



# City of New York

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## OFFICE OF THE COMPTROLLER

Scott M. Stringer  
COMPTROLLER



## AUDITS AND SPECIAL REPORTS

**Marjorie Landa**

Deputy Comptroller for Audit

Audit Report on the New York City  
Housing Authority's Oversight of  
Contracts Involving Building Envelope  
Rehabilitation

SE16-065A

June 30, 2017

<http://comptroller.nyc.gov>



THE CITY OF NEW YORK  
OFFICE OF THE COMPTROLLER  
SCOTT M. STRINGER

June 30, 2017

To the Residents of the City of New York:

My office has audited the New York City Housing Authority (NYCHA) to determine whether it is effectively monitoring construction contracts involving “building envelope” work (on roofs, façades, windows, and foundations) to ensure that all required work is being performed appropriately, on time and in accordance with contract terms and industry standards.

The audit found that NYCHA needs to improve its monitoring of construction contracts involving building envelope rehabilitation work to ensure that all required work is being performed appropriately, on time and in accordance with contract terms and industry standards. We determined that although there appears to be adequate field staffing and inspection of construction work, and sufficient information flow from the construction sites back to the central office and upper management, NYCHA needs to improve its controls and utilize its operational resources effectively to ensure that it delivers quality improvements for its residents that will last their expected useful life.

In particular, we found deficiencies in the finished work product observed at several locations during our field inspections of a sample of the projects. Additionally, we found that construction work was completed late at three of five sampled developments undertaken by the Special Projects unit, and there was inadequate project scoping at one of three sampled developments overseen by NYCHA’s Construction unit led to the questionable use of a change order to procure substantial additional work to address conditions that appear to have existed at the time the original contract was let. Finally, we found recordkeeping weaknesses in Primavera, NYCHA’s construction project management software, as well as unreliable data in the MOD database, NYCHA’s auxiliary management information system that integrates information from various NYCHA systems.

The audit makes 25 recommendations, including that NYCHA should ensure that full inspections are properly completed before any roofing work is accepted; ensure that warranty maintenance programs for all roofs under active warranty are followed, including the examination of roofs after severe weather conditions; conduct thorough field surveys to ensure that contract drawings accurately address existing conditions; ensure all required project documentation in PCM is complete, accurate, and entered in a timely manner; assess liquidated damages for the three contracts we identified as being late; and refine the Local Law 11 contracts Master Schedule to include defined start and end dates for work at each development, as well as showing planned versus actual timelines.

The results of the audit have been discussed with NYCHA officials, and their comments have been considered in preparing this report. Their complete written response is attached to this report. If you have any questions concerning this report, please e-mail my Audit Bureau at [audit@comptroller.nyc.gov](mailto:audit@comptroller.nyc.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Scott M. Stringer".

Scott M. Stringer

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# THE CITY OF NEW YORK OFFICE OF THE COMPTROLLER AUDITS AND SPECIAL REPORTS

## Audit Report on the New York City Housing Authority's Oversight of Contracts Involving Building Envelope Rehabilitation

SE16-065A

### EXECUTIVE SUMMARY

The audit determined whether the New York City Housing Authority (NYCHA) effectively monitors construction contracts involving building envelope work to ensure that required work is being performed appropriately, on time and in accordance with contract terms and industry standards.

The NYCHA is the largest public housing authority in North America. NYCHA seeks to provide safe, affordable housing for low- and moderate-income New Yorkers. More than 400,000 New Yorkers reside in NYCHA's 328 public housing developments across the City's five boroughs.

NYCHA's housing stock is aging: 270 of its developments are 30 or more years old and of those, 114 are more than 50 years old. NYCHA's Capital Projects Division (CPD) is tasked with preserving and modernizing public housing by providing professional design and construction services. CPD manages a diverse portfolio of construction projects that includes brick and roof upgrades, boiler replacements, as well as installation of security cameras and fire alarm systems. CPD is staffed by approximately 380 employees who work out of a central office and at field locations throughout the five boroughs.

A major focus of CPD's work is making buildings water-tight through rehabilitating and/or replacing building envelope components (roof, façade, windows, and foundation). The building envelope rehabilitation work is accomplished through projects that use either traditional, standalone construction contracts or requirements contracts. Three units in the Construction Programs section of CPD are responsible for managing envelope rehabilitation work: the Local Law 11 Unit; the Special Projects Unit; and the Construction Unit. Data received from NYCHA shows that building envelope rehabilitation work was performed on 43 projects utilizing 51 unique contracts awarded from January, 2013 through November, 2015, our audit scope period. The total dollar amount awarded on those contracts was approximately \$1.02 billion.

NYCHA utilizes several types of software to manage its construction activities, principally Primavera, its project management system of record, Oracle Financials (Oracle), its financial system of record, and an auxiliary Microsoft Access database, known as the Mod database, which NYCHA uses to combine data from Primavera and Oracle with additional details that NYCHA states are not available from those systems.

## Audit Findings and Conclusion

Our audit found that NYCHA needs to improve its monitoring of construction contracts involving building envelope rehabilitation work to ensure that all required work is being performed appropriately, on time and in accordance with contract terms and industry standards. We determined that although there appears to be adequate field staffing and inspection of construction work, and sufficient information flow from the construction sites back to the central office and upper management, NYCHA needs to improve its controls and utilize its operational resources effectively to ensure that it delivers quality improvements for its residents that will last their expected useful life.

In particular, we found:

- deficiencies in the finished work product observed at several locations during our field inspections of a sample of the projects;
- construction work was completed late at three of five sampled developments undertaken by the Special Projects unit;
- inadequate project scoping at one of three sampled developments overseen by the Construction unit led to the questionable use of a change order to procure substantial additional work to address conditions that appear to have existed at the time the original contract was let;
- recordkeeping weaknesses in Primavera, NYCHA's construction project management software;
- unreliable data in the Mod database, NYCHA's auxiliary management information system that integrates information from various NYCHA systems; and
- a failure to update NYCHA's CPD procedural manual to reflect its current construction management (CM) project delivery method.

## Audit Recommendations

This report makes a total of 25 recommendations, including that NYCHA should:

- Correct the identified drainage deficiency on Lafayette Gardens' Building 5 roof.
- Ensure that full inspections are properly completed before any roofing work is accepted.
- Ensure that warranty maintenance programs for all roofs under active warranty are followed, including the examination of roofs after severe weather conditions.
- Bring any potential non-conformance to the attention of the roofing manufacturer for consideration to avoid impacting the warranty.
- Take all appropriate action to recoup the cost differential between the standard base flashing installation and the substandard provided installation for the locations identified at Pomonok Houses North.
- Investigate and determine the nature and cause of the yellow stain/growth at East 152nd Street-Courtlandt Avenue development, and properly remediate the condition.

- Require the roofing manufacturer to provide early notification when a roofing component (including, but not limited to roof drains) will not be covered by the warranty so that NYCHA can take action to avoid exclusions and/or determine how the exclusions will impact maintenance cost and useful life of the roof.
- Conduct thorough field surveys to ensure that contract drawings accurately address existing conditions.
- Ensure all required project documentation in PCM is complete, accurate, and entered in a timely manner.
- Consider enforcing its liquidated damages provision when contracts complete late. Specifically, liquidated damages should be assessed for the three contracts we identified as being late.
- Refine the Local Law 11 contracts Master Schedule to include defined start and end dates for work at each development, as well as showing planned versus actual timelines.
- Consider identifying completion of work at each development as a contract "milestone" so liquidated damages may be assessed and enforced when appropriate.
- Ensure that complete and accurate information is entered into the Mod database in a timely manner.

## Agency Response

In its response, NYCHA agreed with 9 of our 25 recommendations and disagreed with 6 of our recommendations. NYCHA stated that the remaining 10 recommendations are not applicable "because the proposed recommendation is consistent with our current practice."

# INTRODUCTION

## Background

NYCHA seeks to provide safe, affordable housing for low- and moderate-income New Yorkers. More than 400,000 New Yorkers reside in NYCHA's 328 public housing developments across the City's five boroughs. NYCHA is the largest public housing authority in North America.

NYCHA's housing stock is aging: 270 of its developments are 30 or more years old and of those, 114 are more than 50 years old. NYCHA's CPD is tasked with preserving and modernizing public housing by providing professional design and construction services. CPD manages a diverse portfolio of construction projects that includes brick and roof upgrades, boiler replacements, as well as installation of security cameras and fire alarm systems. CPD is staffed by approximately 380 employees who work out of a central office and at field locations throughout the five boroughs.

A major focus of CPD's work is the NYCHA developments' exteriors, known as "building envelopes." NYCHA's 2015 Capital Plan identifies two areas that target rehabilitating and/or replacing building envelope components to make buildings water-tight: (1) Brick and Roof Work, and (2) Capital Fund Bond Issue work (Bond B Work).<sup>1</sup> A building envelope includes the roof, façade, windows, and foundation.

The building envelope rehabilitation work is accomplished through projects that use either traditional, standalone construction contracts or requirements contracts. A requirements contract is a contract where the contractor commits to rates and other contract terms for the contract period, but where individual work tasks are assigned on an as needed basis. Requirements contracts are often used in connection with projects that involve multiple locations undergoing similar work. As specific work to be done at a particular NYCHA development is defined, it is assigned to a requirements contract, and its funding is authorized in a "release" (also known as a "task order" or "work order"). Accordingly, requirements contracts will necessarily have one or more releases created for each of the multiple NYCHA developments where work is to be done. More than one requirements contract may be used to perform the work encompassed in a single project, such as pointing brick or replacing roofs in multiple developments.

Three units in the Construction Programs section of CPD are responsible for managing envelope rehabilitation work: the Local Law 11 Unit; the Special Projects Unit; and the Construction Unit.

- The projects managed by the Local Law 11 unit involve the use of requirements contracts to obtain brick and façade work to achieve compliance with NYC Local Law 11.<sup>2</sup> Requirements contracts are generally used where a single type of work is being done (e.g., Local Law 11 façade work) in multiple developments.
- The Special Projects unit undertakes brick and roof work financed by Bond B using traditional, standalone contracts, each of which generally involves one or two

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<sup>1</sup> Bond B is private capital obtained under the Department of Housing and Urban Development's (HUD) Capital Fund Financing Program. These bond proceeds must be expended over a four year period. The Bond B Work is being monitored by the New York City Housing Development Corporation. It consists of comprehensive roof and brickwork projects that were driven by the need to remove sidewalk sheds.

<sup>2</sup> New York City Local Law 11 of 1998 requires the inspection of the exterior walls of buildings greater than six stories in height at least once every five years. Unsafe conditions identified through such inspections are to be corrected within thirty days of submitting the examination report to the New York City Department of Buildings.



developments, and the contracts are therefore identified by the names of the developments where the work is to be done.

- The Construction unit uses a combination of standalone and requirements contracts to accomplish its work, which is not limited to envelope rehabilitation.

Data received from NYCHA shows that building envelope rehabilitation work was in progress on 43 projects utilizing 51 unique contracts awarded from January 2013 through November 2015. The total award amount was approximately \$1.02 billion, as illustrated in Table I below.

**Table I**

Work Breakdown by Program Unit

Program Unit	Number of Projects	Number of Unique Contracts	Award Amount
Construction	13	14	\$217,199,699
Local Law 11	5	11	\$314,588,330
Special Projects	25	26	\$486,740,779
<b>Total</b>	<b>43</b>	<b>51</b>	<b>\$1,018,528,808</b>

The majority of CPD's contracts (both requirements and standalone) utilize outside construction managers. The CM contract with NYCHA is separate from the construction contract. On most jobs, there is a NYCHA Construction Project Manager in the field reporting to the Project Administrator, in the central office. While construction work is in progress, all information needed to manage the rehabilitation work is maintained in the field, while the NYCHA Project Manager is responsible for entering certain information into central NYCHA computer systems.

NYCHA's guidelines for monitoring its contracts are specified in its CPD Manual and supplementary policies and procedures issued by NYCHA since the manual became effective in June 2011. The CPD Manual states that it "provides staff a reference and guide to assist in the performance of their job functions and to provide an overview of CPD's interdependent processes."

NYCHA's project management system software, Primavera, consists of P6 Enterprise Project Portfolio Management (P6) and PCM, and is NYCHA's project management system of record. Oracle is its financial system of record. NYCHA also maintains an auxiliary Microsoft Access database, known as the Mod database, to provide "the flexibility of combining data from both sources [Primavera and Oracle] with additional details not available within the current structure of the systems."

Projects are initiated in Oracle with financial and basic project information. Primavera interfaces with Oracle to populate its informational fields. The NYCHA project manager enters the additional project details into Primavera. P6 contains project-level information and PCM contains project- and contract-level information. The NYCHA project manager is responsible for entering bi-weekly status/progress updates into PCM. PCM also tracks change orders and payments to help ensure that projects are completed on time.

In addition, NYCHA has created a CPD Portfolio Tracking Report. That report summarizes project information and financials, and provides the most recent bi-weekly update. It is typically used by Directors and Deputy Directors to manage their projects. If more granular data is required, it must be obtained from Primavera.

## **Objective**

The objective of this audit is to determine whether NYCHA is effectively monitoring construction contracts involving building envelope work to ensure that all required work is being performed appropriately, on time and in accordance with contract terms and industry standards.

## **Scope and Methodology Statement**

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93, of the New York City Charter. This audit was conducted by auditors with engineering and construction backgrounds.

The scope of this audit included contracts that involve building envelope work that were awarded from January 2013 through November 2015. Please refer to the Detailed Scope and Methodology at the end of this report for the specific procedures and tests that were conducted.

## **Discussion of Audit Results**

The matters covered in this report were discussed with NYCHA officials during and at the conclusion of this audit. A preliminary draft report was sent to NYCHA on May 19, 2017, and discussed at an exit conference held on June 7, 2017. After the exit conference, NYCHA provided additional supporting documentation regarding certain findings discussed in the preliminary report, all of which was carefully reviewed and considered. Where appropriate, the findings were revised to reflect the additional information. On June 15, 2017, we submitted a draft report to NYCHA with a request for comments. We received a written response from NYCHA on June 28, 2017. In its response, NYCHA agreed with 9 of our 25 recommendations and disagreed with 6 recommendations. NYCHA stated that the remaining 10 recommendations are not applicable “because the proposed recommendation is consistent with our current practice.”

The full text of NYCHA’s response is included as an addendum to this report.

## FINDINGS AND RECOMMENDATIONS

Our audit found that NYCHA needs to improve its monitoring of construction contracts involving building envelope rehabilitation work to ensure that all required work is being performed appropriately, on time and in accordance with contract terms and industry standards. We determined that although there appears to be adequate field staffing and inspection of construction work, and sufficient information flow from the construction sites back to the central office and upper management, NYCHA needs to improve its controls and utilize its operational resources effectively to ensure that it delivers quality improvements for its residents that will last their expected useful life.

In particular, we found:

- deficiencies in the finished work product observed at several locations during our field inspections of a sample of the projects;
- construction work was completed late at three of five sampled developments undertaken by the Special Projects unit;
- inadequate project scoping at one of three sampled developments overseen by the Construction unit led to the questionable use of a change order to procure substantial additional work to address conditions that appear to have existed at the time the original contract was awarded;
- recordkeeping weaknesses in Primavera, NYCHA's construction project management software;
- unreliable data in the Mod database, NYCHA's auxiliary management information system that integrates information from various NYCHA systems; and
- a failure to update NYCHA's CPD procedural manual to reflect its current CM project delivery method.

These matters are discussed in greater detail in the following sections of this report.

### Deficiencies in Completed Construction

As part of our audit fieldwork, we inspected rehabilitation work at 22 sampled developments overseen by three CPD units; 14 developments overseen by the Local Law 11 unit; five developments overseen by the Special Projects unit; and three developments overseen by Construction unit (see Appendix I). Although we found that the construction work generally appeared to be of good quality and in compliance with contract and as-built drawings, we nonetheless identified a number of problems at several developments. The deficiencies included roofs that did not drain properly, sub-standard base flashing at roof bulkheads, a yellow stain/vegetative growth condition on masonry, and some minor cosmetic issues.<sup>3</sup>

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<sup>3</sup> Other minor issues observed during our field inspections include: (1) missing or loose fascia joint cover plates at South Beach Houses, Lafayette Gardens, and Nostrand Houses; and (2) shoddy patching of an entrance canopy soffit at King Towers. We estimate the value of this poor quality work to be approximately \$555.

## Improper Roof Drainage

During our field inspection of Lafayette Gardens, Building 5 at 411 Lafayette Avenue in Brooklyn, we noted that portions of the roof (specifically areas around the bulkhead door, ventilator curb and roof drain) had significant ponding of water of up to approximately four to five inches shortly after a period of rain. In those areas, the gravel was also stained, which indicated reoccurring and prolonged standing water.

According to the National Roofing Contractors Association (NRCA), an acceptable duration for ponding water to remain on a roof after a rain for a built-up 4-ply roof system is 48 hours. A follow-up site visit conducted approximately 48 hours after the rain stopped found that standing water was still present, contrary to the industry standard requiring complete drainage within that timeframe.<sup>4</sup>

The Lafayette Gardens' contract specification Section 07 52 00 Part 1 - 1.13 C.1.b. states that "[i]f any work leaks, fails to stay in place or results in ponding," the work will be judged as defective work.<sup>5</sup> Accordingly, the areas we observed with ponding present after 48 hours reflect defective work under this contract.

Lafayette Gardens Contract Specification Section 07 52 00 requires the contractor to be responsible for proper execution of the work including measurements, survey of roofing elevation/slopes, coordinating with roofing manufacturer to obtain a detailed tapered insulation layout drawing, and installing a water-tight roofing system. The drainage deficiency may be due to an incorrect survey, an incorrect tapered insulation drawing, and/or improper installation. However, inasmuch as all three of those activities are the Contractor's responsibility, the deficiency was caused by some failure by the Contractor.

The problems associated with poor drainage, and the resultant ponding water, include:

- Increased risk of leaks and the intrusion of water and moisture into the building;
- Accelerating the deterioration of the roofing system, causing quicker aging and loss of years of useful life;
- Reducing the performance and life of the roofing system and will void most roofing manufacturers warranties;
- Causing growth of vegetation, algae, and/or mold which may damage the roofing system;
- Creating a breeding ground for mosquitoes and flies that may transmit diseases to humans and pets; and
- Increasing the amount of weight the roof has to bear and eventually may result in a collapse.

NYCHA should have rejected this work pursuant to Section 07 52 00 Part 1 - 1.02 I of the Lafayette Gardens Contract, and satisfactory corrections should have been made by the contractor at no additional cost to NYCHA. Unfortunately, NYCHA failed to identify this deficiency during construction even though the staining would likely have been present prior to the formal

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<sup>4</sup> We conducted our follow-up inspection 52 hours after our initial post-rain inspection.

<sup>5</sup> The Lafayette Gardens contract is the contract NYCHA entered into with Universal Construction Resources, Inc., a construction contractor, for exterior restoration and roofing replacement at the Lafayette Gardens development. It included complete roof replacements at all seven buildings.

acceptance of the roof by NYCHA. We estimate the monetary value of the defective work, based on the contract pricing, to be \$5,000.<sup>6</sup> But if the condition is left unaddressed, it will jeopardize NYCHA's \$180,000 investment in the roof at Building 5, and any of the aforementioned bulleted conditions could occur and subsequently result in the intrusion of water and moisture into the building, with the consequent potential for further damage to the building and the growth of mold, which can pose a health risk to the residents in the affected areas of the building.

Furthermore, since NYCHA did not identify the deficiency during the contractor's one year guarantee period, which expired on October 30, 2016, it appears to have lost its opportunity to have the contractor correct the work within the guarantee period. We note that the 20-year warranty on this roof obtained from the roofing manufacturer includes a maintenance program that must be followed to ensure coverage. The maintenance program suggests that the roofing system be examined "for damage after severe weather conditions such as hailstorms, heavy rains, high winds, etc." along with required regular semi-annual inspections. Had NYCHA checked the roof after heavy rains during the one year contractor guarantee period, the defective condition should have been discovered by NYCHA and corrected by the contractor. Moreover, if the manufacturer refuses to cover claimed losses, the financial harm to NYCHA could far exceed the cost of having paid for work inadequately performed and the cost of making repairs to correct the deficient work.

Additionally, other roofs were found to have minor ponding and staining during our field inspections. Those conditions were observed at Lafayette Gardens Buildings 2 and 4 in Brooklyn, Sumner Houses Buildings 4 and 8 in Brooklyn, King Towers Buildings 5 and 10 in Manhattan, and South Beach Houses Building 2 in Staten Island.<sup>7</sup>

During the exit conference, NYCHA informed us that after receiving our preliminary draft audit report the agency conducted its own inspections of the cited ponding condition at Lafayette Gardens Building 5 and found no ponding 48 hours after a rainstorm ended.<sup>8</sup> To support that claim, NYCHA later provided us with photographs—one set NYCHA called "post-storm," purportedly taken shortly after a rainstorm, which shows ponding water, and another set taken approximately 48 hours after the storm, showing no ponding. However, when we compared the photograph taken during our initial inspection on December 2, 2016, shortly after a period of rain (Photograph 1), with NYCHA's photograph taken during its initial inspection on May 22, 2017, shortly after a rainstorm (Photograph 2), significant differences became apparent. Specifically, our photograph depicts ponding over a larger area and at a greater depth than that shown in NYCHA's photograph. From that comparison it appears possible that a larger volume rain had fallen before our initial inspection than had fallen before NYCHA's initial inspection. That or other factors may account for the differing results of the follow-up inspections conducted, respectively, by us and by NYCHA approximately 48 hours after the rains ended—where we observed ponding and NYCHA did not. (See Photographs 3 and 4.) Moreover, the absence of ponding 48 hours after one rainstorm does not negate the fact that ponding was observed 48 hours after a different rainstorm; to the contrary, the differing results reinforce the advisability of periodic inspections, particularly after "severe weather conditions" as recommended by the roof's manufacturer. Those are the conditions that the roof will endure during its useful life. Therefore, we find no reason to revise this finding or the associated recommendations.

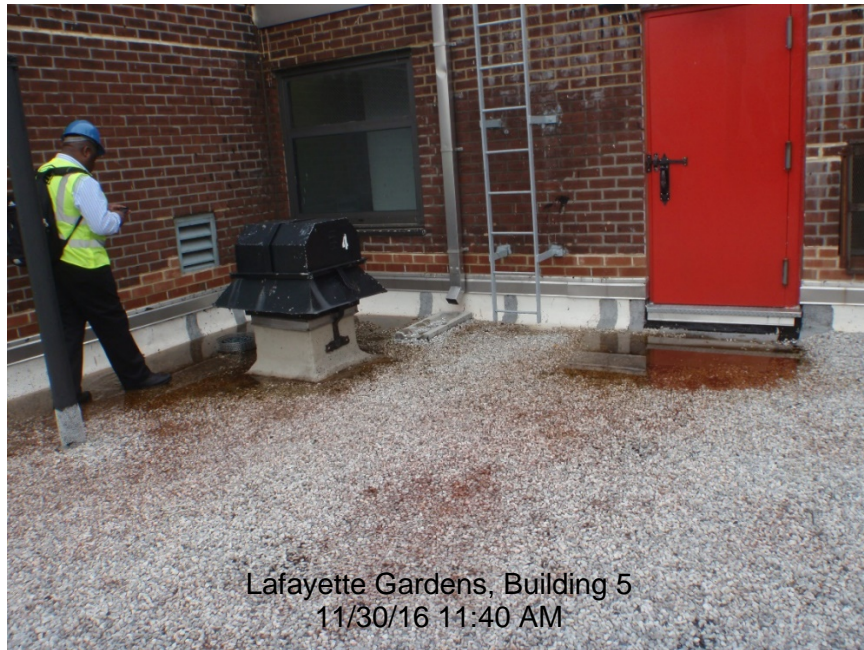
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<sup>6</sup> Since this is a unit price contract, the cost estimate for the defective work is obtained by multiplying the contract unit price per square foot for the roofing detail (4 ply built-up roof system over concrete) by the area of ponding.

<sup>7</sup> We did not conduct follow-up site visits to the roofs where minor ponding was observed. Therefore, we do not know whether standing water was still present 48 hours after the initial visit.

<sup>8</sup> NYCHA also inspected the sites where we observed minor ponding.

**Photograph 1**  
**Auditor-observed Ponding Condition Post Rainstorm**  
**at Lafayette Gardens Building 5**



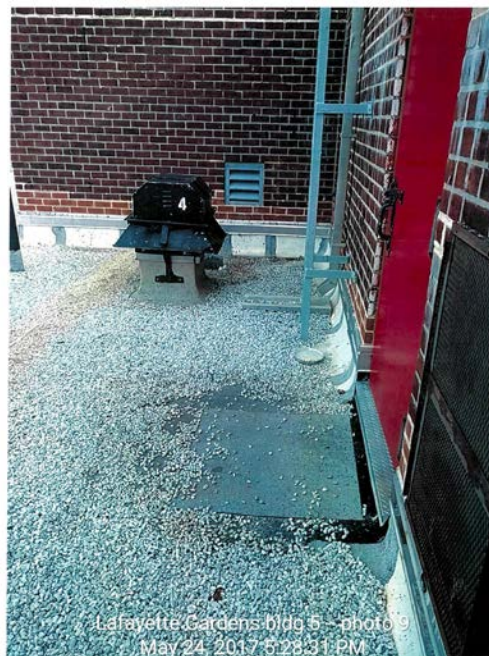
**Photograph 2**  
**NYCHA-observed Ponding Condition Post Rainstorm**  
**at Lafayette Gardens Building 5**



**Photograph 3**  
**Auditor-observed Ponding Condition Approximately 48 Hours Post Rainstorm  
at Lafayette Gardens Building 5**



**Photograph 4**  
**NYCHA-observed Ponding Condition Approximately 48 Hours Post Rainstorm  
at Lafayette Gardens Building 5**



## Recommendations:

NYCHA should:

1. Correct the identified deficiency on Lafayette Gardens' Building 5 roof.

**NYCHA Response:** NYCHA disagreed with the recommendation. "According to the National Roofing Contractors Association (NRCA), an acceptable duration for ponding water to remain on a roof after a rain for a built-up 4-ply roof system is 48 hours. NYCHA conducted its own inspections of the ponding at this and other locations cited (on May 22, 2017 and on June 21, 2017) and found no ponding 48 hours after the rain storm ended."

NYCHA also stated that "the Comptroller did not provide the conditions 'severity of weather conditions' of the rainstorm when this inspection was conducted. Ponding may or may not occur based on the changing conditions of a rain storm i.e. a larger volume of rain and or wind conditions during the storm which could impact the results of the inspections findings."

**Auditor Comment:** During our audit fieldwork, we used the same NRCA criteria that NYCHA references in its response. However, as stated in our finding (and as evidenced by Photograph 3), we found standing water still present on the roof of Building 5 at Lafayette Gardens more than 48 hours after the rain ended. Although, as NYCHA observes, ponding may or may not occur based on the conditions of the specific rainstorm, nevertheless, the acceptable duration for ponding water to remain on a roof is 48 hours. Therefore, the presence of ponding water during our observation more than 48 hours after the rain ended established the deficiency. The absence of ponding water during NYCHA's inspection after a different rainstorm does not negate our inspection finding; instead, it reinforces the need to conduct periodic inspections, including after severe weather as recommended by the manufacturer. Accordingly, we reiterate that there is a deficiency on the Lafayette Gardens' Building 5 roof that requires correction.

2. Determine whether there is a way to recoup the cost of its having to correct the deficiency.

**NYCHA Response:** NYCHA disagreed with the recommendation stating, "[d]ue to no evidence of ponding on roof, recouping cost or issue regarding warranty and maintenance program regarding this deficiency was not needed."

**Auditor Comment:** The evidence of the deficiency is the finding documented in this audit report as discussed in our comment under Recommendation 1. NYCHA should correct the deficiency and attempt to recoup the cost.

3. Monitor the other identified roofs for compliance with the 48 hour drainage standard and remedy as necessary.

**NYCHA Response:** NYCHA agreed with the recommendation and stated that it conducted its own inspections of the ponding on May 22, 2017 and June 21, 2017 at Lafayette Gardens Buildings 2 and 4 and other cited locations, and found no ponding 48 hours after the rainstorm ended.



**Auditor Comment:** We acknowledge NYCHA’s inspections of the locations we cited for minor ponding but reiterate our recommendation, which calls for monitoring—that is ongoing, periodic checking after periods of rain—for compliance with the 48-hour drainage standard. During our field inspections we observed stained gravel indicative of reoccurring and prolonged standing water. Therefore, NYCHA should continue to monitor ponding at these locations to timely address any drainage problems.

4. Ensure that full inspections are properly completed before any work is accepted.

**NYCHA Response:** NYCHA stated that the recommendation is not applicable because it is current practice. “NYCHA goes through a vigorous punch list inspection with A/Es, CMs, Development personnel and Manufacturers prior to acceptance of warranties.”

**Auditor Comment:** NYCHA previously provided us with checklists that its personnel reportedly use to ensure that roofing is properly installed. However, in its response, NYCHA did not provide us with completed checklists for the Lafayette Gardens Building 5. Therefore, we cannot ascertain whether NYCHA followed its procedures and performed all required inspections prior to, during, and at completion of roofing work.

5. Ensure that warranty maintenance programs for all roofs under active warranty are followed, including the examination of roofs after severe weather conditions.

**NYCHA Response:** NYCHA stated that the recommendation is not applicable because it is current practice.

**Auditor Comment:** Although NYCHA states that this recommendation to follow roof warranty maintenance programs reflects NYCHA’s current practice, NYCHA did not provide any documentation supporting that contention. For example, for the Lafayette Gardens Building 5 roof cited previously for significant ponding, NYCHA’s records contained no inspection reports or equivalent documentation of inspections having been conducted in the period of nearly two years since the roof work was completed. As noted in the audit finding, the warranty maintenance program requires semi-annual inspections and recommends additional examinations for damage “after severe weather conditions” such as heavy rains and high winds. Had NYCHA been following that warranty maintenance program several semi-annual inspections—at a minimum—should have been performed, but NYCHA did not provide evidence of such inspections.

## **Base Flashing Installation Does Not Comply with the Applicable Standard**

Our audit found that some of the base flashing around the bulkheads at Pomonok Houses North in Queens, did not comply with the industry standard of extending a minimum of eight inches above the bottom of the cant strip. The NRCA refers to an eight-inch flashing height as a minimum in all details, as do most manufacturers. This lack of compliance was discovered during our field inspection of Pomonok Houses North in Queens, Buildings 2, 6, and 8, when we, accompanied by NYCHA representatives, observed that the height of the counter-flashing above the roof appeared to be less than typical, thereby not permitting the upturn of the base flashing to meet the eight-inch minimum. A follow-up visit was made to inspect the other buildings at this

development. Overall, of the total 16 buildings, we found the sub-standard flashing heights at Buildings 4, 5, 6, 8, and 9.

Allowing for the 3/4-inch average thickness of a 4-ply built up roof, the flashing height should be more than seven inches when measured vertically from the finished roof level. At Buildings 4, 5, 6, 8, and 9, we found 965 linear feet of base flashing whose height above roof level ranged from 4-1/2 to seven inches, consequently indicating non-compliance with the eight-inch minimum standard (see Table II below).

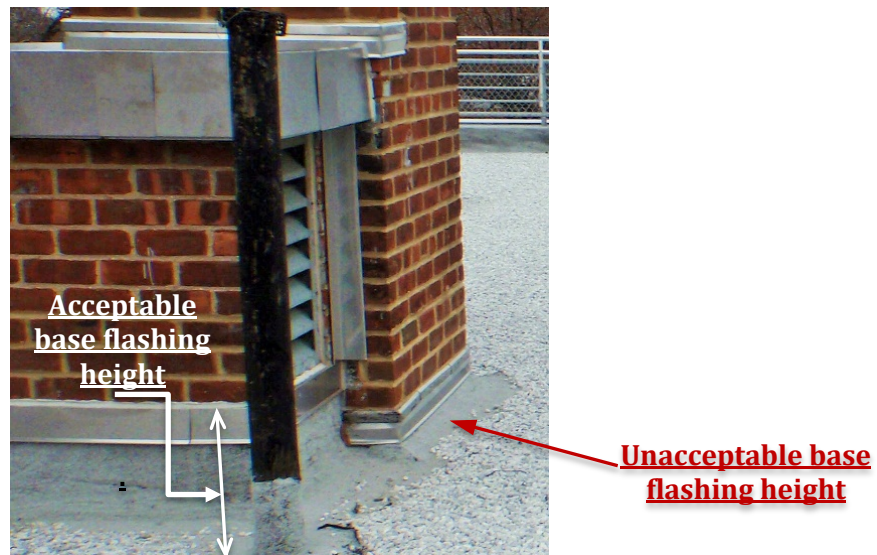
**Table II**

Sub-standard Base Flashing  
Tabulation

Building Number	Address	Heights Observed	Quantity of Substandard Flashing (linear feet)
4	65-52 Parsons Blvd.	4-1/2", 5", 7"	308
5	65-32 Parsons Blvd.	5"	100
6	65-42 Parsons Blvd.	5", 6"	154
8	67-11 Kissena Blvd.	6", 7"	146
9	67-05 Kissena Blvd.	6", 6-1/2", 7"	257
<b>Total</b>			<b>965</b>

There are several reasons for establishing an eight-inch minimum vertical flashing height. One reason is to protect the flashed joint at the wall from moisture infiltration caused by driven rain or snow buildup. The eight-inch height also provides sufficient work space when applying a base flashing and fastening the flashing's top edge to a vertical surface. The height also allows a minimum four-inch overlap for counter-flashing over the top edge of a base flashing termination, which is intended to shed water off of and away from the wall. When NYCHA does not meet industry standards, it fails to ensure that the roofing system will, at a minimum, achieve its expected useful life and maintain its water-tightness. (See Photograph 5.)

**Photograph 5**  
**Building 6 Base Flashing Installation**



It should be noted that the detail included in NYCHA’s contract drawings, Detail 3/A-504, Typ. Wall Flashing at Bulkhead (Through Wall Flashing Replacement) – Cavity Wall, shows an eight-inch minimum upturn of the flashing (see Appendix II). Also, contract specifications Section 07 52 16 Part 1 C.5.a.C.1 requires the eight-inch minimum and Part 3 F.1. requires inspecting for conformance with the eight-inch minimum height and bringing non-conforming areas to the attention of the Owner’s Representative.

Our review found that during construction the contractor performing the work sent a Request for Information (RFI) to NYCHA’s contracted CM firm regarding how to proceed in areas where because of a raised roof level (due to new tapered insulation installation), the standard eight-inch minimum could not be met by installing the new flashing—consisting of base flashing and counter-flashing—at the height of the existing flashing. In the RFI, the contractor stated that the condition—base flashing that failed to meet the required eight-inch height—was not acceptable to the roofing manufacturer, GAF. The contractor was instructed by NYCHA’s CM firm to follow the contract drawings and GAF’s recommendations.<sup>9</sup> However, it would not have been possible for the contractor to follow that instruction, because of an inconsistency between the contract drawings and GAF’s recommendations, as explained below.

The “wall flashing detail” section of the contract drawings called for the installation of base flashing to a minimum height of eight inches—as recommended by GAF. However, the same “wall flashing detail” called for the installation of new counter-flashing—which must overlap with and cap the base flashing—at its pre-existing location. That requirement, if followed, would prevent the new base flashing from meeting the prescribed minimum eight-inch height, because the pre-existing location of the counter-flashing was less than eight inches above the base of the cant strip. In short, by maintaining a fixed pre-existing location for the counter-flashing, contract drawings would not permit the installation of base flashing to a height of eight inches. Therefore, the contract drawings were both internally inconsistent and—insofar as resulting in the new base

<sup>9</sup> A NYCHA representative was copied on its CM firm’s response to the RFI.

flashing at a height of less than eight inches—inconsistent with GAF’s recommendations. Consequently in instructing the contractor to follow both the contract drawings and GAF’s recommendations, NYCHA, through its CM, gave the contractor an internally inconsistent instruction—one that could not be followed.

Accordingly, in that instance, the contractor should have been provided with clearer direction in response to its RFI. At the bulkhead locations where we identified the deficiency, there were no physical barriers to achieving the eight-inch minimum required by GAF and general industry practice; thus the discrepancy could have been resolved by instructing the contractor to follow the manufacturer’s recommendation.

In response to our inquiry about this matter, NYCHA responded that “[t]he counter-flashing installed at the bulkhead is at the height required to meet the 8” base flashing per industry standard. The flashing was inspected and accepted by the roof Manufacturer . . . and the Architect of Record.” However, the first part of that statement—that the height of the counter-flashing allowed for the eight-inch height required for the base flashing—was contradicted by our inspections as documented in the photo above, where we clearly observed conditions restricting base flashing height to less than 8 inches. Moreover, NYCHA’s contention that this condition was accepted by the roofing manufacturer is not consistent with a specific written provision of the warranties that apply to Buildings 4, 5, and 6, which states in paragraph 8 under “EXCLUSIONS FROM COVERAGE,” that

Any condition (e.g., base flashing height or lack of counter-flashing) that is not in accordance with GAF’s published application instructions or any deviation or modification from any published specification, unless specifically authorized by a GAF Field Services Manager or Director in writing.

There was no such written authorization from any GAF official in the project documentation we were provided by NYCHA, and accordingly, by accepting base flashing that was below the height specified by the manufacturer, NYCHA may have incurred the risk that the warranties it received could be construed to exclude coverage for leaks caused by the above-cited condition.

Although the warranties for Buildings 8 and 9 do not have exclusion clauses specifically referring to base flashing, they do have a more general exclusion. An addendum to each warranty states, “[p]lease be advised that all GAF application and specification requirements must be met and procedures followed.” Consequently, there is a risk that the manufacturer might not provide warranty coverage for leaks resulting from NYCHA’s failure to follow GAF standards—including those for base flashing.

NYCHA accepted the above-described flashing work and the warranties notwithstanding the fact that, based on our observations during the audit, the flashing height was contrary to contract requirements and could therefore be cited as a ground for an exclusion from the roof manufacturer’s warranties. Accordingly, NYCHA paid for work that was not properly performed and might be entitled to the differential cost between this flawed installation and an installation complying with industry, manufacturer, and NYCHA standards. For the total 965 liner feet of substandard installation we identified, we estimate this cost to be \$38,200. However, we are unable to estimate the potentially significant future costs that NYCHA may have to bear due to a lack of warranty coverage for leaks resulting from the deficient base flashing, particularly if the manufacturer denies coverage under the warranties.

In addition, the new roofing systems for the impacted Pomonok Houses North Buildings cost NYCHA approximately \$1.8 million. Clearly it is imperative that NYCHA take appropriate action

to ensure that the warranties it receives provide proper coverage with no exclusions. That issue is addressed further in a later finding under *Issues with Roof Warranties*.

## Recommendations:

NYCHA should:

6. Ensure that its field inspectors and CM personnel are knowledgeable about and enforce all requirements under NYCHA and industry roofing standards.
7. Bring any potential non-conformance to the attention of the roofing manufacturer for consideration to avoid impacting the warranty.
8. Ensure that contractor receives appropriate guidance in response to any RFIs.

**NYCHA Response for Recommendations 6, 7, and 8:** NYCHA stated that these recommendations are not applicable because they are NYCHA's current practice, and "field inspectors and CM personnel are knowledgeable about contract requirements. NYCHA provides training for roof inspections on a yearly basis."

**Auditor Comment:** Regarding Recommendation 6, after the exit conference, NYCHA provided us with attendance sheets showing that its in-house personnel receive training. However, it did not explain how it ensures that its contracted CM personnel are knowledgeable about current roofing standards. NYCHA did not address the enforcement component of our recommendation, which is an area requiring improvement inasmuch as a sub-standard base flashing installation was approved.

Although NYCHA states that Recommendations 7 and 8 are current practice, we found exceptions during our audit fieldwork, as shown by NYCHA's acceptance of sub-standard base flashing installation that failed to meet the minimum height specified by the roofing manufacturer as depicted in Photograph 5 and by NYCHA's internally inconsistent response to the contractor's request for information. Additionally, NYCHA did not provide us with any documentation supporting its contention.

9. Take all appropriate action to recoup the cost differential between the standard base flashing installation and the provided installation for the locations identified in this report.

**NYCHA Response:** NYCHA disagreed with the recommendation and stated that "the measurement [of base flashing installation] is from the top of the insulation, not the top of the roof. In addition, the manufacturer provided warranties for this work."

**Auditor Comment:** Our finding clearly details that we allowed ¾-inches for the average thickness of a 4-ply built up roof when computing the quantity of non-compliant base flashing. Therefore, our cited base flashing heights are from "the top of the insulation." Photograph 5 clearly shows both a conforming base flashing height and a non-conforming base flashing height in two adjoining segments of the installation. In light of the inconsistent heights of the two segments depicted in that photograph, we question how NYCHA can conclude that those conditions can both be compliant with industry and manufacturer standards. Accordingly, we find no basis to change our recommendation that

NYCHA recoup the cost differential between the standard base flashing installation and the sub-standard base flashing installation.

## Yellow Stain/Growth on Building Facade

At the East 152<sup>nd</sup> Street-Courtlandt Avenue development in the Bronx, we observed a yellow stain/growth on the split rib block exterior facade. (See Photographs 6 and 7 below.) The condition may be attributable to a mold, fungus, lichen, or similar vegetative growth.<sup>10</sup> The condition exists on both the new block installed under this contract and the previously existing block and, therefore, may be a consequence of the work performed under the contract. Until we alerted them, the NYCHA and CM personnel accompanying us on the site inspection were unaware of this condition.

Not only does this stain/growth adversely impact the appearance of the building, it could possibly cause deterioration of the facade block and pose a health risk to residents. Without knowing the exact nature of the growth, it is not possible to develop an accurate estimate for the cleaning/remediation cost.

### Photographs 6 and 7 Yellow Stain/Growth on Façade



### Recommendation:

10. NYCHA should investigate and determine the nature and cause of the stain/growth, and properly remediate the condition. If it is found that the condition was caused by something related to the construction work, NYCHA should require the contractor to correct at no additional cost.

**NYCHA Response:** NYCHA disagreed with the recommendation. It stated in its response, “[t]his finding is outside of the scope of this audit. Cleaning existing facade was not part of this contract. The contractor did not perform any work near the stained areas. CPD is coordinating with Operations to determine the cause of the staining and NYCHA will address the condition as required.”

<sup>10</sup> We did not conduct any testing to determine the nature of the growth.

**Auditor Comment:** Although NYCHA states that it disagrees with our recommendation, it also states that it is working to determine the cause of the condition we identified and address it, as we recommend. It is not clear how NYCHA can determine that the contractor is not responsible, however, before determining the cause of the condition. We continue to recommend that, should it be found that the stain/growth was caused by something related to the construction work, NYCHA should require the contractor to correct it at no additional cost to NYCHA.

## Failure to Maintain Copies and Substantive Weaknesses in Roof Warranties

Our audit found a number of issues with the roof warranties NYCHA has received from the roofing manufacturers, which may impact the useful life of the roof and impede NYCHA's ability to obtain service under the warranties. Warranties were missing from PCM (the component of NYCHA's project management system software, Primavera, in which project documentation is maintained) for roofs at two of the seven sampled Construction and Special Projects developments that should have received warranties at the time of our review, King Towers and Isaacs Houses in Manhattan. For a third sampled development (Sumner Houses), the warranties found in PCM were incomplete—the warranties for buildings 1 and 12 were missing in their entirety and only the first page of the warranty was present for buildings 2 to 11 and 13. (Other cases of required documentation missing from PCM are discussed later in the audit.)

For the remaining four sampled work locations, we found:

- not all the warranties stated the fascia quantities under "Accessories"; and
- the majority of the warranties were found to specifically exclude the retrofitted pre-existing drains that NYCHA typically uses. Without ensuring that the remaining useful life of the drains to be retrofitted meets or exceeds the 20-year expected useful life of the new roof, NYCHA may prematurely have issues with clogged drains and leaking.

Our findings are shown in Table III.

**Table III**

Roof Warranty Issues

Project Number	Development	Contract Number	Contractor	Responsible NYCHA Program Unit	Buildings with Roofing Work	Is Fascia quantity called out on warranty?	Are roof drains excluded from warranty coverage?
6708	East 152nd - Courtlandt	1315001	Gem-Quality Corp.	Special Projects	1 and 2	no	yes
7469	Pomonok	1321094	APS Contracting	Special Projects	1 to 16	na -- edge to edge warranty	yes for Bldgs 1, 2, 4 to 6, 8, and 9
7472	South Beach	1326622	Universal Construction Resources	Special Projects	1 to 8	no for Buildings 2 and 4 -- yes for other buildings	yes
7604	Lafayette Gardens	1402495	Universal Construction Resources	Special Projects	1 to 7	no for Buildings 2 to 7 -- yes for Building 1	yes

These are issues that are of concern, as they may impact the useful life of the roof and invalidate NYCHA’s ability to obtain service under the warranties.

**Recommendations:**

NYCHA should:

11. Ensure copies of all warranties are maintained in the appropriate files and computer systems.

**NYCHA Response:** “We agree that copies of the warranties should be maintained in the appropriate files and computer systems. As indicated by the Comptroller, hard copy project documentation outside of PCM is also a NYCHA requirement.”

12. Verify that all quantities for accessories are listed on the warranty to ensure proper coverage.

**NYCHA Response:** NYCHA disagreed with the recommendation. However, it responded that “NYCHA will consult with its Law Department to determine if the recommendation to require fascia quantities to be listed as accessories should be included in future contracts.”

**Auditor Comment:** We note that, as NYCHA will obtain a legal opinion to determine whether fascia quantities should be listed as accessories covered by warranties in future contracts, in effect, it is taking a step consistent with our recommendation, notwithstanding its stated disagreement.

13. Ensure that a plumber inspects the roof drains prior to retrofit to ascertain their remaining useful life; it should match or exceed the 20-year expected useful life of the new roof.



**NYCHA Response:** NYCHA stated that the recommendation is not applicable because it is NYCHA’s current practice and “[t]he condition of the drains is inspected as part of the pre-design survey. Replacement of the drains is included in the contract on an as needed basis.”

**Auditor Comment:** During our audit fieldwork, we were made aware that NYCHA does conduct a drain clog test prior to re-using drains. However, no documentation was found, or procedures provided, showing that a plumber verifies the remaining useful life of a drain that will be retrofit.

14. Require the roofing manufacturer to provide early notification when a roofing component (including, but not limited to, roof drains) will not be covered by the warranty so that NYCHA can take action to avoid exclusions and/or determine how the exclusions will impact maintenance cost and useful life of the roof.

**NYCHA Response:** NYCHA stated that the recommendation is not applicable because it is NYCHA’s current practice.

**Auditor Comment:** Our review of the roofing manufacturers’ final inspection report, which includes the punch list, found that it did not identify exclusions. Additionally, NYCHA did not provide us with any documentation showing that it was made aware prior to receiving the warranty that certain roof drains, fascia, etc. would be excluded from coverage. NYCHA should require the roofing manufacturer to provide early notification, as we recommend, to avoid any unexpected non-coverage issues.

## Inadequate Contract Scoping at Sumner Houses Resulted in a Questionable Use of a Change Order

Our audit found that NYCHA used a change order to obtain \$2.1 million of work that apparently should have been—but was not—made a part of the original contract scope. Specifically, we found that NYCHA awarded a \$9,815,954 contract on June 13, 2014 for roof replacement and bulkhead masonry repair for 13 buildings at Sumner Houses. Seven weeks later, on August 1, 2014, prior to that work’s commencing, NYCHA issued a \$2,170,000 change order to the contractor for the demolition of 24 chimneys and a number “smoke rooms” on the roofs of the 13 buildings, work that included asbestos abatement and related rebuilding.<sup>11</sup>

The change order’s large dollar value relative to the size of the contract (a 22 percent increase) indicates a material change in the contract work scope.<sup>12</sup> Further, the change order’s timing—its issuance less than two months after the contract had been awarded and more than a month *before* the work actually began—suggests that the contract’s original work scope was inadequate to address conditions that likely existed at the time the contract was bid.

Because Sumner Houses utilizes both Federal and City funding, compliance with both the NYC Procurement Policy Board (PPB) Rules and HUD’s Procurement Handbook for Public Housing Agencies is required. The PPB Rules state that

<sup>11</sup> Ash settling chambers, or smoke rooms, were used in conjunction with trash incinerators that were banned in the 1980s and replaced in the NYCHA buildings by trash-chutes and compactors. The purpose of the smoke rooms had been to allow ash particles to settle before the gases from the incinerators were exhausted.

<sup>12</sup> The \$2.1 million change order was 22 percent of a \$9.8 million contract. Subsequent to the change order being issued, there was a credit change order of \$431,000 for the work and so the net value of the change order was \$1,739,000, or just over 17 percent of the original contract’s value.

[c]hanges are permitted only for work necessary to complete the work included in the original scope of the contract, and for non-material changes to the scope of the contract. Changes are not permitted for material alterations in the scope of the work or for the insertion of a renewal clause to the contract. Material alterations to the scope of the work may be made only by a new procurement.

Similarly, the HUD Procurement Handbook and HUD's General Conditions for Construction Contracts – Public Housing Programs require that changes be “within the general scope of the contract.”

Accordingly, under the PPB Rules, NYCHA should have either re-bid the contract to include the additional demolition and rebuilding work or awarded a separate competitively bid contract for it. Either of those actions, however, would likely have delayed the originally-scoped roof and bulkhead work or exposed newly refurbished roofs to risk of damage from subsequent demolition and rebuilding work. Thus, it appears that the post-award decision to demolish and rebuild structures on the roof was necessitated by inadequate planning and scoping of the roof replacement and bulkhead contract.

Sumner was the only one of the eight sampled Special Projects and Construction work locations that had an atypical amount of change orders. In general, total change orders for a rehabilitation project are expected to be approximately 10 to 12 percent of the original contract value.

## Recommendations:

NYCHA should:

15. Conduct thorough field surveys to ensure that contract drawings accurately address existing conditions. Reliance on standard details cannot be absolute.

**NYCHA Response:** NYCHA stated that the recommendation is not applicable because it is NYCHA's current practice: “[i]t is our practice to conduct field surveys prior to the development of contract drawings. In this instance the Department of Buildings had revised the Code relative to this type of work, between the time contract had been awarded and work began.” NYCHA also stated, “[i]n consultation with the Department of Buildings, NYCHA changed its policy and practices which would impact the unused [appurtenances] [sic] above the roofs such as incinerator stacks.”

**Auditor Comment:** Although NYCHA states that this work was necessary because of a revision in the Building Code, we did not find any such justification for the change order in PCM – its relevant project management information system. Although it is critical for NYCHA policy and practices to be consistent with the Department of Buildings' regulations, it is equally important to ensure compliance with procurement regulations to preserve competitive bidding. By conducting thorough field surveys prior to developing contract drawings, NYCHA will help ensure that existing conditions are appropriately handled, thereby minimizing the need for change orders.

16. Ensure compliance with applicable rules and regulations regarding the appropriate use of change orders.

**NYCHA Response:** NYCHA stated that the recommendation is not applicable because it is NYCHA's current practice. According to NYCHA, “CPD reviewed its

change order procedures and conducted staff training in April 2015, August 2016 and September 2016.”

**Auditor Comment:** It appears from this response that NYCHA agrees with and has already implemented our recommendation.

## Problems with Primavera Contract Manager

### Incomplete Documentation in PCM for Special Projects and Construction Work at Sampled Developments

We found a Project History and required Bi-Weekly Updates in PCM notepad for the rehabilitation work at each of the three sampled Construction unit developments and the five sampled Special Projects unit developments. Additionally, we found the required Notice to Proceed and contract specifications for all eight of these developments as well as a change order log and payment log, in PCM.<sup>13</sup>

However, we found that some records critical to overseeing and documenting rehabilitation work were missing from PCM for all eight developments. Detail of that finding is summarized in Table IV, below. Without complete documentation NYCHA cannot anticipate and prevent potential problems from impacting scheduled completion dates.<sup>14</sup>

**Table IV**

#### Documentation Missing in PCM

Project Number	Development	Contract Number	Responsible NYCHA Program Unit	Letter of Award (LOA)	Schedule of Values (SOV)	Initial Contractor Schedule	Permits	Licenses	Letter of Substantial Completion	Punch List Sign-off	Certificate of Final Acceptance	Roof Warranties	Pre-Start Meeting Minutes
6708	East 152nd Street-Courtland Avenue	1315001	Special Projects		S	S							
7469	Pomonok Houses North	1321094				S							
7472	South Beach Houses	1326622											X
7527	King Towers	1331696			X	X	X	X	X	X	X	X	
7604	Lafayette Gardens	1402495						X					
6722	Sumner Houses	1222670	Construction		X	X	X	X	X		X	I	X
7365	Queensbridge South Houses	1435814							n/a	n/a	n/a	n/a	
7591	Isaacs Houses	1414156		X	S	S			X	n/a	n/a	X	

**Legend**

- X = No documentation
- I = Incomplete documentation
- S = Documentation not signed-off by NYCHA
- n/a = Not applicable

As reflected in Table IV, we note that the missing documentation is most significant for King Towers and Sumner Houses. Because the work at Sumner Houses was managed in-house by NYCHA personnel, NYCHA personnel were responsible for entering the project documentation into PCM.

<sup>13</sup> Although presence of a change order log and a payment log were verified, no testing was performed to determine whether the documentation for all change orders and payments was present in PCM. Our audit testing did find that P6 contained project schedules for all eight of the sampled Special Projects and Construction projects. NYCHA had informed us that project schedules are the only information it maintains in P6.

<sup>14</sup> A documentation problem could become an operational problem.

We were unable to determine the reason why the above-mentioned documentation detailed in the table was not entered into PCM. King Towers utilized a CM firm, and, according to NYCHA, the CM firm was responsible for updating PCM. However, the NYCHA CPD Manual applicable to CM firms is outdated. Although it states that the CM firm is responsible for maintaining all project files, it does not provide clarity regarding current policies for inputting project documentation into PCM.

We recognize that NYCHA maintains supplementary hardcopy project documentation outside of PCM (which is also stored on CDs at project closeout) and the missing documentation might be available in hardcopy, or in the files of the CM firm, when one is used. However, Primavera is NYCHA's system of record for project management and maintenance of complete documentation would facilitate the efficient completion of the multiple capital projects being undertaken at any given time.

As stated in NYCHA's CPD Manual, "CPD utilizes Primavera project management software (P6 Enterprise Project Portfolio Management, and Primavera Contract Management) to administer its capital projects, including modules to manage scheduling and monitor construction activities, make payments, and track changes to contract terms." Consequently, Primavera should contain timely, accurate, and complete project information; without such complete information, NYCHA cannot anticipate and prevent potential problems from affecting scheduled completion dates which inevitably affect costs and could even potentially impact the quality of work.

A prior audit issued by our office on March 15, 2012, *Audit No. 7E11-119A: Audit Report on NYCHA Oversight of The Construction Management / Build Program*, also found a lack of adequate project documentation in the Primavera system.

Additionally, field personnel told us that that they view PCM as a document repository or "filing cabinet." They criticized it for not being interactive or searchable. We were informed that NYCHA is currently looking into alternative construction project management software as a potential replacement for its current system Primavera.

### **Recommendation:**

17. NYCHA should ensure all required project documentation in PCM is complete, accurate, and entered in a timely manner.

**NYCHA Response:** NYCHA agreed with the recommendation and stated that "CPD meets monthly to ensure that information is accurate and updated."

### **PCM Is Not a Functional System for Local Law 11 Requirements Contracts**

Our audit found that NYCHA is using PCM and P6 in a manner that does not readily accommodate Local Law 11 and other work being done with requirements contracts. With Primavera, NYCHA established a Project-based system that functions well for work performed at a single location using a single contract. However, the Local Law 11 work uses multiple contracts to accomplish work at multiple locations captured under a single project. Thus, the Local Law 11 work is most readily managed on a contract basis. As a result, the Primavera system is not set up to reflect the records and work flow associated with the Local Law 11 work and NYCHA officials are forced to rely on multiple systems to obtain the information needed to adequately oversee that work.

For Local Law 11 and some other construction work, the work is to be done at various locations. These projects are accomplished by utilizing one or more requirements contracts, with each

contract being assigned work at one or more NYCHA developments.<sup>15</sup> A funding authorization, or “release” is associated with each development for which work is assigned to a contract.<sup>16</sup> Requirements contracts typically have multiple releases, each associated with a different development; therefore, releases are sequentially numbered under each contract.

Releases are identified in PCM by number only. For example, Contract # 1229584-4 is Release 4 for Contract 1229584. However, PCM does not link a development’s name with the release number. Without opening a document, such as a payment request, there is no way to determine which development is associated with a specific release. The absence of that information creates a problematic situation, because information about work at a specific development cannot be readily obtained unless the release number is already known. Consequently, the CPD Portfolio Tracking Report also lacks the names of the developments where work is being done because it captures its data from PCM. The absence of development names is problematic because the CPD Portfolio Tracking Report is typically used as a management tool by upper-level NYCHA personnel, who will not likely be able to identify the projects by contract number.

When questioned about the above-described issue, NYCHA responded that PCM can capture a maximum of *up to five* developments, but most of the Local Law 11 requirements contracts exceed that capacity. The system was not designed with a feature to expand the number of development slots. According to NYCHA, a project/contract/release can be and is associated with a development by looking either in the Oracle financial system or at the actual release document.<sup>17</sup> NYCHA’s auxiliary database, the Mod database, should contain the information tying together the development to the project-contract-release. However, that information must be manually input and updated, and there are frequent backlogs and other data issues (discussed later in this report under *Problems with Mod Database*).

To successfully manage projects/contracts and the work being done, the locations where work is underway must be known. Because that information is not readily available for the projects utilizing requirements contracts (generally encompassing multiple locations), PCM is unable to fully serve its intended purpose as a project management system and system of record.

## Recommendation:

18. NYCHA should investigate the possible modification/upgrade of PCM to allow for its expansion to capture more than five developments. Alternatively, if NYCHA decides to implement new construction project management software, ensure that its configuration suits both the needs of staff and its use of requirements contracts.

**NYCHA Response:** NYCHA agreed with the recommendation and stated that “NYCHA is in the process of procuring construction project management software that better meets our needs. (i.e., construction schedule, recordkeeping project management, reporting)”

## Problems with Construction Schedules

It is imperative for building envelope rehabilitation work to progress on schedule and be completed timely to prevent the further intrusion of water and minimize the risk of structural building

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<sup>15</sup> A requirements contract may be used to perform work on more than one project.

<sup>16</sup> NYCHA’s goal is to have one release per development, however, funding constraints may result in multiple releases for a single development.

<sup>17</sup> The release document is scanned into PCM as part of a payment package. It is not put into PCM when it is authorized.

deterioration and mold. Additionally, persistent leaks as well as building work inconveniences residents. The work is noisy, reduces access to and visibility of buildings, creates unsightly conditions, and could make the locations more vulnerable to crime. Furthermore, additional costs for sidewalk sheds, CM services, and NYCHA staff are incurred when work continues past its intended timeframe.

## Work Completed Late at Special Projects Developments

We found that rehabilitation work at three out of the five sampled Special Projects developments was completed late, by between 23 to 60 days. For each of the contracts associated with the rehabilitation work, a Notice to Proceed was issued that specified a contract start date, contract end date, and contract duration. Construction work should be substantially completed by the contract end date plus any NYCHA approved construction time extensions.<sup>18</sup>

Each of the Special Projects contracts includes a liquidated damages clause that allows NYCHA to obtain compensation from the contractor for its failure to complete work on time. The liquidated damages amount is \$800 per calendar day beyond the contractual completion time plus any time extensions granted by NYCHA. For the three Special Projects developments where work was completed late, the amount of potential liquidated damages totaled \$95,200 (see Table V). However, as of April 5, 2017, NYCHA had not yet demanded payment of liquidated damages for any of the corresponding performance delays.

**Table V**

### Liquidated Damages Not Assessed

Project Number	Borough	Development	Contract Number	Vendor Name (Contractor)	Start Date as per NTP	End Date as per NTP	NYCHA Approved Time Extension(s) (calendar days)	End Date with Approved Time Extension(s)	Substantial Completion Date	Calendar Days Late	Contractual Liquidated Damages per calendar day	Liquidated Damages to be Assessed
6708	Bronx	East 152nd Street-Courtlandt Avenue	1315001	Gem Quality Corp.	8/4/2014	9/18/2015	96	12/23/2015	1/15/2016	23	\$ 800	\$ 18,400
7472	Staten Island	South Beach Houses	1326622	Universal Construction Resources	6/26/2014	12/18/2015	60	2/16/2016	3/23/2016	36	\$ 800	\$ 28,800
7604	Brooklyn	Lafayette Gardens	1402495	Universal Construction Resources	8/1/2014	8/31/2015	0	8/31/2015	10/30/2015	60	\$ 800	\$ 48,000

Total = \$ 95,200

NYCHA documentation shows that it recognizes that work at Lafayette Gardens was completed late, and that it is considering assessing liquidated damages. However, we did not find any documentation indicating that NYCHA is contemplating liquidated damages for the work completed late at the other two developments.

Regarding the three sampled developments overseen by NYCHA's Construction unit, work at two (Sumner Houses and Isaacs Houses) was completed on time. Work at the third development (Queensbridge South Houses) was not yet completed, nor had it exceeded the contracted date of completion, during our review timeframe.<sup>19</sup>

<sup>18</sup> Substantial completion is defined as occurring when work is sufficiently complete (approximately 95 percent) in accordance with the contract documents such that the owner may use or occupy the work or building for its intended use.

<sup>19</sup> Although Isaacs was completed, there was no substantial completion certificate in PCM. However, we were able to determine a rough substantial completion date from bi-weekly comments in PCM.

## Recommendation:

19. NYCHA should consider enforcing its liquidated damages provision when contracts are completed late. Specifically, liquidated damages should be assessed for the three contracts we identified as being late.

**NYCHA Response:** “NYCHA does not agree with the liquidated damages recommendation, since delay was out of the contractor's control.” In an attachment to the response NYCHA states, “[s]ubstantial completion of all three projects was achieved within the scheduled timeframe but the contracts could not be closed due to open DOB Letter of Completion delays.”

**Auditor Comment:** As shown in Table V in the finding, we tested whether work was substantially complete by the contract end date plus any NYCHA-approved construction time extensions. That testing directly contradicts NYCHA's statement that substantial completion was achieved within the scheduled timeframe. Accordingly, we continue to recommend that NYCHA enforce the liquidated damages provision for the three contracts in question.

## Issues with Local Law 11 Construction Schedules

Our audit found that the maintenance of contract information in Primavera makes it difficult for NYCHA to properly oversee and monitor the work and schedule of Local Law 11 requirements contracts. That is because project schedules maintained in P6 and PCM do not contain details for each contract or development included in the Local Law 11 projects that are implemented through the use of requirements contracts and because individual development-level schedules are not maintained in either P6 or PCM. Although NYCHA states that Primavera “contains the schedules and contract information for the construction projects,” we found that maintaining contract-level information only is not sufficient for providing proper oversight of the Local Law 11 projects.

Initially we were told by NYCHA officials that the schedule for the work to be performed at a development is determined by NYCHA's Project Manager.<sup>20</sup> We were subsequently informed by NYCHA that a Master Schedule for the LL 11 projects is prepared jointly by the CM firm and NYCHA. The Master Schedule is maintained in the Local Law 11 unit's internal computer files and not in PCM. The Master Schedule is for all Local Law 11 requirements contracts and the developments under each contract for which the CM firm is providing services.

We reviewed the Master Schedule and found that it does not give defined start and finish dates for work at each development. Instead, the schedule provided for each development consists of an “X” marked in a spreadsheet cell for the months when there is (or is planned to be) activity at that location. Also, the Master Schedule does not show planned versus actual timelines.

Further, we were informed by NYCHA that there are “sub-Notices to Proceed” maintained in PCM that provide schedules for each development. Similar to how a Notice to Proceed triggers the start of a contract, the sub-Notices to Proceed initiate work at specific developments. However,

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<sup>20</sup> If there is only a single release for a development, then the release-level schedule, including date of completion, is the same as the development-level schedule. However, NYCHA explained to the audit team that in situations where there is more than one release for the same development and the multiple releases with similar start and end dates, then the earliest start and latest finish will be the development-level schedule.

our audit found that PCM had sub-Notices to Proceed for only three (21 percent) of the 14 Local Law 11 developments in our sample.

Furthermore, we question whether schedules given in sub-Notices to Proceed would be enforceable. Because NYCHA has not contractually identified completion of work at individual developments as milestones, its assessment of liquidated damages for failure to timely complete a milestone might be successfully challenged.<sup>21</sup> In their current form, the NYCHA contracts only allow for liquidated damages to be assessed for failure to complete the overall contract on time.

Without clear, enforceable schedules for each development, NYCHA is hampered in its ability to oversee ongoing work, identify issues, and ensure timely completion. Furthermore, NYCHA's ability to protect its interests through liquidated damages has been voided.

## Recommendations:

NYCHA should:

20. Refine the Master Schedule to include defined start and end dates for work at each development, as well as showing planned versus actual timelines.

**NYCHA Response:** NYCHA agreed with the recommendation and stated that “NYCHA is working with its Law Department to revise the contract document terms where necessary.”

21. Ensure that all sub-Notices to Proceed are maintained in PCM for work at individual developments. The dates of the sub-Notices to Proceed should correspond to those of the Master Schedule.

**NYCHA Response:** NYCHA agreed with the recommendation.

22. Consider identifying completion of work at each development as a contract “milestone” so liquidated damages may be assessed and enforced when appropriate.

**NYCHA Response:** NYCHA agreed with the recommendation and “will consult with the Law Department about revising this contract language.”

## NYCHA's CPD Manual Has Not Been Updated

Our audit found that Chapter 5 of the CPD Manual entitled *CM/Build* is outdated. Between April 2010 and June 2011, NYCHA developed its CPD Manual, and it became effective in June 2011. We were informed by NYCHA that in October 2011, it decided that it would no longer use CM/Build contracts.<sup>22</sup> Since October 2012, NYCHA has generally undertaken construction work through two separate contracts in each instance: one contract for CM oversight (with the CM firm acting as NYCHA's agent in the field); and a second contract for the actual construction. Although a number of policies and procedures updating and supplementing the CPD Manual have been issued, they do not address that fundamental change in the way that CPD's contracts are structured and other associated operational and procedural changes. When questioned as to the

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<sup>21</sup> A contract milestone is an important achievement on a contract's timeline. Milestones are used as checkpoints to determine whether a contract is on schedule.

<sup>22</sup> CM/Build is a project delivery method where NYCHA hires a CM firm who directly contracts with and manages the activities of the construction firm. NYCHA does not hold the construction contracts.



current validity of Chapter 5, NYCHA explained that "the applicable part of Chapter 5 which is being used starts from Section VI "Construction Phase" to the end of Chapter 5."

NYCHA stated that "the CPD Manual provides staff a reference and guide to assist in the performance of their job functions and to provide an overview of CPD's interdependent processes," and that "the conduct of all CPD staff (directly or indirectly), can impact CPD's ability to fulfill its mission." Staff is expected to "carry out their duties diligently, with care and attention to detail and procedural guidelines at all times." Therefore, it is reasonable to expect that NYCHA's procedures and guidelines should be up to date to provide staff proper guidance and allow them to perform their duties appropriately.

Although CM/Build was abandoned nearly four years before our audit began, the manual continues to contain an outdated section. As a result, NYCHA does not have a clear statement of the actual responsibilities for projects utilizing a CM firm. This issue was previously mentioned in this audit as a potential reason why the PCM system was missing a considerable amount of documentation for King Towers, where work is being managed by a CM firm. Additionally, Chapter 5 provided guidance as to when a CM/Build-type of project delivery was appropriate; however, there is currently no such guidance regarding use of a CM firm.

### **Recommendation:**

23. NYCHA should update its CPD Manual to reflect its current method of utilizing CM firms.

**NYCHA Response:** NYCHA agreed with the recommendation and stated that it "is in the process of reviewing and updating its CPD procedure manual."

### **Data in the Mod Database is Unreliable**

Our audit found the data in the Mod database to be both incomplete and inaccurate. NYCHA provided us a list of active building envelope rehabilitation work for our scope period from that database.

However, we found that the spreadsheet of awarded contracts that NYCHA provided to us on September 30, 2015 had numerous data-reliability issues. In the fields concerning schedule (i.e., status and dates) we found:

- Many of the fields were blank, a pervasive problem with the projected construction start and end dates;
- One entry specified a future date that had not yet occurred as an actual completion date;
- 31 listings had a status of "In Progress," but their actual start dates were blank, signifying that the contracts had not started;
- Two listings had a status of "In Progress," but had a construction actual end date, signifying that these contracts were completed; and
- Two listings were assigned to the wrong program unit.

NYCHA attempted to explain some of these discrepancies in a November 13, 2015 e-mail. Regarding blank projected dates, NYCHA stated that "some of the . . . work [was] already in progress or completed when this detailed extraction was performed so the projected dates were not updated." Regarding work in progress with no actual construction start date, NYCHA stated

that "[v]arious issues led to incomplete capture of start dates" such as contract phasing, contractor default, and scope changes.

However, NYCHA admitted that some of the issues noted were in fact errors. It stated that "[a]ll the dates have since been provided and inserted in the Mod [database]. All projects have their associated work status." Those statements indicate that NYCHA simply had not timely entered complete and accurate data into the Mod database. NYCHA stated that the Mod database suffers information input backlogs because of its heavy reliance on manual updating. That condition poses a significant issue regarding the database's utility.

NYCHA provided a corrected version of the spreadsheet listing awarded contracts and stated that all the dates on the corrected spreadsheet "were verified as correct at the time of the report." We later found that the corrected spreadsheet was incomplete, in that it did not include all releases for which work began during our audit scope period.

According to Comptroller's Directive #18, *Guidelines for the Management, Protection and Control of Agency Information and Information Processing Systems*, electronic information can be "made useless by the introduction of unintentional or purposeful errors. . . . Another risk of corrupted information is the potential adverse impact that erroneous information can have on the agency's general business or strategic decisions." Because the Mod database integrates information from multiple NYCHA systems, it may be queried to generate reports regarding construction progress from multiple NYCHA systems. Therefore, it is critical that the information it contains be reliable to timely address any issues, when required.

## Recommendations:

NYCHA should:

24. Ensure that complete and accurate information is entered into the Mod database in a timely manner.
25. Review the existing data for current contracts in the Mod database, and make revisions/corrections as necessary.

**NYCHA Response for Recommendations 24 and 25:** NYCHA agreed with the recommendations stating that "NYCHA is in the process of procuring construction project management software that better meets our needs. (i.e., construction schedule, recordkeeping project management, reporting)."

## DETAILED SCOPE AND METHODOLOGY

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93, of the New York City Charter. This audit was conducted by auditors with engineering and construction backgrounds.

The scope of this audit included contracts that involve building envelope rehabilitation work that were awarded from January 2013 through November 2015.

We obtained background information about NYCHA from its website and the Mayor's Management Report. Also, we examined our prior audit 7E11-119A *Audit Report on New York City Housing Authority Oversight of the Construction Management/Build Program*. In addition, we reviewed NYCHA's Five-Year Capital Plan to understand how it allocates its funding.

To understand the policies, procedures, and regulations governing NYCHA's capital construction program, including work involving envelope rehabilitation, we reviewed:

- NYCHA's CPD manual and its updating policies and procedures;
- NYC Local Law 11 of 1998 and other regulations relevant to façade inspection and repair;
- Various other NYC and NYS codes, rules, and regulations including the NYC Building and Construction Code, the NYC Energy Code, and the New York State Historic Preservation Office (SHPO) guiding standards;
- Comptroller's Directive 18 (*Guidelines for the Management, Protection and Control of Agency Information and Information Processing Systems*); and
- The HUD Procurement Handbook and HUD's General Conditions for Construction Contracts – Public Housing Programs.

To understand NYCHA's internal controls for administering and monitoring contracts involving building envelope rehabilitation work, we reviewed NYCHA organizational charts. We also interviewed NYCHA officials to establish how it oversees projects/contracts and maintains its files. Additional interviews were conducted with NYCHA officials, including IT support personnel, to determine what computer systems are used by NYCHA's CPD, what information these systems capture, how data is input into these systems, and how NYCHA utilizes these systems. We documented these interviews in memoranda. NYCHA provided us with further information regarding its processes and internal controls in response to our clarification questions and information requests. Subsequently, we documented our understanding of the internal controls and our assessment of the risk of fraud in a memorandum.

NYCHA provided the audit team with various datasets from its Mod database including:

- a list of contracts awarded from 2013 to 2015;<sup>23</sup>

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<sup>23</sup> NYCHA's fiscal year corresponds to the calendar year. Therefore, the data received from NYCHA did not include all of 2015; it included up to September 20, 2015, which is the date the information was provided. For contracts with work at more than one development, notably the requirements contracts, an individual entry for each Release is shown in the list.

- a list of contracts completed from 2013 to 2015; and
- a list of planned projects for 2013 to 2015.

The list of contracts awarded was chosen as the focus of our audit work, since a cross-check found that the list of contracts completed was essentially a subset of the list of contracts awarded. However, after analyzing the list of awarded contracts for data reliability, we had numerous questions concerning data discrepancies. In response, NYCHA provided us with a corrected list of contracts awarded.<sup>24</sup> Subsequently, NYCHA provided us with a release-level data extract for the Local Law 11 developments. The results of our data testing were documented in a data reliability memorandum.

Because three different units within NYCHA's CPD handle work involving building envelope rehabilitation, it was determined that there were three populations and a sample would be selected from each. The Construction and Special Projects populations were selected from the corrected contracts awarded spreadsheet, and the Local Law 11 population was obtained from the release-level data extract.

A judgmental sample of rehabilitation work at three developments was selected from the Construction population of 12 developments (25.0 percent) based on borough, dollar value, work description, and reported percentage complete.<sup>25</sup> For Special Projects, a judgmental sample of work at six (17.6 percent) of 34 developments was selected based on the same characteristics. After excluding sidewalk shed-only, other non-construction work, and releases not authorized during the audit's scope period, a random sample of 27 releases, each release being associated with a development, (9.9 percent) was selected from the resultant population of 273 releases, weighted by borough.<sup>26</sup>

Field visits were made to three of the sampled developments—one Construction, one Special Projects, and one Local Law 11. We were accompanied on these field visits by NYCHA CPD personnel and/or its CM personnel. At these field visits, we inspected the rehabilitation work to determine whether all required work was performed and is of good quality, interviewed NYCHA and CM personnel regarding oversight procedures and information flow to and from NYCHA's main office, and, at the one site where work was in progress, we examined the documentation maintained for sufficiency and compliance with NYCHA requirements. Upon completion of these three initial visits, it was determined that the Special Projects sample size would be reduced to five developments and the Local Law 11 sample size would be reduced to fourteen releases.<sup>27</sup> This decision was made because field oversight appeared adequate and no potential systemic issues with the actual work performed were identified. Field visits were made to the remaining 19 sampled developments.

After identifying potential deficiencies during our field visit inspections, we reviewed NYCHA drawings and specifications, conducted internet research, and spoke with manufacturers to determine whether these were actual deficiencies. Also, additional info was requested from NYCHA as needed to aid with this determination. Internet research was conducted to determine the future effects of these deficiencies. Cost estimates of the value of the defective work were prepared.

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<sup>24</sup> The corrected list received from NYCHA included data up to November 13, 2015, which is the date the information was provided.

<sup>25</sup> Initially, the Construction population consisted of 13 contracts. One of the contracts was a requirements contract. Since requirements contracts are specifically addressed by the Local Law 11 testing, the requirements contract was removed from the Construction population to avoid duplication of and simplify testing.

<sup>26</sup> The initial release-level data extract listed of 417 releases.

<sup>27</sup> The Local Law 11 sample was initially reduced to 15 releases, but upon field visit to one location it was found that the release was for non-construction work.

A spreadsheet compiling information obtained from field personnel during field visit interviews was prepared. Based upon this spreadsheet, a determination was made as to whether procedures as reported across a unit were generally consistent, and also whether they agreed with what we had been told during interviews with NYCHA officials at the central office. Moreover, we determined whether there is adequate information flow between the field locations and the central office for monitoring work progress, identifying issues, and taking corrective action.

An in-depth interview was held with the Local Law 11 unit to discuss Primavera functionality for the group, funding and scheduling of releases, and the responsibilities of the CM firm.

We evaluated the use and utility of Primavera. For the Special Projects and Construction samples, Primavera was tested to determine whether it contained documentation needed to properly oversee rehabilitation work. These samples were also tested for schedule compliance (based on dates and durations stated in their Notice to Proceed). If work was not completed on schedule, we located and examined extensions of time granted by NYCHA, if any. For cases when work was still late after considering time extensions, we reviewed the associated contracts for liquidated damages clauses and determined the dollar value of damages that NYCHA could assess.

We tested the Special Projects and Construction samples for excessive contract change orders. To do so we determined the percentage of change order dollars to the original contract amount. The percentage was then compared to the industry standard that total change orders for a rehabilitation project are expected.

Also, roof warranties were reviewed for compliance with the NYC Building Code wind speed requirement, inclusion of accessories under the warranty, and exclusions that may prevent NYCHA from obtaining warranty service in the future.

We developed our findings and conclusions on the basis of our analyses. The results of our samples cannot be projected to the entire populations. However, our test results provided a reasonable basis to determine whether NYCHA is effectively monitoring construction contracts involving building envelope work.

## APPENDIX I

### Construction Unit Sample

Project Number	Borough	Development	Contract Number	Contractor	Award Amount
6722	Brooklyn	Sumner Houses	1222670	Pro-Metal Construction, Inc.	\$ 9,815,954
7591	Manhattan	Isaacs Houses	1414156	Pro-Metal Construction, Inc.	\$ 11,939,020
7365	Queens	Queensbridge South Houses	1435814	Adam's European Contracting, Inc.	\$ 45,570,117

**Total \$ 67,325,092**

### Special Projects Unit Sample

Project Number	Borough	Development	Contract Number	Contractor	Award Amount
6708	Bronx	East 152nd Street - Courtlandt Avenue	1315001	Gem-Quality Corp.	\$ 8,315,627
7604	Brooklyn	Lafayette Gardens	1402495	Universal Construction Resources	\$ 12,121,898
7527	Manhattan	King Towers	1331696	Technico Construction Services, Inc.	\$ 16,692,953
7469	Queens	Pomonok Houses North	1321094	APS Contracting, Inc.	\$ 46,209,002
7472	Staten Island	South Beach Houses	1326622	Universal Construction Resources	\$ 11,699,007

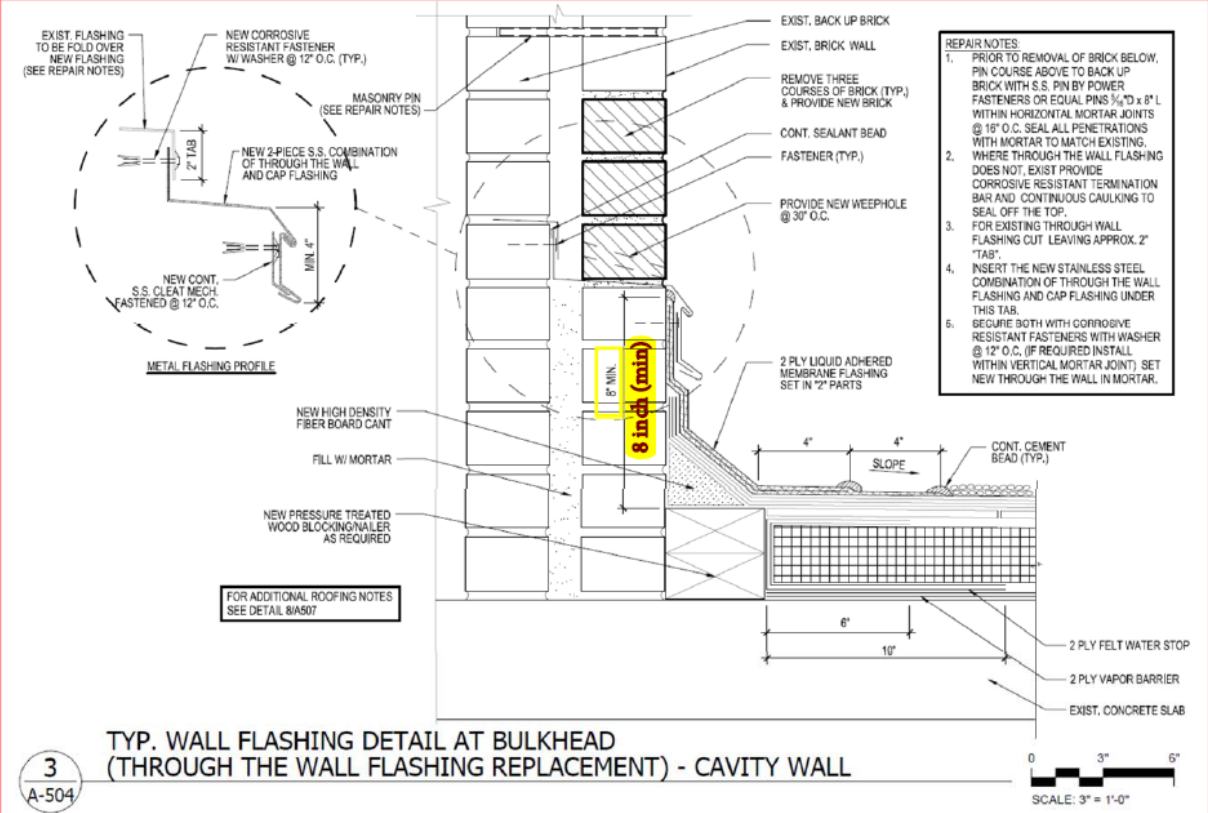
**Total \$ 95,038,486**

### Local Law 11 Unit Sample

Project Number	Borough	Development	Contract Number	Release Number	Contractor	Original Authorization Amount
6481	Bronx	Throggs Neck Addition	1320244	34	Roma Scaffolding, Inc.	\$ 834,696
7988	Bronx	Betances Houses I	1435557	5	S & N Builders, Inc.	\$ 579,239
7989	Bronx	Forest Houses	1229585	85	Sharan Builders, Inc.	\$ 2,268,620
6481	Brooklyn	Gowanus Houses	1320244	36	Roma Scaffolding, Inc.	\$ 444,562
7987	Brooklyn	O'Dwyer Gardens	1229582	4	Zoria Housing LLC	\$ 209,723
7987	Brooklyn	Nostrand Houses	1406854	27	Zoria Housing LLC	\$ 1,051,057
7988	Brooklyn	Carey Gardens	1229584	23	Zoria Housing LLC	\$ 292,186
7988	Brooklyn	Woodson Houses	1229584	39	Zoria Housing LLC	\$ 221,760
7989	Brooklyn	Reid Apartments	1229585	133	Sharan Builders, Inc.	\$ 37,572
7989	Brooklyn	Stuyvesant Gardens I	1435558	3	Roma Scaffolding, Inc.	\$ 256,670
7681	Manhattan	Samuel Apartments (City)	1505555	1	S & N Builders, Inc.	\$ 2,193,532
7988	Manhattan	East River Houses	1229584	95	Zoria Housing LLC	\$ 114,807
7988	Manhattan	Smith Houses	1435557	6	S & N Builders, Inc.	\$ 768,663
7989	Queens	Carleton Manor	1435558	13	Roma Scaffolding, Inc.	\$ 783,009

**Total \$ 10,056,096**

**Wall Flashing Detail at Bulkhead**





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**SHOLA OLATOYE**  
CHAIR & CHIEF EXECUTIVE OFFICER

June 28, 2017

Ms. Marjorie Landa  
Deputy Comptroller for Audit  
NYC Office of the Comptroller  
One Centre Street, Room 1100N  
New York, NY 10007

Dear Ms. Landa:

I am writing in response to your June 15<sup>th</sup> letter which provided the Draft Report related to your audit of the NYCHA's Oversight of Contracts Involving Building Envelope Rehabilitation - # SE16-065A.

We have attached the NYCHA Response on the following pages, which provides our responses, the implementation status on the recommendations with which we agree and the reasons for the disagreement where applicable. We have also attached the supporting documentation, including photographs, to support our position for the recommendations with which we disagree.

As stated in our June 8<sup>th</sup> response to the Preliminary Draft we agree with 9 (or **36%**) of the recommendations, and disagree with 6 (or **24%**) of the recommendations. For the remaining 10 (or **40%**) recommendations, we believe these findings are not applicable because the proposed recommendation is consistent with our current practice, including vigorous punch list inspections, training to field inspectors, wind speed coverage in accordance with Department of Building standards, and appropriate change order procedures and related staff training (*see attached PDF*). We have attached the supporting documentation to reflect the current practices.

If you have any questions, please call Tricia L. Roberts, Audit Director, at 212-306-3441.

Sincerely,

A handwritten signature in blue ink, appearing to read "Michael Kelly", written over the word "Sincerely,".

Michael Kelly  
General Manager & Chief Operating Officer

cc: Shola Olatoye, Chair & Chief Executive Officer  
David Farber, EVP for Legal Affairs & General Counsel  
David Pristin, EVP for External Affairs  
Deborah Goddard, EVP for Capital Projects  
Celeste Glenn, VP for Quality Assurance, Capital Projects  
Karina Totah, VP for Strategic Initiatives  
Tricia L. Roberts, Director Internal Audit & Assessment  
Kelly MacNeal, First Deputy General Counsel, Law Department



## A. Deficiencies in Completed Construction:

### I. Improper Roof Drainage

#### Recommendations:

1. Correct the identified deficiency on Lafayette Gardens' Building 5 roof
2. Determine whether there is a way to recoup the cost of its having to correct the deficiency.
3. Monitor the other identified roofs for compliance with the 48 hour drainage standard and remedy as necessary.
4. Ensure that full inspections are properly completed before any work is accepted.
5. Ensure that warranty maintenance programs for all roofs under active warranty are followed, including the examination of roofs after severe weather conditions.

#### NYCHA Response:

- According to the National Roofing Contractors Association (NRCA), an acceptable duration for ponding water to remain on a roof after a rain for a built-up 4-ply roof system is 48 hours. NYCHA conducted its own inspections of the ponding at this and other locations cited (on May 22, 2017 and on June 21, 2017) and found no ponding 48 hours after the rainstorm ended.
- Issue regarding **evidence gathering**- the Comptroller did not provide the conditions “severity of weather conditions” of the rainstorm when this inspection was conducted. Ponding may or may not occur based on the changing conditions of a rainstorm i.e. a larger volume of rain and or wind conditions during the storm which could impact the results of the inspections findings.

Note: Due to no evidence of ponding on roof, recouping cost or issue regarding warranty and maintenance program regarding this deficiency was not needed.

NYCHA goes through a vigorous punch list inspection with A/Es, CMs, Development personnel and Manufacturers prior to acceptance of warranties.

### II. Base Flashing Installation Does Not Comply with the Applicable Standard:

#### Recommendations:

6. Ensure that its field inspections and CM personnel are knowledgeable about and enforce all requirements under NYCHA and industry roofing standards.
7. Bring any potential non-conformance to the attention of the roofing manufacturer for consideration to avoid impacting the warranty.
8. Ensure that contractor receives appropriate guidance in response to any RFIs.
9. Take all appropriate action to recoup the cost differential between the standard based flashing installation and the provided installation for the location identified in this report.

#### NYCHA Response:

- Recommendations 6, 7 and 8 are NYCHA's current practice; field inspectors and CM personnel are knowledgeable about contract requirements. NYCHA provides training for roof inspections on a yearly basis.
- We do not agree with recommendation 9- the measurement is from the top of the insulation, not the top of the roof. In addition the manufacturer provided warranties for this work.

### **III. Yellow Stain / Growth on Building Facade:**

#### Recommendations:

10. NYCHA should investigate and determine the nature and cause of the stain/growth, and properly remediate the condition. If it is found that the condition was caused by something related to the construction work, NYCHA should require the contractor to correct at no additional cost.

#### **NYCHA Response:**

- This finding is outside of the scope of this audit. Cleaning existing façade was not part of this contract. The contractor did not perform any work near the stained areas. CPD is coordinating with Operations to determine the cause of the staining and NYCHA will address the condition as required.

### **B. Failure to Maintain Copies and Substantive Weaknesses in Roof Warranties:**

#### Recommendations:

11. Ensure copies of all warranties are maintained in the appropriate files and computer systems.
12. Verify that all quantities for accessories are listed on the warranty to ensure proper coverage.
13. Ensure that a plumber inspects the roof drains prior to retrofit to ascertain their remaining useful life; it should match or exceed the 20 year expected useful life of the new roof.
14. Require the roofing manufacturer to provide early notification when a roofing component (including, but not limited to, roof drains) will not be covered by the warranty so that NYCHA can take action to avoid exclusions and/or determine how the exclusions will impact maintenance cost and useful life of the roof.

#### **NYCHA Response:**

- We agree that copies of the warranties should be maintained in the appropriate files and computer systems. As indicated by the Comptroller, hardcopy project documentation outside of PCM is also a NYCHA requirement.
- NYCHA will consult with its Law Department to determine if the recommendation to require fascia quantities to be listed as accessories should be included in future contracts
- The condition of the drains is inspected as part of the pre-design survey. Replacement of the drains is included in the contract on an as needed basis.
- This is NYCHA's current practice.

### **C. Inadequate Contract Scoping at Sumner Houses Resulted in a Questionable Use of a Change Order:**

#### Recommendations:

15. Conduct thorough field surveys to ensure that contract drawings accurately address existing conditions. Reliance on standard details cannot be absolute
16. Ensure compliance with applicable rules and regulations regarding the appropriate use of change orders.

#### **NYCHA Response:**

- It is our practice to conduct field surveys prior to the development of contract drawings. In this instance the Department of Buildings had revised the Code relative to this type of work, between the time contract had been awarded and work began.
- In consultation with the Department of Buildings, NYCHA changed its policy and practices which would impact the unused appearances above the roofs such as incinerator stacks.

- Addendum  
Page 4 of 33
- CPD reviewed its change order procedures and conducted staff training in April 2015, August 2016 and September 2016.

## ***D. Problems with Primavera Contract Manager***

### ***I. Incomplete Documentation in PCM for Special Projects and Construction Work at Sampled Developments***

### ***II. PCM is Not a Functional System for Local Law 11 Requirements Contracts;***

#### Recommendations:

17. NYCHA should ensure all required project documentation in PCM is complete, accurate and entered in a timely manner.
18. NYCHA should investigate the possible modification/upgrade of PCM to allow for its expansion to capture more than five developments. Alternatively, if NYCHA decides to implement new construction project management software, ensure that its configuration suits both the needs of staff and its use of requirements contracts.

#### ***NYCHA Response***

- NYCHA is in the process of procuring construction project management software that better meets our needs. (i.e. construction schedule, recordkeeping project management, reporting )

## ***E. Problems with Construction Schedules***

### ***I. Work Completed Late at Special Projects Developments***

### ***II. Issues with Local Law 11 Construction Schedules***

#### Recommendations:

19. NYCHA should consider enforcing its liquidated damages provision when contracts are completed later. Specifically, liquidated damages should be assessed for the three contracts we identified as being later.
20. Refine the Master Schedule to include defined start and end dates for work at each development, as well as showing planned versus actual timelines.
21. Ensure that all sub-Notices to Proceed are maintained in PCM for work at individual developments. The dates of the sub-Notices to Proceed should correspond to those of the Master Schedule. Ensure that complete and accurate information is entered into the Mod database in a timely manner. Review the existing data for current contracts in the Mod database, and make revisions/corrections as necessary.
22. Consider identifying completing of work at each development as a contract “milestone” so liquidated damages may be assessed and enforced when appropriate.

#### ***NYCHA Response***

- NYCHA does not agree with the liquidated damages recommendation, since delay was out of the contractor’s control
- NYCHA is working with its Law Department to revise the contract document terms where necessary
- CPD meets monthly to ensure that information is accurate and updated.

***F. NYCHA's CPD Manual Has Not Been Updated:***

Recommendation:

23. NYCHA should update its CPD Manual to reflect its current method of utilizing CM firms.

 ***NYCHA Response***

- *NYCHA is in the process of reviewing and updating its CPD procedure manual.*

***G. Data in the Mod Database is Unreliable:***

Recommendation:

24. Ensure that complete and accurate information is entered into the MOD database in a timely manner

25. Review the existing data for current contracts in the Mod database and make revision/ corrections as necessary.

 ***NYCHA Response***

- NYCHA is in the process of procuring construction project management software that better meets our needs. (i.e. construction schedule, recordkeeping project management, reporting )



DEPARTMENT OF INTERNAL AUDIT AND ASSESSMENT  
 Status Report on NYC Comptroller's Findings and Recommendations  
 Audit of NYCHA's Oversight of Contracts Involving Building Envelope Rehabilitation - # SE16-065A

No.	Finding	Recommendation	Owner(s)	Status (Agree/ Disagree)	Response (Status) as of June 7, 2017	Documentation
1	<p><b>Improper Roof Drainage - Lafayette:</b>            During our field inspection of Lafayette Gardens, Building 5 at 411 Lafayette Avenue in Brooklyn, we noted that portions of the roof (specifically areas around the bulkhead door, ventilator curb and roof drain) had significant ponding of water of up to approximately four to five inches. In these areas, the gravel was also stained, which indicated reoccurring and prolonged standing water. (pages 4-5)</p>	<p>Correct the identified deficiency on Lafayette Gardens' Building 5 roof.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p><b>Disagree</b></p>	<p>Inspection 48 hours after a storm showed no ponding. No action required.</p>	<p>Post storm and 48 hour post storm photographs. <b>Attachment A:</b></p>
2	<p><b>Improper Roof Drainage - Cost Recoupment:</b>            Unfortunately NYCHA failed to identify this deficiency during construction even though the staining would likely have been present prior to the formal acceptance of the roof by NYCHA. We estimate the monetary value of the defective work to be \$5,000. (page 5)</p>	<p>Determine if there is a way to recoup the cost of its having to correct the deficiency.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p><b>Disagree</b></p>	<p>No deficiency identified on the roof.</p>	<p>Post storm and 48 hour post storm photographs. <b>Attachment A:</b></p>
3	<p><b>Improper Roof Drainage - Other Roofs:</b>            Additionally, other roofs were found to have minor ponding and staining during our field inspections. The roofs were located at Lafayette Gardens Buildings 2 and 4 in Brooklyn, Sumner Houses Buildings 4 and 8 in Brooklyn, King Towers Buildings 5 and 1 O in Manhattan, and South Beach Houses Building 2 in Staten Island. (page 6)</p>	<p>Monitor the other identified roofs for compliance with the 48 hour drainage standard and remedy as necessary.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p><b>Agree</b></p>	<p>Confirmed; No ponding.</p>	<p>Post storm and 48 hour post storm photographs. <b>Attachment A:</b></p>



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4	<p><b>Improper Roof Drainage - Warranty and Maintenance Program:</b> Furthermore, since NYCHA did not identify the deficiency during the one year contractor guarantee period which expired on October 30, 2016, it lost its opportunity to have the contractor correct the work within the guarantee period. We note that the warranty on this roof obtained from the roofing manufacturer includes a maintenance program that must be followed to ensure coverage. The maintenance program suggests that the roofing system be examined "for damage after severe weather conditions such as hailstorms, heavy rains, high winds, etc." along with required regular semi-annual inspections. If NYCHA had checked the roof after heavy rains during the one year contractor guarantee period, the defective condition would have been discovered and corrected by the contractor. Moreover, if the manufacturer refuses to cover claimed losses, the financial harm to NYCHA could far exceed the cost of having paid for work inadequately performed and the cost of making repairs to correct the deficient work. (page 6)</p>	Ensure that full inspections are properly completed before any work is accepted.	Deborah Goddard - EVP for Capital Projects	<b>Not applicable because this is our current practice</b>	NYCHA goes through a vigorous punch list inspection with AE, CM, Development and Manufacturer prior to acceptance of warranty.	Pre-roofing checklist and sequence of roof checklist <b>Attachment B:</b>
5		Ensure that warranty maintenance programs for all roofs under active warranty are followed, including the examination of roofs after severe weather conditions.	Deborah Goddard - EVP for Capital Projects	<b>Not applicable because this is our current practice</b>		



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6	<p><b>Base Flashing Installation - Pomonok:</b>            Our audit found that some of the base flashing around the bulkheads at Pomonok Village North in Queens, did not comply with the industry standard of extending a minimum of eight inches above the bottom of the cant strip. The NRCA refers to an eight-inch flashing height as a minimum in all details, as do most manufacturers. This lack of compliance was discovered during our field inspection of Pomonok Village North in Queens, Buildings 2, 6, and 8, when we, accompanied by NYC HA representatives, observed that the height of the counter flashing above the roof appeared to be less than the four inch minimum standard, thereby not permitting the upturn of the base flashing to meet the eight-inch minimum. A follow up visit was made to inspect the other buildings at this development. Overall, of the total 16 buildings, we found the sub-standard flashing height at Buildings 4, 5, 6, 8, and 9. (page 6)</p>	<p>Ensure that its field inspectors and CM personnel are knowledgeable about the requirements under NYCHA and industry roofing standards.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p><b>Not applicable because this is our current practice</b></p>	<p>Field inspectors &amp; CM are knowledgeable about contract requirements. NYCHA provides training for roof inspections on yearly basis.</p>	<p>Liquid Applied Roofing Training - March 2017            Cold Liquid Applied Roofing Training - March 2017            Wind Uplift Training - May 2017            Green Roof Training - July 2016            Tapered Insulation Training - July 2016            Current NYCHA Roofing Systems - September 2015            Current NYCHA Roofing Systems - August 2015  <b>Attachment C</b></p>
7	<p><b>Base Flashing Installation - Non-conformance:</b>            It should be noted that the detail included in NYCHA's as-built drawings, Detail 3/A-504, Typ. Wall Flashing at Bulkhead (Through Wall Flashing Replacement) - Cavity Wall, shows an eight-inch minimum upturn of the flashing (see Appendix II ). Also, contract specifications Section 07 52 16 Part 1 C.5.a.C.1 requires the eight-inch minimum and Part 3 F.1 . requires inspecting for conformance with the eight-inch minimum height and bringing non-conforming areas to the attention of the Owner's Representative. (page 7)</p>	<p>Bring any potential non-conformance to the attention of the roofing manufacturer for consideration to avoid impacting the warranty.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p><b>Not applicable because this is our current practice</b></p>		



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8	<p><b>Base Flashing Installation - Response to RFI:</b>            Our review found that the contractor sent a Request for Information (RFI) regarding how to proceed in areas where because of a raised roof level (due to new tapered insulation installation), the standard eight-inch minimum could not be met by installing the new flashing at the height of the existing flashing. The RFI stated that the condition was not acceptable to the roofing manufacturer, GAF. The contractor was instructed by the CM firm to follow the contract drawings and GAF's recommendations.<sup>8</sup> At the bulkhead location where we identified the deficiency, there were no physical barriers to achieving the eight-inch minimum required by GAF and general industry practice. However, to achieve the eight-inch minimum, the new flashing could not have been installed at the height of the existing flashing as shown in the detail; consequently NYCHA, through its CM, should have provided the contractor with clearer direction in its response to the RFI. (pages 7-8)</p>	Ensure that contractor receives appropriate guidance in response to any RFIs.	Deborah Goddard - EVP for Capital Projects	<b>Not applicable because this is our current practice</b>		
9	<p><b>Base Flashing Installation - Cost Recoupment:</b>            NYCHA paid for work that was not properly performed and might be entitled to the differential cost between this flawed installation and an installation complying with industry, manufacturer, and NYCHA standards. For the total 988 liner feet of substandard installation we identified, we estimate this cost to be \$39, 100. However, we are unable to estimate the potentially significant future costs that NYCHA may have to bear due to a lack of warranty coverage for leaks resulting from the deficient base flashing, particularly if the manufacturer denies coverage under the warranties. (page 8)</p>	Take all appropriate action to recoup the cost differential between the standard base flashing installation and the provided installation for the locations identified in this report.	Deborah Goddard - EVP for Capital Projects	<b>Disagree</b>	Details 2 & 3/A-504 show that the 8" is measured from the top of the insulation, not the top of the finished roof. GAF roofing warrantee	copies of the contract detail and warrantees <b>Attachment D</b>





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10	<p><b>Possible Mold Condition:</b>            At the East 152nd Street-Courtlandt Avenue development in the Bronx, we observed a yellow stain/growth on the split rib block exterior facade. (See Photographs 3 and 4.) This may be a mold, fungus, lichen, or similar vegetative growth. The condition exists on both the new block installed under this contract and the previously existing block and, therefore, seems to be a consequence of the work performed under the contract. Until we alerted them, the NYCHA and CM personnel accompanying us on the site inspection were unaware of this condition. (page 9)</p>	<p>NYCHA should investigate and determine the nature and cause of the stain/growth, and properly remediate the condition. If it is found that the condition was caused by something related to the construction work, NYCHA should require the contractor to correct at no additional cost.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p><b>Disagree</b></p>	<p>Cleaning the existing facade was not part of this contract. The Contractor did not perform any work near the stained areas. CPD will coordinate with Operations.</p>	<p>CPD notified Operations <b>Attachment E</b></p>
11	<p><b>Issues with Roof Warranties - Wind Speeds:</b>            For the remaining four sampled work locations, we found:            • not all the warranties provided coverage for wind speeds up to 110 miles per hour. NYCHA informed the auditors that such coverage is required by NYCHA as per the 2008 New York City Building Code Chapter 16 Section 1609 and ASCE 7 Minimum Design Loads for Buildings and Other Structures Section 6. (Pomonok and Lafayette Gardens) (pages 10-11)</p>	<p>Ensure that all roof warranties provide coverage for wind speeds in accordance with the New York City Building Code.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p><b>Not applicable because this is our current practice</b></p>	<p>Roof warrantees provide wind speed coverage in accordance with DOB standards.</p>	<p>This issue was picked up and corrected in 2014. copies attached. <b>Attachment F</b></p>
12	<p><b>Issues with Roof Warranties - Fascia Quantities:</b>            • Not all the warranties stated the fascia quantities under "Accessories". (East 152nd St - Courtlandt Ave, South Beach and Lafayette) (pages 10-11)</p>	<p>Verify that all quantities for accessories are listed on the warranty to ensure proper coverage.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p><b>Disagree</b></p>	<p>NYCHA will consult with our Law Dept. to determine if this requirement should be included in future contracts.</p>	
13	<p><b>Issues with Roof Warranties - Retrofitted Drains:</b>            • The majority of the warranties were found to specifically exclude the retrofitted pre-existing drains that NYCHA typically uses. Without ensuring that the remaining useful life of the drains to be retrofit meets or exceeds the 20 year expected useful life of the new roof, NYCHA may prematurely have issues with clogged drains and leaking. (East 152nd St - Courtlandt Ave, Pomonok, South Beach and Lafayette) (pages 10-11)</p>	<p>Ensure that a plumber inspects the roof drains prior to retrofit to ascertain their remaining useful life; it should match or exceed the 20 year expected useful life of the new roof.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p><b>Not applicable because this is our current practice</b></p>	<p>The condition of the drains is inspected as part of the pre-design survey. Replacement of the drains is included in the contract on an as needed basis.</p>	



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14	<p><b>Issues with Roof Warranties:</b>            These are all issues that are of concern since they may impact the useful life of the roof and invalidate NYCHA's ability to obtain service under the warranties. (page 11)</p>	<p>Require the roofing manufacturer to provide early notification when a roofing component (including, but not limited to, roof drains) will not be covered by the warranty so that NYCHA can take action to avoid exclusions and/or determine how the exclusions will impact maintenance cost and useful life of the roof.</p>	Deborah Goddard - EVP for Capital Projects	<b>Not applicable because this is our current practice</b>		
15	<p><b>Inadequate Contract Scoping - Sumner Houses:</b>            Our audit found that NYCHA used a change order to obtain \$2.1 million of work that apparently should have been-but was not-made a part of the original contract scope. Specifically, we found that the original contract NYCHA awarded a \$9,815,954 contract on June 13, 2014 for roof replacement and bulkhead masonry repair for 13 buildings at Sumner Houses. Seven weeks later, on August 1, 2014, prior to that work's commencing, NYCHA issued a \$2, 170,000 change order to the contractor for the demolition of 24 chimneys and a number "smoke rooms" on the roofs of the 13 buildings, work that included asbestos abatement and related rebuilding. (page12)</p>	<p>Conduct thorough field surveys to ensure that contract drawings accurately address existing conditions. Reliance on standard details cannot be absolute.</p>	Deborah Goddard - EVP for Capital Projects	<b>Not applicable because this is our current practice</b>	In consultation with DOB, NYCHA changed our policy and practices with regard to unused appurtances above the roofs such as incinerator stacks.	
16	<p><b>Inadequate Contract Scoping - Compliance with Rules:</b>            The change order's large dollar value relative to the size of the contract (a 22 percent increase) indicates a material change in the contract work scope.             Because Sumner Houses utilizes both Federal and City funding, compliance with both the NYC Procurement Policy Board (PPB) Rules and HUD's Procurement Handbook for Public Housing Agencies is required. (page 12)</p>	<p>Ensure compliance with applicable rules and regulations regarding the appropriate use of change orders.</p>	Deborah Goddard - EVP for Capital Projects	<b>Not applicable because this is our current practice</b>	CPD has tightened up its change order procedures and conducted staff training.	Agenda and sign in sheets Aug 2016 and Change Order Procedures and Requirements - Sep 2016 <b>Attachment G</b>
17	<p><b>Incomplete Documentation in PCM:</b>            We found that some records critical to overseeing and documenting rehabilitation work were missing from PCM for all eight developments. Detail of those finding is summarized in Table III. Without complete documentation NYCHA cannot anticipate and prevent potential problems from impacting scheduled completion dates. We note that the missing documentation is most significant for King Towers and Sumner Houses. (pages 13-14)</p>	<p>Ensure all required project documentation in PCM (Primavera Contract Manager) is complete, accurate, and entered in a timely manner.</p>	Deborah Goddard - EVP for Capital Projects	<b>Agree</b>	CPD meets monthly to ensure that information is accurate and updated.	



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18	<p><b>PCM Not Functional for Local Law 11 Contracts:</b>            Our audit found that NYC HA is using PCM and P6 in a manner that does not readily accommodate Local Law 11 and other work being done with requirements contracts. With Primavera, NYCHA established a Project-based system that functions well for work performed at a single location using a single contract. However, the Local Law 11 work uses multiple contracts to accomplish work at multiple locations captured under a single project. PCM can capture a maximum of up to five developments, but most of the Local Law 11 requirements contracts exceed this capacity. (pages 15-16)</p>	<p>NYCHA should investigate the possible modification/upgrade of PCM to allow for its expansion to capture more than five developments. Alternatively, if NYCHA decides to implement "e-Builder," ensure that its configuration suits both the needs of staff and its use of requirements contracts.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p>Agree</p>	<p>New project management software has been identified and will be implemented within the next few months upon contract award.</p>	
19	<p><b>Work Completed Late:</b>            We found that rehabilitation work at three out of the five sampled Special Projects developments was completed late, by between 23 to 60 days. For the three Special Projects developments where work was completed late, the amount of liquidated damages totaled \$95,200 (see Table IV). (East 152nd St - Courtlandt Ave, South Beach and Lafayette).            As of April 5, 2017, NYCHA had not yet demanded payment of liquidated damages for any of these performance delays. (pages 16-17)</p>	<p>NYCHA should consider enforcing its liquidated damages provision when contracts complete late. Specifically, liquidated damages should be assessed for the three contracts we identified as being late. (Contract numbers: 1315001, 1326622, 1402495)</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p>Disagree</p>	<p>Substantial completion of all three projects was achieved within the scheduled timeframe but the contracts could not be closed due to open DOB Letter of Completion delays. NYCHA does not agree that liquidated damages are warranted since the delay was out of the contractor's control.</p>	
20	<p><b>Issues with Local Law 11 Construction Schedules - Master Schedule:</b>            Our audit found that the maintenance of contract information in Primavera makes it difficult for NYCHA to properly oversee and monitor the work and schedule of Local Law 11 requirement contracts. A Master Schedule is maintained in the Local Law 11 unit's internal computer files and not in PCM.            We reviewed the Master Schedule and found that it does not give defined start and finish dates for work at each development. Instead, the schedule provided for each development consists of an "X" marked in a spreadsheet cell for the months when there is (or is planned to be) activity at that location. Also, the Master Schedule does not show planned versus actual timelines. (pages 17-18)</p>	<p>Refine the Master Schedule to include defined start and end dates for work at each development, as well as showing planned versus actual timelines.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p>Agree</p>	<p>We are working with the Law Dept. to revise the contract documents. The new software will address this issue.</p>	



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21	<p><b><u>Issues with Local Law 11 Construction Schedules - Sub-Notices to Proceed:</u></b>            Also, we were informed by NYCHA that there are "sub-Notices to Proceed" maintained in PCM that provide schedules for each development. Similar to how an NTP triggers the start of a contract, these sub-Notices to Proceed initiate work at specific developments. However, our audit found that PCM had sub-Notices to Proceed for only three (21 percent) of the 14 Local Law 11 developments in our sample. (page 18)</p>	<p>Ensure that all sub-Notices to Proceed are maintained in PCM for work at individual developments. The dates of the sub-Notices to Proceed should correspond to those of the Master Schedule.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p>Agree</p>	<p>New project management software has been identified and will be implemented within the next few months upon contract award.</p>	
22	<p><b><u>Issues with Local Law 11 Construction Schedules - Liquidated Damage for Individual Developments:</u></b>            Because NYCHA has not contractually identified completion of work at individual developments as milestones, its assessment of liquidated damages for failure to timely complete a milestone might be successfully challenged. In their current form, the NYCHA contracts only allow for liquidated damages to be assessed for failure to complete the overall contract on time. (page 18)</p>	<p>Consider identifying completion of work at each development as a contract "milestone" so liquidated damages may be assessed and enforced when appropriate.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p>Agree</p>	<p>The current NYCHA requirement contracts do not allow liquidated damage assessment by development. We will consult with the Law Dept. about revising this contract language.</p>	
23	<p><b><u>CPD Manual Not Updated:</u></b>            Our audit found that Chapter 5 of the CPD Manual entitled CM/Build is outdated. We were informed by NYCHA that in October 2011, it decided that it would no longer use CM/Build contracts. Although CM/Build was abandoned nearly four years before our audit began, the manual continues to contain an outdated section. (pages 18-19)</p>	<p>NYCHA should update its CPD Manual to reflect its current method of utilizing CM firms.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p>Agree</p>	<p>Currently in progress</p>	
24	<p><b><u>Data in Mod Database is Unreliable:</u></b>            Our audit found the data in the Mod database to be both incomplete and inaccurate. NYC HA stated that the Mod database suffers information input backlogs because of its heavy reliance on manual updating. This poses a significant issue regarding this database's utility. (pages 19-20)</p>	<p>Ensure that complete and accurate information is entered into the Mod database in a timely manner.</p>	<p>Deborah Goddard - EVP for Capital Projects</p>	<p>Agree</p>	<p>New project management software has been identified and will be implemented within the next few months upon contract award.</p>	



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25	<p><b>Data in Mod Database is Unreliable:</b>            We found that the contracts awarded spreadsheet provided to us by NYCHA on September 30, 2015 had numerous data reliability issues. In the fields concerning schedule (i.e., status and dates) we found:</p> <ul style="list-style-type: none"> <li>• Many of the fields were blank, a pervasive problem with the projected construction start and end dates;</li> <li>• One entry specified a future date that had not yet occurred as an actual completion date;</li> <li>• 31 listings had a status of "In Progress," but their actual start dates were blank, signifying that these contracts had not started;</li> <li>• Two listings had a status of "In Progress," but had a construction actual end date, signifying that these contracts were completed; and</li> <li>• Two listings were assigned to the wrong program unit.</li> </ul> <p>(pages 19-20)</p>	Review the existing data for current contracts in the Mod database, and make revisions/ corrections as necessary.	Deborah Goddard - EVP for Capital Projects	Agree	New project management software has been identified and will be implemented within the next few months upon contract award.	



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