New York City Local Law 11/98: consequences of administrative regulations on the conservation of buildings
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1. Introduction
In 1979 a piece of terra-cotta fell from a 1912 residential building at 115th street and Broadway in New York City and killed Grace Gold, a student from a local college. The Department of Buildings became increasingly concerned about the general aging of the city building stock and the overall lack of maintenance. A city law (Local Law 10/80) was passed soon after that dramatic event: it imposed a requirement on building owners to file a report on the soundness of their building facades, when taller than six stories, every five years. At the time, this was the second law of this type to be enacted in the United States; a similar one was passed in Chicago in 1978 after another deadly accident. The inspection, or critical examination, was to be carried out by registered architects or professional engineers and prescribed intervention in case unsafe conditions were uncovered. The observations of the facades and appurtenances had to be performed from the street level via binoculars. In its original configuration the law applied to about 8,000 buildings in all the five boroughs, three-quarters of them in Manhattan. It required the periodic inspection of exterior walls and appurtenances of buildings more than six stories high and within 25 feet of any sidewalks, plazas or play areas; that basically meant that the object of the examinations and consequent actions were walls facing spaces accessible by the public only, de facto excluding all rear walls facing private courtyards or alleys.

Since then, the law has evolved to become increasingly strict in terms of procedures for the inspections and liability for owners, architects and engineers. The main turning point occurred when again in 1998 a section of brick veneer separated from a lateral wall back-up structure of a Madison Avenue office tower and fell on the roof of a lower building next door: the event triggered the revision of the law to comprise the examination of all the facades, including rear and lateral elevations. The new law became Local Law 11/98. It also introduced the requirement of “hands-on” examination from scaffolds and platforms, in addition to observations from street level via binoculars. A report describing the outcome of the inspection is filed with the NYC Department of Buildings, the local authority in charge of reviewing the reports, verifying their compliance with the law, and follow-up if repairs are required. Currently about 12,000 buildings are affected by the law.

The law and its implementations were harshly criticised by owners, architects and engineers, and preservationists, all for different reasons. The owners were foreseeing a soaring of costs related to the erection of sidewalk sheds and the mandatory repairs; architects and engineers’ concerns were about the liability they would carry in case owners did not perform the remediation of unsafe conditions or new unsafe conditions developed in between the inspections; preservationists saw in the new law the possibility for owners to justify removal of architectural features from historical facades of those buildings not
protected by the Landmarks Preservation Commission, in the name of public safety. If many of these apprehensions have disappeared or been assimilated during the 33 years since the law was passed, undoubtedly the law’s provisions and requirements had a significant outcome in the way building maintenance is perceived and implemented with obvious consequences on the building themselves.

2. Provisions and requirements of the current law
A critical examination of all parts of all exterior walls and any appurtenances of buildings that fall under the requirement described in the current version of the law (those buildings that have at least one wall taller than six stories) is carried on and a report is filed every five years. A couple of years ago the 5-year cycle was subdivided in sub-cycles, each of them staggered and including certain buildings only; for examples, for buildings located within a block ending with the number 4, 5, 6, 9, an acceptable report shall be filed within the filing window starting February 21, 2010 and ending February 21, 2012; the second sub-cycle started on February 21, 2011 and ended August 21, 2012; the third sub-cycle began on February 21, 2012 and ended February 21, 2013. This allowed spreading inspections, report filing, and repairs of the 12,000 buildings over a period of three years, eliminating the congestion of construction sites in the streets and paperwork at the NYC Department of Buildings.

The examination is conducted by or under the direct supervision of a Qualified Exterior Wall Inspector (QEWI) retained by the owner of the building, as to say an architect or engineer. The QEWI “designs an inspection program for the specific building to be inspected, which shall 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” [Local Law 11_RCNY_103-04]. Although the professional is responsible for defining the inspection methodology, which may also include selective removals to verify construction characteristics, the law requires that at least all the facades are visually examined with binoculars (without the use of any other diagnostic instrumentations) from the street level and one close-up, or “hands-on”, inspection from a suspended platform, pipe scaffold or other devices is to be done on the every street facade. It is the professional’s responsibility to select representative areas of the facades for the close-up inspections: knowledge of traditional construction techniques and materials, together with the experience, become a useful tool to select the right number of hands-on observations.

The building facades can be placed in three categories based on the severity of the conditions observed during the examination: Safe, Safe with Repair and Maintenance Program (SWARMP) and Unsafe. The report is then filed with the Department of Buildings within the prescribed deadline. No actions are expected for those conditions classified as Safe and SWARMP. Even if
only one condition is classified Unsafe, the entire building becomes Unsafe. Defects in the “unsafe” category are supposed to be repaired within 30 days, unless the Buildings Department grants an extension, which typically requires that temporary pedestrian protection must remain in place until the repair is completed. Because the LL11/98 inspections quite often trigger an overall repair campaign of the building, the time needed well exceeds the 30 days and extension are common, as long as the repairs are actually carried out and the pedestrian protection is maintained effective. SWARMP conditions are those that do not pose an immediate threat to public safety but require some sort of intervention to prevent them to become unsafe; they’ll have ultimately to be repaired within the next five-year cycle or they’ll be reported as unsafe by the QEWI, although they may not really be hazardous. Non-compliance with the law in terms of late or missed report filing translates in violation notices and fines for the owner; falls of facades fragments following a report filing may have harsh outcomes for the professional responsible for the inspection, including fines, revoke of the license, and penal consequences.
3. Consequences for the physical conservation of facades
While the law’s main purpose was to protect New York City pedestrians from falling masonry and other facade components, it has undeniably had significant consequences for the conservation of buildings. In its infancy the law was strongly criticized by the preservationists because it allegedly legitimated the spread of unjustified removals, called facade “stripping”, of ornamental elements, such as terra-cotta cornices, stone balustrades and cast stone balconies. Some notorious cases in the early 80’s, such as the removal of all the terra-cotta ornamentation from the 1920’s Mayflower Hotel, on Central Park West and 61st Street because it was deemed “unsafe” and “un-repairable”, shook the preservation community. What was conceived as a solution to ease the maintenance of buildings and thus improve their conservation, it was pointed out as the culprit of many horrific actions against historical buildings. Nevertheless, advocates of the law proved that this practice was unfortunately already on-going before the law had been enforced. An interesting study on this subject was done and reported by Christopher Gray in the famous New York Times column “Streetscapes”3. The observations of 207 street facades of tall buildings on Broadway, West End Avenue and Riverside Drive, between 70th and 110th Streets revealed that 46 of them once had cornices, balconies and other protruding ornamentation. The comparison of the existing condition with post-World War II photographs and LL11 reports showed that 17 of them were stripped before the 80’s, 12 between the 1980 and 1985, and 7 between the 1985 and 1993 (when the study was conducted). For 10 buildings it was not possible to pin point a precise date when the removals occurred. Although it is true that sometimes heavy-handed and useless interventions were carried out in the name of public safety, the data indicate a decrement of the cases where ornamentation was removed; this may also be due to the fact that architects and engineers got to know the law and its requirements better and their expertise in dealing with historical materials and constructions increased with the years. However, in a few cases there really might have been no practical options other than removing the ornamentation. We have to note that tall buildings started to appear in the New York skyline at the turn of the 20th century; this coincides with the improvements in the design and construction of steel structures that permitted the buildings to grow taller. This new way of building had consequences also on the facades. In fact, masonry facades and their terra-cotta and stone ornamentation were “applied” to the back-structure through metal cramps; the steel structure itself was embedded in brick masonry to provide fire protection. Because of the lack of experience in using these new construction methods, many details, such as those preventing the ingress of water into the facade, were neglected and their importance underestimated. As one might have expected, over a few decades corrosion of the steel structure and anchors led to cracking, fracturing and spalling of the masonry elements, sometimes in such a critical manner that repair would be hardly conceivable even by the most passionate preservationist. These extreme conditions were often aggravated by the lack of maintenance in the years preceding the law: it has to be noted that many building facades are not easily accessible because
Fractured terra-cotta sill: cracking propagates along the entire length of the sill and up into the vertical pier (left); Extreme deterioration of terra-cotta ashlars due to the corrosion of the steel beam behind them (right)

of their height and the density of the urban fabric and the cost of installing a scaffold or a suspended platform can sometimes be equal or bigger than the cost of the repairs.

The benefits of constant monitoring granted by the law are undeniable: causes of decay are detected at their first stages; damages are less widespread and less severe; repairs are restricted to localized areas and replacements due to un-reparability are less common. Undoubtedly, the conservation of the historic fabric has gained from the law. Ultimately it has been positively welcomed also by building owners who, after initially lamenting additional costs for the inspections and mandatory repairs, have seen an advantage in doing minor preventative maintenance as opposed to drastic and expensive once-in-30-years restorations.

Sometimes, paradoxically, from a lack of repairs we have passed to an overabundance of them. Because the law requires the architect to report those conditions that are not yet unsafe but may become so in the next five years (SWARMP), often, potentially safe conditions are reported as SWARMP. That’s the case for example of cracks caused by the settlement of the structure which have not progressed in years: a cautious architect or engineer would not want to take any liability in not reporting the crack and it would specify repairs even if not strictly necessary. This prudent attitude is also justified by the fact that the examination is not thorough enough for the architect to fully determine the actual causes of each condition.

But what happens to those buildings shorter than 6 stories? A statistical study was conducted in 2009 to assess the safety of facades of Manhattan and Brooklyn dwelling buildings built in the 18th century and that are not subject to the mandatory periodic inspections because lower than 6 stories (they amount to about 40,000 between the two boroughs). Location, conditions, materials, exposure and height were all factors considered in the study of a statistically selected number of buildings. The research showed that the buildings are generally in fair condition despite the fact that inspections and repairs are left to
the will of the owners. The reasons are many: they were built with solid brick or stone masonry and wood joist structures (the lack of steel being a positive factor because it would prevent the detrimental effects that corrosion has on masonry); their facades are very simple with very limited protruding architectural features; because of their reduced height they are not overly exposed to weather elements, and maintenance and repairs, when needed, are easier to perform.

### 3.1. Case Studies

One of the most critical types of architectural features that are often subject to careful examinations and subsequent repairs are terra-cotta cladding and ornamentation. Terra-cotta elements are hollow blocks serially produced out of molds with the intent to replicate stone. They were used for cornices, balconies, lintels and sills, pinnacles and piers, through which architects could generate extremely decorated and flamboyant facades. The blocks were secured to the brick back-up wall with steel anchors and clamps. A significant example is a 14-story Neo-Gothic tower, located in the Upper West Side of Manhattan and built in 1911. Originally, the building was entirely clad in detailed high-relief glazed terracotta; however, during the 1950s, most of the ornament and approximately 60% of the flat ashlar terracotta were replaced with brick. A significant amount of terracotta remains and the building is still a stand-out on the block in this Historic Landmarked District and an Individual Landmark itself. In 2006 Thornton Tomasetti was engaged by the owners to perform the LL11/98 critical examination and file the report. The unsafe conditions were many and the building was classified unsafe. The main issues were related to the terra cotta ornamentation: its close proximity to steel members, the lack of maintenance, and ineffective and improper repairs had caused major cracking and splitting of the terra cotta elements, in many cases along protruding elements such as sills and vertical piers. The deterioration was so widespread that the cost for repairing or replacing the terra-cotta amounted to 50% (about $1.3 million) of the cost for repairing the whole street facade. The
A crack, originated by the corroded steel cramp and exposed by the removal of the adjacent stone unit, is visible at the cut line of the probe but not yet visible on face of the stone (left). Limestone facades of the office building (right).

goal was to minimize substitution with new material and save as much of the original material as possible, but many blocks (about 30%) had to be replaced because they had broken into too many fragments.

The importance of periodic examination of the New York City buildings is well represented by the building located at 230 Park Avenue, beyond the Grand Central Terminal. The inspection revealed widespread cracking of the gigantic terra-cotta ornamentation, such as at the 3-story tall columns located between the 28th and the 32nd floor, the one-story tall brackets below them, and the 7-feet (about 2 meters) tall buffalo heads. Almost 100% of the terra-cotta was preserved, thanks to a customized anchoring system that re-secured the element to the structure behind.

Sometimes the five-year periodic inspections prescribed by the law are not sufficient to address all the conditions developing on a building and the professional recommendation to the owner is to make them more frequent so that no hazardous conditions are left un-addressed and the cost of the repairs is spread over a longer period of time instead of being concentrated before the 5-year deadline. This is the case of a large office building, occupying an entire city block in downtown Manhattan, whose facades are built with large limestone blocks. The steel cramps used to secure the blocks to the back-up structure were installed so tightly into the stone notches that when corrosion began, the pressure initiated fracture in the surrounding stone. The resulting spalls, however, do not reveal themselves to the observer until they are fully formed and become unsafe conditions, hence, the suggestion has been made to perform more frequent inspections.

4. Final Considerations
Although the law was not conceived with the intent of protecting historical buildings and does not provide any direction in terms of methodology for inspections and repairs, it had an impact on the conservation of buildings. Most of
the time the impact has been positive because the periodic inspections have helped detect detrimental situations at early stages and address their effects on the historic fabric in time for effective repairs. Nevertheless, the ultimate responsibility in understanding the damage and specifying the proper repair is left to the professional. Unjustified removals of architectural features or improper repairs may still occur if the building is not protected by the Landmarks Preservation Commission or the owner has no particular interest in preserving the building facade features, or the architect has not enough knowledge and experience to recommend the right actions. During the past 10 to 15 years more complex and clearly articulated procedures, such as “planned conservation” organized not only around the monitoring and the maintenance of buildings but also involving large scale risk assessments and every day operational activities, have been implemented mostly in the European countries. Local Law 11/98 may have been founded on simple principles to achieve simple targets but still it has contributed to the regulation of maintenance of building facades and probably lengthened their survival.

Notes
5 See Della Torre S., 2003, La Conservazione Programmatà del Patrimonio Storico Architettonico: linee guida per il piano di conservazione e consuntivo scientifico, Guerini, Milano.