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The Facade Inspection and Repair Laws Keeping Cities Safe

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Early one evening in the spring of 1979, a young Barnard College student, Grace Gold, was chatting with a friend while walking down West 115th Street at Broadway, when a tragedy occurred that would forever change the responsibilities of building owners and architects across the country. A lintel over a 7th floor window came loose and fell, hitting Gold square on the forehead. In minutes, she was dead.

“Falling Masonry Fatally Injures Barnard Student,” ran the headline in the *New York Times* on May 17, 1979. “A lot of pieces fall off this building,” the article quotes a resident of the 11-story apartment building as saying. “We find them often on our balcony.” Racing to quell public unrest about the hazards of ill-maintained buildings, the City Council adopted Local Law 10 of 1980 that February, requiring periodic inspection and repair of the facades of buildings more than six stories high.

As the first compliance deadline loomed, many lauded the intention of the law while criticizing its hastily drafted provisions. Building owners worried about the costs of repairs, design professionals found no set standard for how to perform a proper inspection, and preservationists despaired over the prospect of landlords tearing down historic ornamentation rather than shelling out for restoration work.

In the more than four decades since that law was enacted, New York City’s current facade ordinance, known colloquially as “Local Law 11” after updates under that enumeration passed in 1998, has become more nuanced and detailed, and it’s now the standard by which many other cities have crafted their own, similar, requirements. However, New York was not the first major American city to enact a facade inspection and repair law. That credit belongs to Chicago, which passed legislation to that effect in 1978, after a woman was killed by falling pieces of a terra cotta facade four years earlier.

Unfortunately, fatalities seem to be the primary driver of stronger laws. In 2010, after a man fell to his death when a balcony railing gave way, the NYC Department of Buildings undertook a widespread campaign to evaluate balconies and better enforce the law. Still, that didn’t prevent the 2014 death of a young woman who fell from the balcony of a 17th-story apartment. Vowing swift and comprehensive action, the city amended the existing rules and added a supplementary reporting requirement on balcony and railing stability. As the new rule was adopted in the middle of the filing cycle, many owners balked at the sudden new expense and hurried to carry out the added inspections and repairs in time. The stronger



▲ Periodic inspection and repair of facades might be a hassle, but it keeps buildings safe.

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requirements are now codified in the Facade Inspection Safety Program (FISP), an undertaking so far-reaching that, just to manage the more than 13,000 buildings covered by the law, filing windows are staggered.

With requirements that are increasingly extensive and electronic reporting procedures so complex they require specialized registration as a "Filing Representative," facade ordinance compliance has become a cottage industry. From URLs with iterations of the names and numbers of local laws to social media accounts dedicated to hashtags like #locallaw | #facadeinspection, building owners can fall prey to charlatans claiming to demystify what is, admittedly, a rather confounding process. Labyrinthine government sites like New York's "DOB Now: Safety" don't help matters, with their alphabet soup of acronyms ("QEWI" for Qualified Exterior Wall Inspector; or "SWARMP" for Safe with a Repair and Maintenance Program), an in-crowd jargon that all but assures beleaguered building owners that they are out of their element and had best leave the decoding to professionals.

The truth is both less glamorous and less shrouded in mystique: facade laws, whether in New York or Chicago, Boston or Detroit, are not that different. Nor are they, really, all that complicated. Sure, the specifics differ – 5-year cycles in one city, 10-year cycles in another – but the essentials remain the same. All require a licensed professional architect or engineer, sometimes with additional qualifications, to assess the integrity of exterior walls and, often, appurtenances, and determine what's safe and what's not. For anything that poses a hazard or will do so soon, owners have to make appropriate repairs. That's it, in a nutshell.

Within that spare outline, though, lies a good deal of nuanced evaluation

What's a SWARMP condition?

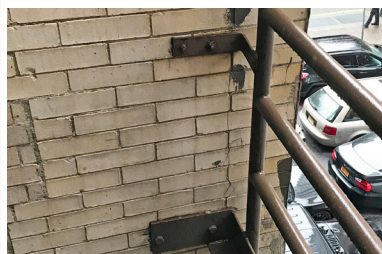
Not quite hazardous, not quite safe, they need maintenance before the next cycle.



▲ Hairline cracks in granite.



▲ Rusted relieving angle and failed sealant.



▲ Balcony railing attached to cracking brick.

that demands knowledge, experience, and foresight on the part of the design professional. Here, we cover the basics of what typical facade ordinances require, why they require it, and how those requirements are met. More importantly, we look at the types of defects these ordinances are designed to uncover, as well as how architects and engineers categorize conditions and set timelines for repairs.

Why Dozens of Cities Now Have Facade Ordinances

"I saw it coming, and what could I do?" lamented a Columbia student who had been walking behind Grace Gold that evening in 1979 when she was struck and killed with a chunk of falling

concrete. The idea behind facade inspection ordinances is that experts in exterior wall assemblies can, by means of a comprehensive, up-close investigation, do just what the hapless Columbia student could not: see a failure coming and know what to do.

Facade ordinances vary city-to-city as to which buildings are covered by the code, with most stipulating a minimum height and some adding age- or material-based criteria. They also range in frequency, with some demanding reports every three years (Saint Louis), others allowing 10 years (San Francisco), and most falling somewhere between, most often five years. Some, notably New York, are minutely prescriptive about report contents and formatting, down to the letter designations of each section and the rather droll requirement of inspector "selfies" to verify presence on site.

What they all have in common, though, is a mandated visual inspection of the building. Generally, the procedures for these inspections are founded on ASTM E2270-14(2019): "Standard Practice for Periodic Inspection of Building Facades for Unsafe Conditions," which covers not only for inspection, but also evaluation and reporting. Many jurisdictions supplement the ASTM standard with additional requirements.

The Inspection Process

When many of the facade ordinances were first enacted, mandated inspections demanded little more than a visual assessment from the ground, usually with binoculars. At the design professional's discretion, inspection of concerning areas might then be undertaken from a manlift or swing staging. As laws became more regimented, such close-up inspections began to be required, with wide variation in the required intervals and methods.

Beginning with Cycle 9 in 2020, New York took the bold step of mandating destructive testing, as well. Every odd-numbered cycle, **probes**, or wall openings, must be performed on all cavity wall construction, at least one along each close-up inspection interval. That means punching holes in exterior walls at least every 60 feet.

Why would New York require this? Missing or deficient wall ties are a widespread enough problem to cause concern, and a building over six stories with a wall that's not tied back correctly is certainly terrifying. Although the law makes exceptions for recently rehabilitated walls, new buildings with evidence of proper installation, and alternative methods approved by the design professional and Department of Buildings, this is still a massive undertaking. Consider: sidewalk protection must be erected, and relevant permits obtained. For large buildings, that means a work permit, as well. Historic structures also must seek approval by the Landmarks Preservation Commission. Still, the life-saving benefits of keeping exterior walls securely attached to buildings are worth the added hassle, especially when performing the probes buys owners 10 years' respite from further invasive testing if no issues are uncovered.

If the architect or engineer has concerns about a building area but probes aren't necessary, there are non-destructive options, including **sounding** and **water testing**. Where underlying conditions cannot be seen, they can



▲ NYC now requires cavity wall probes.



▲ Unsafe conditions pose immediate danger.

sometimes be heard. Sounding can facilitate detection of delamination and incipient spalls, which resonate with a dull sound or pop when the surface of the wall is tapped with a hammer. For timber elements, a dull or hollow sound might signify decay, and loose bolts or rivets can be detected by their characteristic sounds. Distinguishing these tones from the ring of solid, intact material can aid in identifying problems below the surface without destructive testing. Still, suspected deficiencies found via sounding should be confirmed through other, definitive test methods.

Where water penetration is suspected, water testing can verify points of entry, as well as the degree of infiltration. Spray racks set to specified pressures, single nozzles, or sealed test chambers can augment visual inspection by pinpointing the source of observed leaks. While water entry might not rise to the level of a spalled cornice in terms of immediate menace to public safety, over time, wall elements subjected to the continuous presence of moisture will break down. Add to that the apt conditions for breeding toxic mold, and the necessity for remediating water infiltration becomes apparent. Moreover, in many municipalities, the law requires the exterior wall inspector to evaluate the weathertightness of the building enclosure.

Other close-up inspection methods include pushing or pulling against facade elements to test for stability, sealant adhesion testing, and removal

of loose or fractured components to assess underlying conditions, where safe to do so. Laboratory testing of material samples may also prove valuable, as when evaluating the composition of a mortar mix or assessing the quality of concrete.

Drones, also known by the acronym UAS, or Unmanned Aircraft Systems, are remotely piloted airborne devices, and they represent another possible tool to support facade inspections. Chicago and Philadelphia already permit drone use during mandated exterior wall evaluations, and, in 2020, New York undertook a study to evaluate the safety and feasibility of allowing drones for FISP inspections.

Traveling easily into hard-to-access areas, drones capture high-resolution photographs and infrared thermal images of the building enclosure. Drone images can be analyzed through **photogrammetry** to create maps, measurements, and models, and they can be compiled into an **orthomosaic** — a detailed map made from overlaying multiple photographs into a unified image (think Google Earth). Drones can use LiDAR, or Light Detection and Ranging, also known as 3-D laser scanning, to create high-resolution models of areas that would be difficult or impossible to access otherwise.

While drones can provide helpful supplementary information, images, no matter how detailed, cannot take the place of physical, hands-on inspections of building materials. Although drones offer the option of pinpointing areas of distress more accurately and so reducing the need for extensive sidewalk sheds, they also pose their own potential risks, including over-reliance on remotely collected data.

Role of the Exterior Wall Inspector

Much discretion in the facade ordinance compliance process is left to

the design professional overseeing the inspection, so it makes sense for cities to stipulate minimum credentials for these experts. All jurisdictions require a registered architect or engineer to carry out inspections personally or supervise those who do. In New York, rule changes in 2020 hiked the baseline experience requirement for a Qualified Exterior Wall Inspector (QEWI) from one year to seven, with those applying for QEWI status also required to provide a detailed résumé and demonstrate familiarity with codes and rules pertaining to facades. No longer can QEWIs delegate inspection to technicians or tradespeople, as the new rule reserves inspection tasks only for licensed architects or engineers, or those with a degree in architecture or engineering and at least three years of FISP experience.

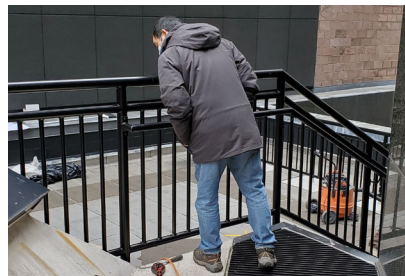
Other cities, notably Boston and Philadelphia, specify that the inspecting professional be not only a licensed structural engineer or architect, but also that they have knowledge and experience explicitly with facades.

Credentials and experience are important when it comes to the design professional undertaking the facade inspection, as some defects may appear minor to the untrained eye yet conceal far graver conditions. When New York City officials conducted follow-up inspections on hundreds of properties during the previous filing cycle, they found many alarming discrepancies between reported conditions and those they observed. The deficient facade inspection reports were one of the key drivers in the changes to the QEWI certification requirements and to the tightening of restrictions on who is eligible to conduct inspection tasks.

That's because the QEWI is tasked with sorting observed conditions into three categories: **Safe**, **Unsafe**, and, perhaps the trickiest of the three,

Safe with a Repair and Maintenance Program (SWARMP). That last can be hard to pin down, and cities have spent decades trying to define its boundaries. If a crack isn't likely to pose imminent harm in the next month, is it SWARMP? What about in the next year? Two years? Five? The design professional must rely on experience, knowledge of material properties, and some degree of educated guesswork to predict the future and anticipate the point of failure.

Recognizing this ambiguity, New York updated the law to specify that conditions requiring repair or maintenance within a year must be declared Unsafe, whereas anything that can wait a year but must be addressed before the next cycle — that is, within five years — should be classified as SWARMP.



▲ Inspectors must evaluate railings, too.

Most other cities rely on the architect or engineer conducting the inspection to use their expert judgement in determining whether something is Unsafe or is just on the way to becoming Unsafe but not there yet. Boston and Philadelphia, for instance, define SWARMP conditions as those “that the Registered Professional does not consider Unsafe at the time of inspection, but requires repairs or maintenance within a time period designated by the Professional in order to prevent its deterioration into an Unsafe condition.” Circular in its reasoning, the statement is ultimately just telling the architect or engineer: we trust you to make the right call.

The Standard Behind the Ordinances

Given these vagaries, it makes sense to wonder if there are any universal standards for facade ordinance inspections, a set of time-tested guidelines for assuring evaluations are carried out appropriately. Fortunately, there are.

ASTM E2270 has been revised many times over the years, and the latest iteration, ASTM E2270-14(2019) lays the groundwork for comprehensive and well-documented facade inspections. Briefly, here is what it requires:

Review Existing Documents. Poorly conceived or implemented repairs, neglected maintenance, and past history of chronic problems can contribute to and aggravate unsafe conditions. Before arriving on site to conduct the visual inspection, the design professional reviews the **facade service history**, as well as any available documents, drawings, and reports. Modifications to the original construction, or a building that wasn't constructed in keeping with the design documents, may point to potential sources of problems.

Prepare Inspection Drawings. A site plan and ground-level floor plan, as well as supplemental floor plans if the footprint changes at higher stories, contextualize the report and must be included together with facade elevation drawings and typical wall details.

Assess Weathertightness. Alongside the facade service history, an interior leak survey can inform selection of locations for close-up inspection and, if needed, probes. Some jurisdictions require a watertightness evaluation as part of the report, as well.

Inspect the Facade. Scanning the facade methodically side-to-side and top-to-bottom from a distance, the design professional first checks for displacement and other concerning features. Based on this general inspection,

(continued on page 6)

Exterior Wall Inspection Laws

City	Covered Buildings	Frequency	Inspection Requirements
Boston	Over 70 feet tall	5 years	Drops on street-facing facades for buildings >125 feet tall
Chicago	Over 80 feet tall	4, 8, or 12 years based on building category and attachment system of exterior walls; at halfway point in cycle, submit ongoing inspection / repair plan	One drop per facade; one probe per facade for masonry buildings older than 50 years
Cincinnati	5 stories / 60 feet tall or more and 15 years or older	5, 8, or 12 years based on building category per exterior wall construction	One drop per facade; may be waived for walls >25 feet from vehicle/pedestrian access
Cleveland	5 stories / 75 feet tall (whichever is shorter) or more and 30 years or older	5 years	Meet or exceed requirements in ASTM E2270-14 for general inspection
Columbus	20 years or older within 10 feet of public right-of-way or open walkway	5 years	Buildings 3 stories or more in "Critical Observation Areas" must be inspected by registered architect or structural engineer
Detroit	5 stories or more	5 years	Building official may require probes to examine concealed conditions
Jersey City	Masonry-clad buildings over 4 stories; all others over 6 stories	10 years	Visual inspection by a licensed architect or engineer
Milwaukee	5 stories or more and 15 years or older	Based on building category as determined by exterior wall construction	One drop per facade with close-up visual inspection; may permit remote observation for hard-to-reach facades
New York	Over 6 stories	5 years on staggered schedule determined by last digit of block number	Close-up inspections at intervals of <60 feet along public right-of-way; probes required for cavity wall construction at least every odd-numbered cycle
Philadelphia	6 stories or more or with an appurtenance >60 feet tall	5 years; initial inspection within 10 years of construction	Inspection by licensed structural engineer or architect with facade knowledge
Pittsburgh	All except 1- or 2-family homes & daycare / housing with 5 or fewer residents	5 years	Inspection requirements determined by licensed engineer or architect
San Francisco	5 stories or more	10 years	Meet requirements in ASTM E2270-14 for general and detailed inspection
Saint Louis	>5 stories or 60 feet plus balconies, stairways, fire escapes on all buildings	3 years	Visual inspection with detailed inspections per design professional's determination
Montreal & Quebec City	5 stories or more	5 years after building's 10th year in operation	Visual inspection with detailed inspections per design professional's determination



▲ Sidewalk sheds protect until repairs are done.

the architect or engineer designs a detailed inspection program specific to the building and situation, considering the type of construction, age, exposure, and presence of specific details. The facade service history and leak survey also influence the methods of the detailed inspection.

With cell phone cameras making high-resolution photography ubiquitous, reports now include photo documentation of every significant condition, including cracking, displacement, splitting or fracturing, settlement, movement, delamination, areas that can retain water, and loose or missing anchors or supports. **Appurtenances**, including parapets, railings, copings, flagpoles, balcony enclosures, window guards, window air conditioners, flower boxes, and other exterior fixtures, may also be included, as required by jurisdiction.

Report Unsafe Conditions.

Immediately upon identifying an Unsafe condition, such as a severely cracked corbel or displaced lintel, the architect or engineer must notify the building owner and the authority having jurisdiction (AHJ), typically the city department of buildings or inspectional services. The design professional must clearly explain to the owner what the hazard is and how to protect the public until it can be fixed.

File a Compliance Report. For the owner, the report provides a comprehensive picture of facade conditions, articulating any areas of concern and

steps needed to remedy these problems. For the AHJ, it serves as a record of the building's safety and integrity. In addition to descriptions of the facade service history and other documentation, as well as the observation methods used, the report classifies each condition Safe, Unsafe, or SWARMP. Keyed drawings and photographs of observed conditions document and locate areas of concern, and the design professional provides recommendations for repair, as well as timeframes for getting the work done.

Reports must bear the signature and seal of the architect or engineer responsible for the inspection. For future reference, both the owner and the AHJ keep a copy of the report on file.

Restoring Safe Status

Once the inspection is complete, it's time to make needed repairs. Each municipality has its own requirements as to how soon work must be carried out, based on the severity of defects found. In general, conditions designated as Unsafe must be addressed without delay, or owners face stiff penalties. In Philadelphia, for example, owners must be notified immediately of any Unsafe conditions and must then act within 24 hours to protect the public. Typically, this means closing off sidewalks near the area of concern, installing sidewalk bridging to protect pedestrians from falling debris, stabilizing the facade element with temporary ties or netting, or all of the above. Within ten days, repairs must begin.

Once Unsafe conditions have been stabilized and remediated, owners must turn their attention to those defects that the design professional determines are provisionally safe, provided steps are taken in the near future to make repairs (that is, SWARMP). If left alone, these conditions will become Unsafe. In fact, most jurisdictions

explicitly disallow designating the same condition as SWARMP in consecutive inspection cycles. The idea is that if something is classified as safe but only with repairs and maintenance, then those repairs and maintenance must be completed – or the condition becomes, administratively at least, Unsafe.

What exactly a “repair and maintenance program” entails can vary greatly. Recommended actions can range from routine mortar joint repointing or window seal repairs to full replacement of building materials, elements, and appurtenances. When faced with a costly and disruptive repair program, such as reconstructing a wall section with deficient veneer anchors, owners might be tempted to take the fastest and least invasive approach to resume normal building operation as expeditiously as possible. However, unless the cause of the defect is addressed, the problem will very likely recur.

Shoddy and ill-conceived repairs often make problems worse: arbitrarily selected mortar applied overtop crumbling joints can trap moisture, exert pressure on adjacent masonry, fail to adhere to the joint, and lead the wall to fail sooner, not later, than it would have if left alone. Appropriately specified mortar applied to a correctly prepared surface with proper technique, on the other hand, rewards the building owner with many years of worry-free service. Only a qualified building exterior expert can diagnose underlying conditions and determine the best way to mitigate future damage.

The Vexing but Much-Needed Facade Laws Owners Love to Hate

As we move through cities, racing to work, strolling to the theater, hauling children to parks, taking in the bracing energy of downtown, we hardly pause to consider how much trust we must place in the integrity of the

(continued on page 8)

representative projects



Facade Ordinance Inspection and Repair

Since Local Law 10 of 1980 was enacted in New York, mandating periodic inspection and repair of exterior walls, Hoffmann Architects + Engineers has been at the leading edge of professional services for facades. We keep up-to-date with every service bulletin, amendment, hearing, and nuance in enforcement and compliance. Before changes to the code go into effect, we are updating our practice to account for them, with approaches that not only stay abreast of evolving requirements, but also keep safety and accountability front-and-center.

With facade ordinance services that span more than four decades, our project list is long and varied. Examples include:



▲ **AT&T / Koppers Tower**, Pittsburgh, Penn., BBI Ordinance 9-2004 Inspection and Testing.

Pfizer World Headquarters

New York, New York
FISP Inspections / Repairs Since 1985, Cycles 2-9

Boston Medical Center

65 & 88 East Newton Street
Boston, Massachusetts
Ordinance 9-9.12 Inspection

Masonic Hall NYC

New York, New York
FISP Cycles 8 & 9 Inspections / Repairs

New York Stock Exchange

New York, New York
FISP Inspections / Repairs Since 1995, Cycles 4-9

Federal Reserve Bank of New York

33 Maiden Lane
New York, New York
FISP Cycles 7-9 Inspections / Repairs

590 Madison Avenue

New York, New York
FISP Cycles 6-9 Inspections / Repairs

The Chapin School

New York, New York
FISP Cycles 7-9 Inspections / Repairs

Residence Inn by Marriott

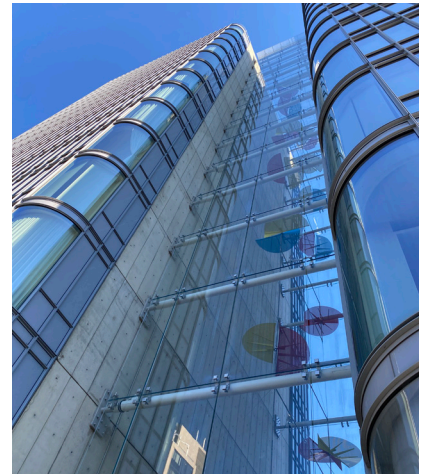
Pittsburgh, Pennsylvania
BBI Ordinance 9-2004 Inspection

The Ford Foundation

New York, New York
FISP Initial Inspection (1981) and Cycles 4-9 Inspections / Repairs

Columbia University Morningside Campus

New York, New York
FISP Inspections / Repairs at Dozens of Buildings Since 1999, Cycles 4-9



▲ **565 Broome SoHo**, New York, New York, *FISP Cycle 9 First Mandated Investigation.*

Broad Exchange Building, 25 Broad St.

New York, New York
FISP Cycles 6-9 Inspections / Repairs

Columbia Univ. Irving Medical Center

New York, New York
FISP Cycles 8 & 9 Inspections / Repairs

AT&T Long Lines Building and AT&T Switching Center

33 Thomas St. & 811 Tenth Ave.
New York, New York
FISP Cycles 6-9 Inspections / Repairs

Carpenters Union Building

395 Hudson St.
New York, New York
FISP Cycles 5-9 Inspections / Repairs

101 Avenue of the Americas

New York, New York
FISP Cycles 5-9 Inspections / Repairs

Grand Lodge of Masons of Mass.

Boston, Massachusetts
Ordinance 9-9.12 Inspections / Repairs

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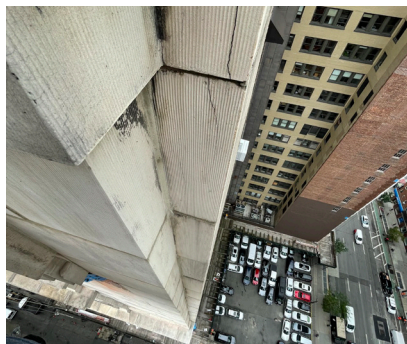
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architectural landscape around us. Without regular attention and upkeep, the walls towering above bristle with potentially deadly projectiles – a cracking sill, a displaced cornice, a loose brick ready to give way.



▲ Aging terra cotta poses such a hazard that some cities mandate it gets extra attention.

We take for granted that the buildings we pass are safe. Often, it takes a sensational news story to shake our faith that the unseen terra cotta ornament dozens of feet above won't suddenly crash to the street. For owners, facade ordinances are no picnic; complying with them is expensive, disruptive, rife with bureaucratic frustrations. Yet, without them, what assurance would we have that we can venture out without being pummeled by masonry?

In 2015, a grandmother sat outside her Manhattan senior residence home with her two-year-old granddaughter, enjoying the May sunshine,

when a terra cotta windowsill fell eight stories and struck the pair. After hours on the operating table, the young girl died. Despite New York's robust facade inspection safety program, the dangerous condition evaded

notice, whether missed in the previous inspection or evolved into a hazard in the intervening years.

After the incident, New York strengthened the laws once more, but no ordinance can be failsafe without being prohibitively onerous in its execution. To keep buildings safe, cities rely on the expert judgement of the professionals conducting inspections and specifying repair programs. It is that experience and discretion that can make the difference between an exterior wall survey that manages to eke out a certificate of compliance and one that truly achieves a safe facade. ■

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