high	20 years after construction	Every 7 years	All walls	100% of façade
ASTM E2270-14 Periodic Inspection of Building Façades for Unsafe Conditions		2014		N/A	N/A	Every 5 years		General Inspection > 6' from façade. 100% of exterior walls and appurtenances on public ROW (not horizontal roof areas)

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City	Hands-on Inspections	Mandatory Probes	Classification Categories	Public Protection Requirements	Drones Specifically Mentioned	Adjacent to Water	Avg Freeze-Thaw Cycles Per Year
Jersey City, NJ	Does not specify any "hands-on".	No	SAFE UNSAFE	If the inspection indicates façade repairs are needed, the owner must "immediately undertake such measures as may be required to secure public safety".	No	Yes (Hudson River, Atlantic Ocean)	25
Singapore	10% of the surface area of each elevation	Not required, but recommended where façade has "concealed supports" that cannnot be inspected. Mandatory if building facades require a "full façade investigation" based on close-range inspection. This would include in-situ testing.	SAFE REQUIRES REPAIR UNSAFE	For REQUIRES REPAIR and UNSAFE conditions, the Competent Person will assess whether immediate measures, such as "cordoning off and erecting of protective hoarding" are needed.	Yes	Yes (South China Sea)	0
ASTM E2270-14 Periodic Inspection of Building Façades for Unsafe Conditions	Any areas found to be UNSAFE by General Inspection require a Detailed Inspection at representative areas (< 6' from façade and "tactile," including probes and NDT). Detailed Inspection consists of 25% "tactile" inspection of areas where UNSAFE condition found by visual inspection.	Yes, as part of Detailed Inspection, as follows: Category A: (>20 year old brick, stone, concrete, cast stone, terra cotta, glass block, GRFC, stucco, barrier EIFS, and wall panels with adhesive attachment) 3 probes per façade plus 3 pull tests per elevation for adhesively attached components. Category B: (5-20 year old barrier EIFS system, or any system where movement or rust is apparent) 3 probes per facade. Category C: (>20 year old mechanically attached panels) 3 probes per facade. Category D: (5-20 year old mechanicaly attached panels) 3 probes per facade only when movement or rust is apparent. Category E: (>20 year old "all other materials") 3 probes per facade only when movemetn or rust is apparent. Category F: (5-20 year old "all other materials") NO PROBES REQ'D	Ordinary Maintenance Requires Repair / Stabilization Unsafe Condition	Notify owner of the need to take immediate action to protect the public by appropriate means and that such protection shall not be removed until the unsafe condition has been remedied.	No	N/A	N/A

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CHAPTER 100

Subchapter C Maintenance of Buildings

§103-04 Periodic Inspection of Exterior Walls and Appurtenances of Buildings.
(a) ***Definitions.*** For the purposes of this section, the following terms have the following meanings.

Acceptable report. A technical examination report filed by a Qualified Exterior Wall Inspector that meets the requirements of the Administrative Code and this rule as determined by the Department.
Amended report. A technical examination report filed by a Qualified Exterior Wall Inspector who certifies that the unsafe conditions reported in the initial report have been repaired and that no unsafe conditions exist at the building.
Appurtenance. An exterior wall element including, but not limited to, fire escapes, exterior fixtures, ladders to rooftops, flagpoles, signs, parapets, railings, copings, guard rails, window frames (including hardware and lites), balcony and terrace enclosures, including greenhouses or solariums, window guards, window air conditioners, flower boxes, satellite dishes, antennae, cell phone towers, and any equipment attached to or protruding from the facade.
Cavity wall construction. An exterior wall system consisting of an exterior veneer with a backup wall whereby the exterior veneer relies on a grid of metal ties to the backup wall for lateral stability. The two layers of wall are separated by an air cavity which may or may not be filled with insulation.
Critical examination. An examination conducted to review the exterior of a building and all parts thereof to determine whether the exterior walls (facades) and the appurtenances are either safe, unsafe, or safe with a repair and maintenance program (SWARMP) and whether, in the judgment of a Qualified Exterior Wall Inspector, they require remedial work.
Filed report. A report shall be deemed filed with the Department when it has been received by the Department. The filed report must be completed in accordance with the provisions of paragraph (3) of subdivision (c) of this section.
Filing window. The two-year period during which a report for a particular building may be filed without penalty.
Public right-of-way. A public street, avenue, sidewalk, roadway or any other public place or public way.
Qualified Exterior Wall Inspector (hereinafter "QEWI"). A qualified exterior wall inspector as defined in section 101-07 of the rules of the Department.
Report filing cycle. The five-year time interval established by the Commissioner for the filing of each successive report for each successive critical examination of every building subject to the requirements of Article 302 of Title 28 of the Administrative Code.
Safe condition. A condition of a building wall, any appurtenances thereto or any part thereof not requiring repair or maintenance to sustain the structural integrity of the exterior of the building and that will not become unsafe during the next five years.
Safe with a repair and maintenance program (hereinafter "SWARMP"). A condition of a building wall, any appurtenances thereto or any part thereof that is safe at the time of inspection, but requires repairs or maintenance during the next five years, but not less than one year, in order to prevent its deterioration into an unsafe condition during that five-year period.
Staggered inspection cycle. The separate time intervals for filing reports of critical examinations as determined by the last digit of the building's block number, beginning February 21, 2010, and continuing thereafter for each subsequent report filing cycle.
Subsequent report. A technical examination report that is filed by a QEWI after an acceptable report in order to change the status of the building for that report filing cycle to reflect changed conditions or the recommended time frame for repairs of SWARMP or unsafe conditions .
Unsafe condition. A condition of a building wall, any appurtenances thereto, or any part thereof that is hazardous to persons or property and requires repair within one (1) year of completion of critical examinations. In addition, any condition that was reported as SWARMP in a previous report and that is not corrected at the time of the current inspection must be reported as an unsafe condition.

(b) ***Responsibilities of qualified exterior wall inspectors.***

(1) A QEWI must conduct critical examinations and file reports in accordance with this section and Article 302 of Title 28 of the Administrative Code.

(2) A QEWI must maintain records of inspections and tests for at least six years and must make such records available to the Department upon request.

(3) A QEWI must maintain insurance coverage as set forth in paragraph (7) of subdivision (b) of section 101-07 of these rules. Copies of such insurance policies must be made available to the Department upon request.

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(c) ***Critical examinations.***

(1) *Periodic inspection requirements.* In order to maintain a building's exterior walls and appurtenances in a safe condition, and in accordance with Article 302 of Title 28 of the Administrative Code, a critical examination of all parts of all exterior walls and any appurtenances of all existing buildings greater than six stories in height or buildings hereafter erected that are greater than six stories in height, except for those parts of any exterior wall that are less than twelve inches (305 millimeters) from the exterior wall of an adjacent building, must be conducted at periodic intervals.

(2) *Inspection procedures.*

(i) Before any exterior wall for any building is critically examined, the QEWI retained by or on behalf of the owner of the building must carefully review the most recent report and any available previous reports. The Department will maintain a file of such reports submitted in conformance with Article 302 of Title 28 of the New York City Administrative Code, and furnish copies upon payment of fees set forth in the rules of the Department.

(ii) Examination of a building's exterior walls and appurtenances thereof pursuant to section 28-302.2 of the Administrative Code must be performed by or under the direct supervision of a QEWI retained by the owner of the building or his or her representative.

(iii) The QEWI must design an inspection program for the specific building to be inspected, which must include, but not be limited to, the methods to be employed in the examination. The inspection program shall be based on the considerations of the type of construction of the building's envelope, age of the material components, the façade's specific exposure to environmental conditions and the presence of specific details and appurtenances. Consideration shall be given to the façade's history of maintenance and repairs as described in previous reports and submittals to the Department. Architects, engineers, individuals with a bachelor's degree in architecture or engineering and three (3) years of relevant FISP inspection experience, or individuals with five (5) years of relevant FISP inspection experience working under the QEWI's direct supervision, may be delegated to perform selected inspection tasks.

(iv) The methods used to examine the building must permit a complete inspection of same. Except as herein required, the use of a scaffold or other observation platform is preferred, but the QEWI may use other methods of inspection as he/she deems appropriate. Physical examinations from scaffolding or other observation platform ("close-up inspections") must be performed at intervals of not more than 60'-0", with the minimum number of physical examinations per total length of facade elevation noted in the table below. If the building does not front a public right-of-way, physical examinations are to be performed at a representative sample of the façade elevations with a minimum of one examination per building. All physical examinations shall occur along a path from grade to top of an exterior wall fronting each public right-of-way, using at least one scaffold drop or other observation platform configuration, including all exterior wall setbacks. The QEWI shall determine the most deleterious locations and perform physical examinations at those locations. The use of drones, high resolution photography, non-destructive testing, or other similar methods does not eliminate the requirements for close-up inspections.

Length of Facade Elevation Fronting Public Right of Way (L)	Minimum # of Physical Examinations
L <60'-0"	1
60'-0"≤ L <120'-0"	2
120'-0"≤ L <180'-0"	3
180'-0"≤ L <240'-0"	4
240'-0"≤ L <300'-0"	5
300'-0"≤ L <360'-0"	6
For every additional 60'-0" of length of facade, one additional close-up inspection is required.	

(v) The known history of the building, the nature of the materials used and the conditions observed will dictate the extent of the critical examination. The QEWI must apply a professional standard of care to assess the building's condition and the individual building systems that comprise the facades, including splitting or fracturing of terra cotta on buildings, cracking of masonry and brick work in brick faced buildings, mortar and other joint materials, loosening or corrosion of metal anchors and supports, water entry or flow within cavities, mineral build-up, coping materials, movement of lintel/shelf angles, and must ascertain the cause of these and such other conditions detected. The QEWI must order any special or additional inspections and/or tests, including sounding procedures, that may be required to support investigations and to determine the causes of any defects. Starting with the ninth cycle,

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probes must be performed on all cavity wall construction, and, at a minimum, during every subsequent odd-numbered cycle. The QEWI shall determine the location of the probes, which shall be in areas not previously renovated. At a minimum, a single probe must be completed along each required close-up inspection interval. The QEWI must ensure that the number and size of the probes are sufficient to report the presence, condition, and spacing of wall ties. The removal of portions of the façade in order to facilitate the performance of tests may require a permit from the Landmarks Preservation Commission.

Exceptions:

The requirement for probes may be waived in the following cases:

1. When a repair campaign addressing cavity wall ties has been completed within ten (10) years of the filing deadline and the owner or QEWI provides proof of such repair including, but not limited to, photographs, special inspection reports, and construction documents, which must be submitted and found acceptable by the Department.
2. When the first Temporary Certificate of Occupancy or Certificate of Occupancy for a new building was issued within ten (10) years of the filing deadline and the owner or QEWI provides evidence of tie installation including, but not limited to, photographs, special inspection reports, and construction documents, which must be submitted and found acceptable by the Department.
3. Where a QEWI proposes an alternate method of determining tie condition and spacing, which must be submitted and found acceptable by the Department.

(vi) Photographs must be taken and/or sketches made during the course of the Critical Examination to properly document the location of all conditions observed that are either unsafe or SWARMP.

(vii) Upon discovery of any unsafe condition, the QEWI must immediately notify the Department and the owner of the building. The QEWI must identify the location of any unsafe condition, advise the owner on the appropriate protective measures to be taken, and include the recommended type and location of public protection in the notification to the Department.

(viii) Completion of a critical examination means that the QEWI has conducted a final physical inspection to determine that the building conditions as described in the report are consistent with the actual conditions. Such final inspection must, at a minimum, include an actual visual examination and a walk around with binoculars or other inspectorial equipment. A drive-by inspection is not acceptable.

(3) *Report requirements.*

(i) The QEWI must file with the Department a written report describing the result of the critical examination, clearly documenting all conditions noted during the inspection and stating that the inspection was performed and completed in accordance with the Administrative Code and this rule. A separate acceptable report must be prepared and filed for each building with a control number, as provided by the Department, even if it shares a Block and Lot number with other structures. The QEWI must also submit a copy of the report to the owner of the building.

(ii) Technical information in the report must adhere to and follow the sequence and the labeling of the report requirements as listed in subparagraph (iii) of this paragraph, and must be provided on such forms and in such format as the Department requires. Additional information may be provided. If a requirement is not applicable, this must be indicated on the report.

(iii) The report must include an executive overview that consists of a summary of findings and recommendations, a concise statement of the scope of the inspection and findings, the conclusions and recommendations and a determination as to whether the building is categorized as "safe," "SWARMP," or "unsafe." The report must also include, but not be limited to:

(A) The address, any a.k.a. addresses, Block and Lot number, the Building Identification Number ("BIN"), the landmark status of the building, and the location from the nearest cross street;

(B) The name, mailing address and telephone number of the owner of the building, or, if the owner is not an individual, the name, mailing address, telephone number, position/title of a principal of the owner;

(C) A description of the building, including the number of stories, height, plan dimensions, Certificate of Occupancy number if available, usage, and age and type of exterior wall construction, specifying all materials present in the exterior wall;

(D) A detailed description of any distress, settlements, repairs, or revisions to exterior enclosures since the previous report, including, but not limited to, settlement, splitting or fracturing, displacement, bulging, cracking of any exterior wall elements, loosening of metal anchors and supports, water entry, movement of lintel or shelf angles, or other defects or changes;

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(E) A detailed description of the procedures used in making the critical examination;

(F) The following information:

1. The extent and location of all physical examinations performed, including odd-numbered cycle cavity wall probes;
2. The names, addresses, telephone numbers, and license or registration numbers for riggers, contractors, and consultants involved in the critical examination;
3. A location diagram of a discernable scale and with a north arrow, indicating the main entrance, dimensions of the length of each façade elevation, including all setbacks and returns, and nearest cross street and locations and dates of close-up inspections;
4. Dates of the start and completion of the critical examination; and
5. Dated photo documentation of the QEWI and/or his or her employees performing physical ("close-up") inspections.

(G) A description, classification, and mapping of each significant condition observed including deterioration and any movement detected and the apparent water-tightness of the exterior surfaces. The description must also include a list of all the exterior appurtenances and their condition. Each condition must be classified as safe, unsafe or SWARMP. If the building is classified as unsafe or SWARMP, the report must include the locations and descriptions of all unsafe or SWARMP conditions. If unsafe conditions are noted, the report must recommend the type and location of public protection. Photographs must be labeled and the report must include key plans, key elevations and locator drawings documenting these conditions. Guards and railings, including, but not limited to, balconies, must be inspected to ensure that their components (balusters, intermediate railings and panel fillers) are positively secured against movement (e.g. by welds, bolts or screws). If any guard or railing, balcony enclosure, or greenhouse structure is found not to be positively secured, the condition is classified as unsafe and must be made safe pursuant to the requirements of paragraph (5) of subdivision (c) of this section.

(H) An analysis of the causes of the conditions reported as unsafe or SWARMP.

(I) A detailed status report of maintenance work performed up to the date of submission of the report and the maintenance plan implemented for building facades;

(J) A comparison of currently observed conditions with conditions observed during the previous report filing cycle examinations, including the status of the repairs or maintenance performed with respect to the prior conditions. The following must be included and discussed:

1. Work permit numbers relating to façade repairs, including permits for sheds;
2. Job numbers, status and sign-off dates for any façade related jobs, where applicable; and
3. Violation numbers of any open Environmental Control Board ("ECB") façade violations and the status of the repairs of the conditions cited in the ECB violations;

(K) Recommendations for repairs or maintenance of SWARMP and unsafe conditions, including:

1. If a building is categorized as SWARMP:
   A. The recommended time frame for such repairs or maintenance to be performed, which must indicate the date by which the work must be performed (MM/DD/YYYY) to prevent the conditions from becoming unsafe and not the date on which work is planned or scheduled;
   B. Time frames of less than one (1) year, "ASAP," or "immediately," shall not be accepted.

2. If a building is categorized as unsafe:
   A. The QEWI must provide a recommended time frame for repairs to be performed to bring the building to SWARMP or safe status, and must indicate the date by which the work will be completed (MM/DD/YYYY);
   B. Time frames of more than five (5) years will not be accepted.

(L) A list and description of the work permits required to accomplish the necessary work. If no work permits will be required, the reason must be indicated;

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(M) All photographs must be color, clearly legible, dated, and high resolution. Digital photos must be a minimum of 800 x 600 pixels. Photographs must be arranged into PDF uploads of no larger than 11" x 17". The following photos must be submitted:

1. Elevation photos. Color photographs of the primary house number and at least one view of the entire street front elevation for all reports regardless of the building's filing condition.

2. Detailed condition photos. Color photographs of specific conditions must be clearly labeled and indicate the status designation. Detailed conditions must be located on the mapping of the building's facade required by item G of this subparagraph (iii).

   A. All SWARMP and unsafe must be catalogued.
   B. If building status is safe, submit a minimum of three typical conditions.

3. Cavity wall probe photos. Color photographs of the following items:

   A. each probe opening showing the location and size of the probes;
   B. the interior of the probe showing the cross section of the wall;
   C. the measurement of the spacing of the wall ties;
   D. a close-up of the wall tie type and installation;
   E. any other condition that indicates the soundness of the wall ties and cavity wall;
   F. condition of relieving angle, including flashing and connection; and
   G. condition of substrate.

(N) The classification of the building for the current report filing cycle, as determined by the following guidelines:

1. If there are no unsafe conditions and no conditions that are SWARMP, then the building shall be classified as safe;
2. If there is at least one unsafe condition, then the building shall be classified as unsafe.
3. If there is at least one condition that is SWARMP and there are no unsafe conditions, then the building shall be classified as SWARMP. A report may not be filed describing the same condition at the same location as SWARMP for two consecutive report filing cycles. The QEWI must certify that all of the conditions identified in the previous report as requiring repair have been corrected or the building shall be classified as unsafe;

(O) The seal and signature of the QEWI under whose direct supervision the critical examination was performed.

(4) *Report filing requirements*.

(i) The requirements of this rule apply to all buildings with exterior walls or parts thereof that are greater than six stories, regardless of the information in the Certificate of Occupancy. For buildings that contain six (6) stories above grade plane plus a cellar, where more than half the height of that cellar as measured at any individual exterior wall is above the adjacent ground level, including but not limited to areaways, yards, and ramps, all walls of such building shall be subject to façade inspection. Conditions requiring façade inspections may also include other structures that add to the height of the building as per section BC 504. The Commissioner shall determine which additional buildings and/or parts thereof are required to file in accordance with this rule.

(ii) Buildings required to file a report must do so at least once during each five-year report filing cycle established by the Department.

(iii) An acceptable report must be filed within the applicable two-year filing window to avoid a late filing penalty.

(iv) The report must be submitted to the Department along with a filing fee as specified in the rules of the Department.

(v) Staggered inspection cycle. For every five-year report filing cycle an acceptable report is due in accordance with the following filing windows:

(A) For buildings located within a block ending with the number four (4), five (5), six (6), or nine (9), an acceptable report must be filed within the two-year filing window starting February 21 of years ending in zero (0) and five (5) and ending February 21 of years ending in two (2) and seven (7).
(B) For buildings located within a block ending with the number zero (0), seven (7), or eight (8), an acceptable

report must be filed within the two- year filing window starting February 21 of years ending in one (1) and six (6) and ending February 21 of years ending in three (3) and eight (8).

(C) For buildings located within a block ending with the number one (1), two (2), or three (3), an acceptable report must be filed within the two-year filing window starting February 21 of years ending in two (2) and seven (7) and ending February 21 of years ending in four (4) and nine (9).

Exception: Starting in Cycle 10, owners whose buildings have their most recent status as "No Report Filed" may file a report prior to the start of their designated filing window provided that all applicable civil penalties set out in subdivision (d) of this section are paid at the time of filing.

(vi) Initial reports for new buildings greater than six stories in height must be filed as follows:

(A) The report must be filed five years from the date the first Temporary Certificate of Occupancy or Certificate of Occupancy was issued, if that five year date falls within the applicable filing window according to the last digit of the building's block number as provided in subparagraph (v) of this paragraph; or

(B) If five years from the date the first Temporary Certificate of Occupancy or Certificate of Occupancy was issued falls outside the applicable filing window according to the last digit of the building's block number as provided in subparagraph (v) of this paragraph, then the initial report must be filed within the applicable two-year filing window for the next five-year cycle.

(vii) If contiguous zoning lots under single ownership or management contain multiple buildings that are considered one complex where at least two buildings of more than six stories in height fall into different filing windows as described above in items (A), (B) and (C) of subparagraph (v) of this paragraph, the owner or management must choose one of the following report filing options:

(A) An acceptable report for each building to which this rule applies may be filed separately according to the filing window corresponding to the last digit of that individual building's block number; or

(B) The owner or his or her representative may choose one of the applicable filing windows and file a report for all of the buildings within that filing window, regardless of that building's individual filing window. The owner or his or her representative must inform the Department 180 days prior to the end of the assigned filing window if this option is chosen. If an owner or representative chooses this option, the owner or representative must continue to file under this same filing window for the duration of the owner's ownership of the property.

(viii) A report must be filed within sixty (60) days of the date on which the QEWI completed the critical examination (final inspection date), as defined in subparagraph (viii) of paragraph (2) of subdivision (c) of this section. Failure to file a report within sixty (60) days of the completed critical examination requires a new critical examination.

(ix) A report may not be filed more than one (1) year after completion of the close-up inspection.

(x) If the report is not acceptable and is rejected by the Department, a revised report must be filed within forty-five (45) days of the date of the Department's rejection, after which the original file date will no longer be valid. If the report is not acceptable after two (2) rejections, a new initial filing fee as specified in the rules of the Department is required. Failure to submit a revised report addressing the Department's objections within one (1) year of the initial filing requires a new critical examination, including a new close-up inspection.

(xi) A subsequent report indicating revised conditions may be filed within a five-year report filing cycle to change a building's filing status or the recommended time frame for repairs of SWARMP or unsafe conditions for that cycle.

(5) *Unsafe conditions.*

(i) Upon filing a report of an unsafe condition with the Department, the owner of the building, his or her agent, or the person in charge of the building must immediately commence such repairs or reinforcements and any other appropriate measures such as erecting sidewalk sheds, fences, and safety netting as may be required to secure the safety of the public and to make the building's walls and appurtenances conform to the provisions of the Administrative Code.

(ii) All unsafe conditions must be corrected within ninety (90) days from the submission of the critical examination report.

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(iii) If, due to the scope of the repairs, the unsafe conditions cannot be corrected within the required 90 days, the QEWI must recommend a timeframe for repairs as noted in item (K) of subparagraph (iii) of paragraph (3) of subdivision (c). The owner of the building is responsible for ensuring that the conditions described in the critical examination report as unsafe are corrected and all actions recommended by the QEWI are completed within this timeframe. The owner must notify the Department of any deviation from the timeframe to make corrections as specified in QEWI's report. The subsequent report must include supporting documents from the QEWI justifying the request for a new time frame.

(iv) Within two weeks after repairs to correct the unsafe condition have been completed, the QEWI must inspect the premises. The QEWI must promptly file with the Department a detailed amended report stating the revised report status of the building, along with a filing fee as specified in the rules of the Department and the owner must obtain permit sign-offs as appropriate. If the report is not acceptable and is rejected by the Department, a revised report must be filed within forty-five (45) days of the date of the Department's rejection. If the report is not acceptable after two (2) rejections, a new amended filing fee as specified in the rules of the Department is required. Sheds or other protective measures must remain in place until an amended report is accepted; however, the QEWI may request permission for the removal of the shed upon submission of a signed and sealed statement certifying that an inspection was conducted, the conditions were corrected and the shed is no longer required. Permission to remove the shed may be granted in the Commissioner's sole discretion.

(v) The Commissioner may grant an extension of up to ninety (90) days to complete the repairs required to remove an unsafe condition upon receipt and review of an initial extension application submitted by the QEWI, together with:

(A) Notice that the premises have been secured for public safety by means of a shed, fence, or other appropriate measures as may be required;
(B) A copy of the contract indicating scope of work to remedy unsafe conditions;
(C) The QEWI's estimate of length of time required for repairs;
(D) A statement of all applicable permit requirements;
(E) A notarized affidavit by the owner of the building that work will be completed within the time of the QEWI's stated estimate; and
(F) A fee as specified in the rules of the Department.

Note: Financial considerations shall not be accepted as a reason for granting an extension.

(vi) A further extension will be considered only upon receipt and review of a further extension application, together with notice of:
(A) An unforeseen delay (e.g., weather, labor strike) affecting the substantially completed work; or
(B) Unforeseen circumstances (e.g., fire, building collapse); or
(C) The nature of the hazard that requires more than ninety (90) days to remedy (e.g., new wall to be built): or
(D) Progress photos showing current façade repairs.

Note: Financial considerations shall not be accepted as a reason for granting an extension.

(6) *Conditions that are safe with a repair and maintenance program (SWARMP).*
(i) The owner of the building is responsible for ensuring that the conditions described in the critical examination report as SWARMP are corrected and all actions recommended by the QEWI are completed within the time frame recommended by the QEWI, and are not left to deteriorate into unsafe conditions. It is the owner's responsibility to notify the Department of any deviation from the timeframe to make corrections as specified in QEWI's report. The subsequent report must include supporting documents from the QEWI justifying the request for a new time frame.

(ii) A report may not be filed describing the same condition and pertaining to the same location on the building as SWARMP for two consecutive report filing cycles.

(iii) The QEWI must certify the correction of each condition reported as requiring repair in the previous report filing cycle, report conditions that were reported as SWARMP in the previous report filing cycle as unsafe if not corrected at the time of the current inspection, or report corrections that were made in the previous cycle as unsafe if they need further or repeated repair at the time of the current cycle.

(d) ***Civil Penalties.***

(1) *Failure to file.* An owner who fails to file the required acceptable inspection report shall be liable for a civil penalty of five thousand dollars ($5,000) per year immediately after the end of the applicable filing window.

(2) *Late filing.* In addition to the penalty for failure to file, an owner who submits a late filing shall be liable for a civil penalty of one thousand dollars ($1,000.00) per month, commencing on the day following the filing deadline of the assigned filing window period and ending on the filing date of an acceptable initial report.

(3) In addition to the penalties provided in this section, an owner who fails to correct an unsafe condition shall be liable for a civil penalty as detailed in the table below, until the unsafe condition is corrected. Unless the Commissioner grants an extension of time to complete repairs pursuant to this section, the penalties will be incurred as detailed in the table below. This penalty shall be imposed until receipt of an acceptable amended report by the Department indicating the unsafe conditions were corrected, the sidewalk shed has been removed and the associated permits are signed off with the Department, including shed permits, or an extension of time is granted by the Commissioner.

	Base penalty	Plus
Year 1	$1000/month	NA
Year 2	$1000/month	$10/linear foot (l.f.)of shed/month
Year 3	$1000/month	$20/l.f. shed/month
Year 4	$1000/month	$30/l.f. shed/month
Year 5	$1000/month	$40/l.f. shed/month

(4) *Failure to correct SWARMP conditions.* An owner who fails to correct a SWARMP condition reported as requiring repair in the previous report filing cycle and subsequently files the condition as unsafe shall be liable for a civil penalty of two thousand dollars ($2,000).

(5) *Challenge of civil penalty.*

(i) An owner may challenge the imposition of any civil penalty authorized to be imposed pursuant to this subdivision by providing proof of compliance. Examples of such proof must include, but are not limited to, a copy of an acceptable initial report, a copy of the acceptable amended report, copies of approved extension of time requests while work was/is in progress or written proof from a QEWI that the unsafe conditions observed at the building were corrected and the violation was dismissed.

(ii) Challenges must be made in writing within thirty (30) days from the date of service of the violation by the Department and send to the office/unit of the Department that issued the violation. The decision to dismiss or uphold the penalty shall be at the sole discretion of the Department.

(e) ***Full or partial penalty waivers; eligibility and evidentiary requirements.*** Owners may request a full or partial waiver of penalties assessed for violation of Article 302 of Title 28 of the Administrative Code, the New York City Building Code and/or rules enforced by the Department. Requests must be made in writing and must meet eligibility and evidentiary requirements as follows:

(1) *Owner status.*

(i) A new owner requesting a waiver due to change in ownership must submit proof of a recorded deed evidencing transfer of ownership to the current owner after penalties were incurred, as well as any other documentation requested by the Department, and only in one of the following circumstances:

(A) A new owner of a property previously owned by a government entity requesting a waiver due to change in ownership must submit official documentation from the government entity affirming that the premises was entirely owned by the government entity during the period for which a waiver is requested.

(B) A new owner who receives a notice of violation for failure to comply with the requirements of this section or Article 302 of Title 28 of the Administrative Code that was issued to the property after the transfer of ownership must submit a recorded deed showing the date that the property was acquired or transferred. The waiver period shall be from the date of the deed to the date of the violation issuance.

(ii) An owner may be granted a waiver of penalties upon submission of a copy of an order signed by a bankruptcy court judge.

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(iii) If a state of emergency is declared that prevents an owner from conducting an inspection, filing a report or correcting unsafe conditions, an owner may be granted a waiver of penalties.

(2) *Building status.* An owner requesting a waiver because the building was demolished must submit city or departmental records evidencing the demolition of the building prior to the filing deadline.

(f) ***Posting of Conditions Certificate.*** A conditions certificate issued by the Commissioner must be posted in a frame with a transparent cover in the lobby or vestibule of the subject building within thirty (30) days of issuance. The certificate must indicate the most recent condition of the building's exterior walls and appurtenances.

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Gary Mancini

Gary is a managing principal and leads Thornton Tomasetti's Restoration and Renewal practice. He has decades of experience managing complex façade and structural assessment and repair projects throughout New York City. His portfolio also includes feasibility studies, peer reviews and forensic analyses.
Gary is a registered QEWI.

Robert Kornfeld

Robert is a principal in Thornton Tomasetti's Renewal practice in New York, specializing in historic preservation, envelope restoration, and building renewal. He is also a QEWI and serves as a lead contact for the firm's historic preservation services, advising clients on strategies that balance sensitive repair with performance and cost-effectiveness.

Charu Chaudhry

Charu is an associate principal in Thornton Tomasetti's Renewal practice in New York, specializing in historic preservation, materials conservation and building renovations. Her work includes designing repairs and preservation treatments for restoration and adaptive reuse of historic landmarks. She serves as a lead for the firm's capabilities on materials assessment and historic preservation.

Jonathan Ehrlich

Jonathan is the CEO of T2D2.ai, an AI platform that detects and classifies damage on buildings and infrastructure from inspection imagery to deliver actionable insights. His work has spanned technology, data science and public policy sectors. He collaborated on this report, contributing to policy insights, incorporation of technology solutions and data analysis. He is also a licensed FAA drone pilot.

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The above statements are made consistent with the standards of skill and care generally exercised by other engineering firms acting in the same locale under similar conditions. TT reserves the right to amend this Report and the opinions set forth herein, upon receipt of new or additional information.

NYC Buildings

New York City Department of Buildings
250 Broadway
New York, NY 10007

Thornton Tomasetti

Thornton Tomasetti, Inc.
120 Broadway
New York, NY 10271
ThorntonTomasetti.com