



Issue Date	December 18, 1996
Audit Case Number	97-CH-204-1003

TO: David M. Kellner, Director, Public Housing Division, Ohio State Office

FROM: Dale L. Chouteau, District Inspector General for Audit, Midwest

SUBJECT: Columbus Metropolitan Housing Authority  
Rehabilitation of Lincoln Park Apartments  
Comprehensive Improvement and Assistance Program  
Comprehensive Grant Program  
Columbus, Ohio

We completed an audit of the Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments. We performed the audit at the request of the Ohio State Office, Public Housing Division. Our audit objectives were to determine whether: the Authority followed Federal procurement procedures in awarding the rehabilitation contract; the work was performed in a workmanlike manner and in accordance with the specifications; and, the cost of change orders was reasonable.

The Authority followed Federal procurement procedures in awarding the contract. The Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments was not in a workmanlike manner and in accordance with specifications. The staff of HUD's Ohio State Office's Multifamily Housing Division inspected the contractor's work and estimated the cost of defective work at \$414,898. The cost of change orders were within reason.

Within 60 days, please give us, for each recommendation made in the report, a status report on (1) the corrective action taken; (2) proposed corrective action and the date to be completed; or (3) why action is considered unnecessary. Also please furnish us copies of any correspondence or directives issued because of the audit.

Should your staff have any questions, please have them contact me at (312) 353-7832.

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# Executive Summary

We completed an audit of the Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments. Our audit objectives were to determine whether: the Authority followed Federal procurement procedures in awarding the rehabilitation contract; the work was performed in a workmanlike manner and in accordance with the specifications; and, the cost of change orders was reasonable.

The Authority followed Federal procurement procedures in awarding the contract. The Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments was not in a workmanlike manner and in accordance with specifications. The cost of change orders were within reason.

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Rehabilitation was not completed in a workmanlike manner or in accordance with specifications

The Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments was substandard. The rehabilitation work was not completed in a workmanlike manner and in accordance with the contract work specifications. Multifamily Housing Division staff from HUD's Ohio State Office estimated the cost of the defective work at \$414,898.

The defective work included sod incorrectly installed for \$196,675; bricks installed with the unfinished side facing outward or discolored for \$95,000; plumbing fixtures loose for \$27,500; brick planters not reinforced, mulched and capped for \$26,663; doors incorrectly installed and hardware missing for \$20,945; exterior concrete expansion and control joints missing for \$20,700; tiles defective and wall base moldings loose for \$20,169; and, other defective work for \$7,246. Neither the Authority nor the general contractor provided the necessary inspections needed to ensure quality rehabilitation work. Furthermore, tenants were living in units that were unsanitary and hazardous.

Recommendations

We are making several detail recommendations to correct the deficiencies reported. We recommend that HUD's Ohio State Office's Public Housing Division inspect the interiors of units not included in our sample to determine whether the rehabilitation work in these units was performed in a skillful, workmanlike manner and in accordance with the specifications. We also recommend the Division require the Authority to correct defective work at no additional cost. The Division should periodically monitor the Authority's progress

in correcting the defective work. The Ohio State Office's Public Housing Division should consider taking sanctions against the contractor.

If the general contractor does not make the required repairs, the Authority should (1) contract for the repairs or services and back-charge the cost to the general contractor, (2) consider alternate solutions for the defective work, for example, extending the warranties. The Authority's future monitoring of rehabilitation contracts should ensure work is correctly performed.

We discussed our finding with the Authority's Executive Director during the audit and provided him the draft finding. We also provided a copy of the draft finding to the Ohio State Office. We held an exit conference with Authority officials on November 12, 1996. The Authority provided written comments to the finding and recommendations. Excerpts from the comments are included in the finding with our evaluation and in Appendix B in their entirety.

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# Introduction

The Columbus Metropolitan Housing Authority was organized on May 8, 1934, pursuant to Section 1078-1 to 1078-41 of the General Code of Ohio, as revised by Section 3735.27 of the Revised Code, effective October 1, 1953. The Authority is governed by a five-member Board of Commissioners. The Executive Director has the overall responsibility for fulfilling the goals and objectives established by the Board of Commissioners. Dennis Guest was the Executive Director. The Authority's books and records were located at 960 East Fifth Avenue, Columbus, Ohio.

The Authority, as of October 31, 1996 owned 4,400 low-income units in 30 projects. Lincoln Park was built in 1941 and had 33 rowhouses with 346 family units. After rehabilitation Lincoln Park will have 29 buildings and 292 units. The rehabilitation included the project's interior and exterior. The contract was signed on September 3, 1992 for \$8,996,505. The Authority approved 22 change orders as of September 6, 1996 for \$2,804,609, bringing the total cost of the rehabilitation to \$11,801,114.

The Authority funded the rehabilitation of Lincoln Park Apartments with Comprehensive Improvement Assistant Program funds from 1987 through 1991 and Comprehensive Grant Program funds from 1992 and 1993.

On October 28, 1994, the Authority terminated the contract with the general contractor because of the Authority's dissatisfaction with the contractor's work and the length of construction delays. The Authority and the contractor agreed to a reinstatement effective November 23, 1994. At about the same time, the Authority terminated the contract of the original architect and, in January 1995 hired another firm.

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## Audit objectives

Our audit objectives were to determine whether: the Authority followed Federal procurement procedures in awarding the rehabilitation contract; the work was performed in a workmanlike manner and in accordance with the specifications; and, the cost of change orders was reasonable.

## Audit scope and methodology

To achieve the objectives, we reviewed HUD Regulations, HUD handbooks and administrative requirements. We interviewed HUD and the Authority's staff to obtain information about awarding of the contracts. We reviewed files at HUD's Ohio State Office to obtain information on the rehabilitation funding and HUD's review of the rehabilitation work. We reviewed files at the Authority to obtain information about awarding the contracts, inspecting and supervising rehabilitation work, reviewing change orders and settling disputes. We also interviewed the Authority's

attorney, architects and a sub-contractors to obtain information regarding the contractor's performance.

To evaluate the quality of the rehabilitation, we requested the staff of HUD's Ohio State Office's Multifamily Housing Division to inspect the rehabilitation work. We accompanied the Division's inspectors. HUD's Ohio State Office hired an independent contractor to determine whether the general contractor properly reinforced the concrete and masonry work and installed sod according to the specifications.

The audit covered the period August 1, 1992, about the time the bid process started for Lincoln Park Apartments, through March 31, 1996. We expanded the coverage as necessary. We performed the on-site audit work between April 1996 and November 1996.

We conducted our audit in accordance with generally accepted government auditing standards.



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# Rehabilitation of Lincoln Park Apartments Was Substandard

The Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments was substandard. The rehabilitation work was not completed in a workmanlike manner and in accordance with the contract work specifications. Neither the Authority nor the general contractor provided the tight inspection and supervision needed to ensure quality rehabilitation work. HUD's Ohio State Office's Multifamily Housing Division staff estimated that correcting the defective work would cost \$414,898. Furthermore, tenants were living in units that were unsanitary and hazardous.

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## Contract requirements

The Authority's contract with the general contractor states that the contractor shall furnish all labor, material, equipment and services and complete all work in strict accordance with the drawings and specifications. The contract specifications require the contractor to correct, repair, restore and cure any damage resulting from any defects, omission or failure in workmanship and materials. The general conditions of the contract also state that all work shall be performed in a skillful and workmanlike manner.

## 35 percent of units and all exterior work were inspected

At our request, Construction Analysts from the Multifamily Housing Division of HUD's Ohio State Office inspected Lincoln Park Apartments to determine the quality of the rehabilitation and the cost of correcting the defective work. The Multifamily staff inspected the interior of all 103 units in sectors Ia and IIa, about 35 percent of the project's 292 units. In addition, they inspected the exteriors of all buildings and all land improvements in sectors I through IV. Sector V was not included because the Authority had not yet accepted the contractor's work in the sector. An independent contractor inspected the brick planter boxes, patio slabs, porches and sidewalks with a magnometer for reinforcement steel and wire mesh. A magnometer is an instrument that uses magnetic fields to detect iron and steel. Another independent contractor inspected the sod to determine whether the sod was installed in accordance with the specifications.

## Estimated cost to correct defective work was \$414,898

The Construction Analysts identified defective external and internal work totaling \$414,898. The defects affected virtually

all aspects of the rehabilitation including the sod, brick work, plumbing, electrical and carpentry. The \$414,898 includes only defective rehabilitation work. The Construction Analysts did not cite corrective work needed because of poor maintenance.

The following table shows the defective work and the estimated cost to fix it.

<u>Description of Defective Work</u>	<u>Estimated Cost to Correct</u>
Sod was incorrectly installed	\$196,675
Bricks were laid wrong side out	95,000
Plumbing fixtures were loose	27,500
Brick planters were not reinforced, mulched and capped	26,663
Doors were improperly installed and hardware was missing	20,945
Exterior concrete expansion and control joints were missing	20,700
Tiles were defective and wall base moldings were loose	20,169
Safety valves, electrical outlets and wiring were hazardous	6,596
Other	<u>650</u>
Total	<u>\$414,898</u>

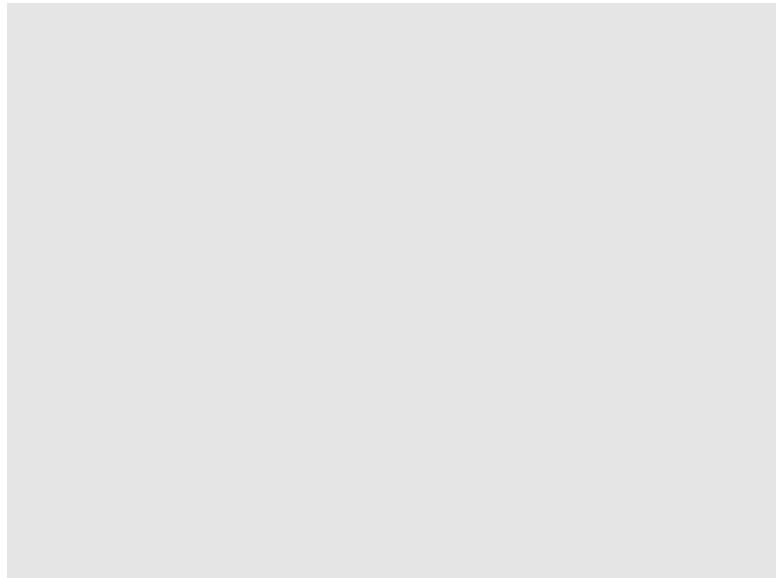
Sod was incorrectly installed

The lawns throughout sectors I through IV were barren and brown; weeds were abundant. The lawns also had wide cracks throughout because the grass had not grown sufficiently to join the squares of sod. Furthermore, the squares of sod had not blended with the underlying base and could be pulled up intact. These conditions were confirmed by inspections made by an independent contractor, HUD's Ohio State Office's staff and Ohio State University's Plant and Pest Diagnostic Clinic.

The lawns were laid in the summer of 1994, fall of 1995, spring, summer and fall of 1996. Similar conditions existed regardless of when the sod was laid.

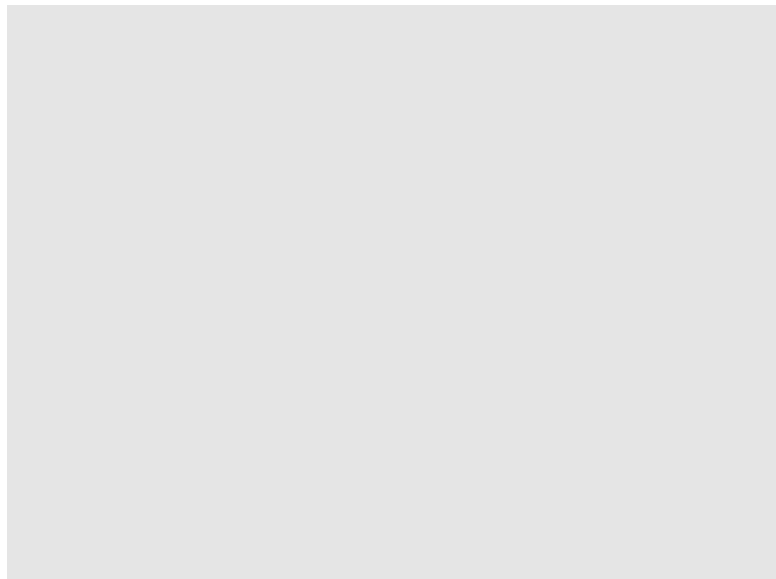
The pictures below show lawns that were typical throughout Lincoln Park.

This sod at this location was laid in Summer 1994. Sod laid on stony surface will not sustain a healthy growth. The lawn had numerous bare areas where sod had died.



Sector Ia, between Building 1770 and Building 630

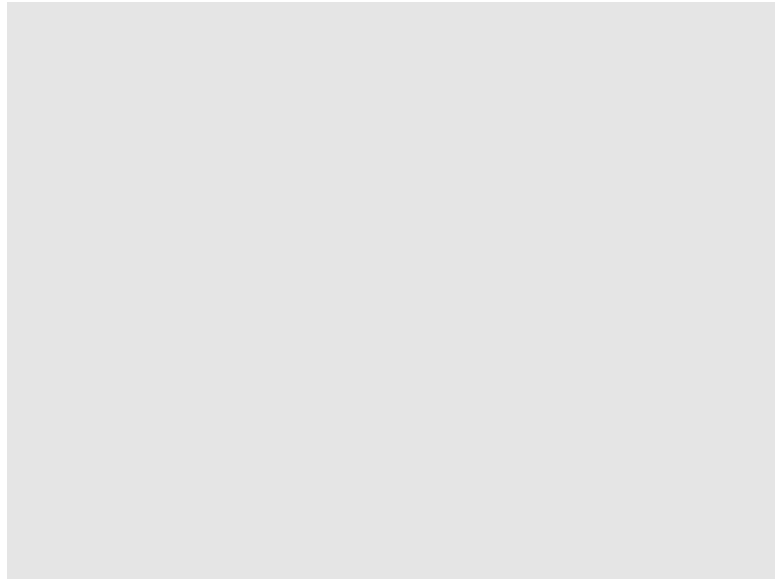
Sod was installed in Fall 1995.



Sector IIa

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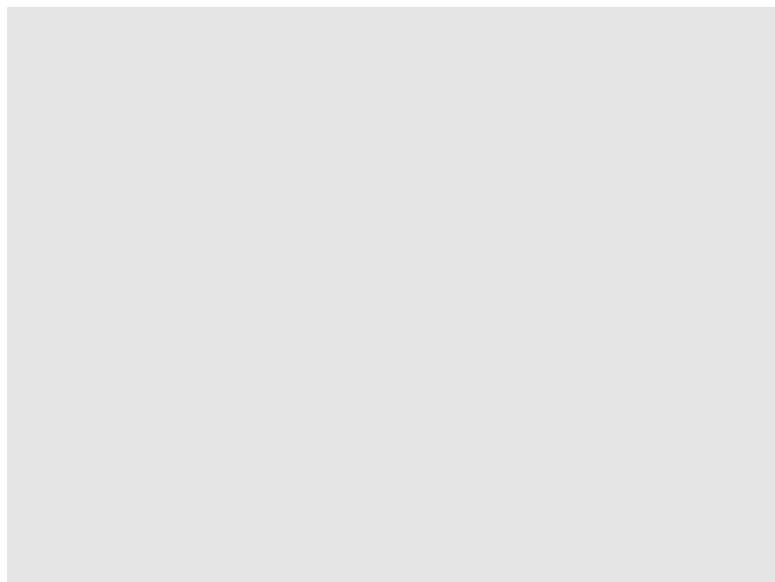
Sod was installed Spring 1996.



**Sector IIb**

The sod was defective because the subcontractor did not prepare the underlying base, as required before laying the sod. The specifications required the contractor to loosen four inches of ground and remove all sticks, roots, rubbish, stones over 1-1/2 inches and other extraneous matter. Without proper preparation, the grass will not root and will eventually die. We and HUD's Ohio State Office's staff lifted the sod at different locations and found the underlying base littered with stones and other debris.

Sod was installed July 1996.



**Sector III**

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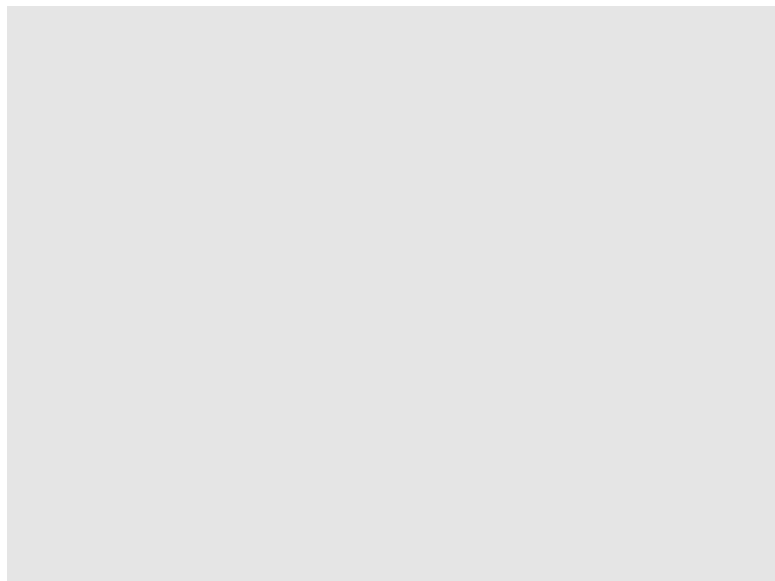
The Authority was aware of sod problems since May 1995. The Ohio State University's Plant and Pest Diagnostic Clinic analyzed the sod in sector I. The sod in sector I was the only sod laid at the time of the University's analysis. The University concluded that the soil was not correctly prepared.

Sod will not root, let alone sustain a healthy growth on unloosened soil loaded with stones and debris. The HUD Ohio State Office's staff recommended that the sod be completely removed, the underlying base properly prepared and new sod laid. The estimated cost in the contract for the sod was \$196,675.

Bricks laid wrong side out

An estimated 5 to 10 percent of the bricks in the new storage sheds and brick planters boxes were laid the wrong side out or were discolored. The masonry specifications stated that the flat finished side of the bricks should face outward. The contractor, however, installed the brick with the unfinished side outward. In addition, some of the bricks had an ashy residue. The bricks that were laid wrong side out or were discolored present no structural problem. However, the Authority paid for rehabilitation work properly completed. HUD's Construction Analysts estimated the cost to correct the defective brick work was \$95,000.

Ashy residue on bricks could not be removed by scrubbing or power washing.



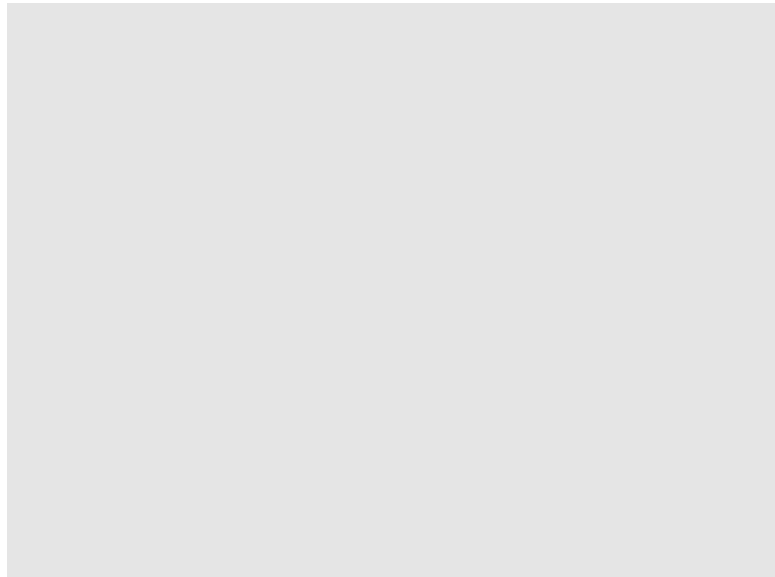
Unit #1745J

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Bathroom and kitchen fixtures were loose

Bathroom and kitchen plumbing fixtures in 75 units were not correctly installed. The specifications stated plumbing fixtures were to be installed in accordance with manufacturer's instructions. Bathroom sinks were not secured to base cabinets and toilets were loose and leaking. Faucets in both the bathrooms and kitchens were loose. The loose plumbing fixtures prevented proper caulking and caused leaks. The estimated cost to correct the bathroom and kitchen plumbing fixtures was \$27,500.

The picture shows a bathroom sink which was not secured to the base cabinet. We lifted the sink to show that it was not secure. Sinks not caulked and not attached to base cabinets may cause leaks and rotting in time.



Unit #640J

Brick planter boxes were not reinforced and mulched, and patio wall caps were not correctly installed

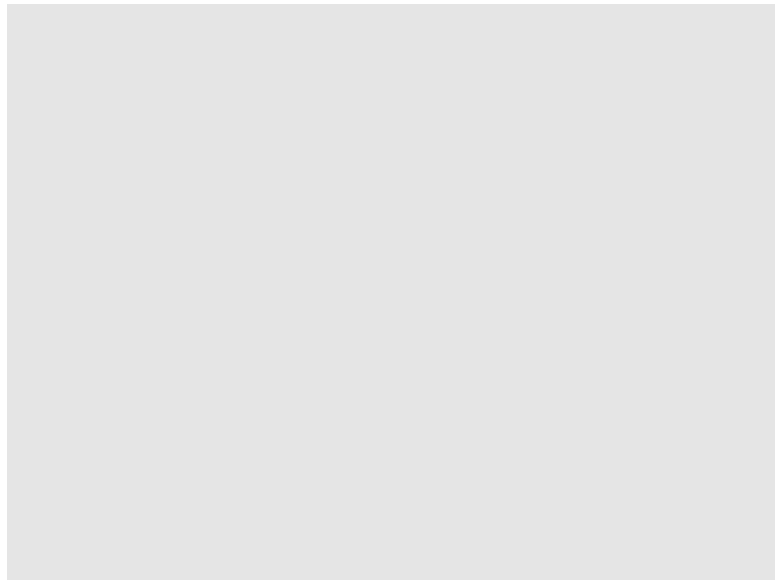
Brick planter boxes were not reinforced and mulched as required. An independent contractor using a magnometer determined that reinforcing bars were either not installed or improperly installed in 42 of 138 planter boxes through sectors I through IV. Without correctly installed reinforcing bars, the planter boxes are likely to crack, especially in freezing temperatures.



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The contractor also did not prepare, mulch and fertilize the soil in the brick planters, as provided by the specifications. The Ohio State Office's staff observed a contractor's employee discarding debris in the planter boxes. The Ohio State Office's staff also said that dirt in front of the units was used to fill the planters, rather than using the specified soil composition. Further, tenants complained that their planter boxes were full of construction debris hidden under a shallow layer of dirt. Without proper soil preparation and mulching, rapid evaporation and uncontrolled weed growth will occur. The lack of initial fertilizer adversely affects plant growth.

The picture shows a typical brick planter at Lincoln Park Apartments. The planter box was not mulched, prompting weed growth.



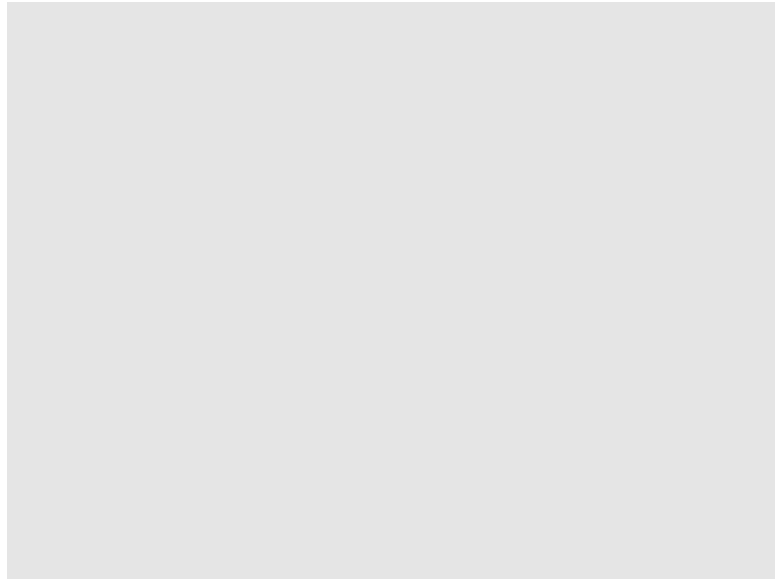
#### Unit #640B

Patio wall caps were not correctly installed. The architect designed the wall caps so that water would move away from the patios. The contractor installed the wall caps backwards. The water drained towards the patios and caused water to pool, which can cause slipping hazards in the wintertime.

The Authority was aware that the wall caps were facing the wrong direction. The Authority decided to accept these wall caps because it would take 6 to 8 weeks to obtain the correct caps. Furthermore, the Authority did not view the additional water on the patios as a significant problem. The Authority also was concerned that while waiting for the correct wall caps the vacant units would be vandalized. The Ohio State Office's staff estimated the cost to correct the planter boxes and patio wall caps was \$26,663.

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Defective wall caps add water to patios. The condition may cause slipping hazards in winter when water freezes.



Unit #674C

Doors were incorrectly installed and hardware was missing

Doors in 17 units were incorrectly installed or missing hardware or stops. The specifications provided for installation in accordance with the manufacturer's instructions. The metal doors were misaligned so they were difficult to open, and the deadbolts did not match the cutouts. The wood doors were installed at an angle and would not close completely. As a result, the doors were difficult to operate. The Ohio State Office's staff estimated the cost of correcting the defective work at \$20,945.

Concrete expansion joints were missing

Concrete expansion and control joints were not installed in 48 locations in sectors I and II. The specifications required the contractor to install expansion joints between abutting concrete curbs, structures, walks and other fixed objects unless otherwise indicated. Because of missing expansion and control joints, the concrete was likely to crack prematurely, settle unevenly and become a tripping hazard. The Ohio State Office's staff estimated that correcting the defective work would cost \$20,700.

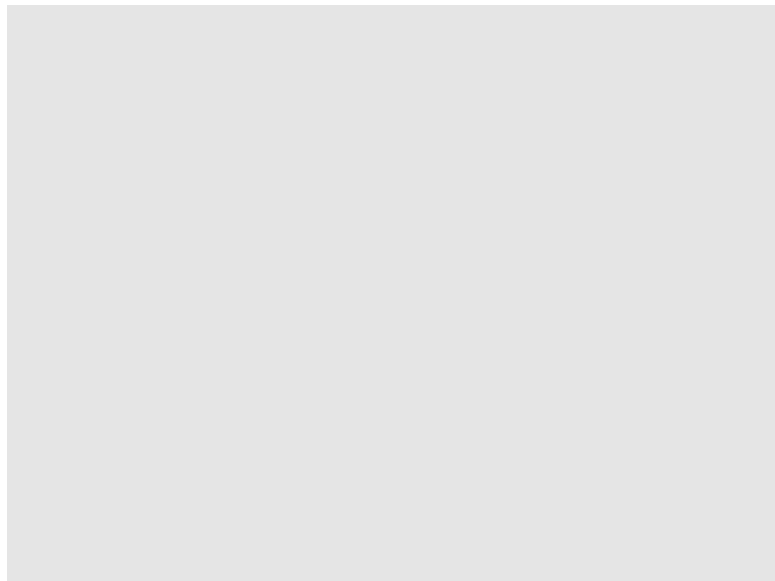
Tiles were defective and broken, and wall base moldings were loose

Defective and broken floor tiles and loose wall moldings were typical in the apartments. Floor tiles were cracked, did not correctly meet door thresholds and contained bumps where the subfloor had not been cleaned prior to laying the floor tiles. The specifications state that unsatisfactory work, such as damaged flooring materials, shall be corrected. The specifications also require moldings to be tightly bonded to the surface.

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The defective and broken tiles and loose wall moldings can cause unsanitary conditions by trapping germs and preventing a thorough floor cleaning, particularly in bathrooms and kitchens. The Ohio State Office's staff estimated the repair cost of the defective tile and loose wall moldings was \$20,169.

Loose wall moldings may cause unsanitary conditions. Wall moldings were loose in most units.



Unit #660E

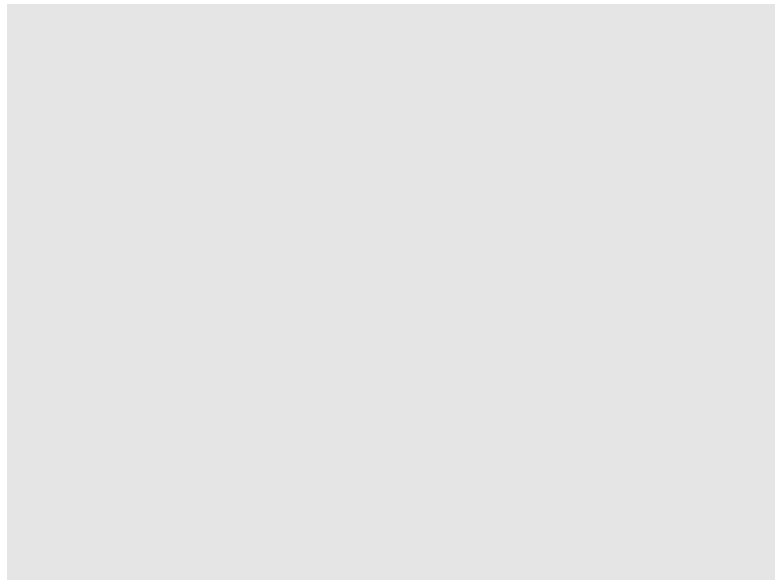
Safety valves, electrical outlets and wiring were hazardous

Hot water valves, electrical outlets and wiring were hazardous. The hot water heaters were located in the first-floor furnace rooms. None of the hot water safety valves were piped to floor drains as required by the specifications. Thus, any surges in pressure or temperature could make the valves pop off, burn tenants and flood apartments.

Electrical outlets and wiring were hazardous. Electrical outlets were not properly recessed or secured in 27 units in sector I as required. In addition, electrical wiring in 23 storage sheds was encased with plastic sheeting. This was a hazard because the sheeting was susceptible to damage, exposing bare wire. The wiring was required to be encased by conduit. The Ohio State Office's staff estimated the cost to correct the defective safety valves, electrical outlets and the electrical wiring was \$6,596.

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Wiring encased in plastic sheeting on wall surface was in violation of electrical code and was a hazard. The wiring should have been encased in conduit.



Unit #684A

Other defective work

Other defects consisted of anchor bolts connecting roofs to the storage sheds were missing for two units and paint was peeling on handrails. Because the roofs were not secured to the building, a strong wind could cause an uplift and blow the roof off the storage buildings. Paint on iron handrails peeled because the handrails were not prepared before painting. The handrails were not cleaned, primed and painted with two finishing coats as provided by the paint specifications. As a result of the peeling paint, the handrails were likely to rust. The Office estimated that the repairs would cost \$650.

The Ohio State Office's Construction Analysts observed that the construction procedures in process in sectors III, IV and V did not follow the specifications. Thus the interior defects found in sectors I and II probably exist in sectors III, IV and V.

The Authority did not provide supervision

Based on HUD's Ohio State Office's staff inspections and the defective work, we conclude that the Authority and the general contractor did not closely supervise the rehabilitation work as it progressed. The HUD Construction Analysts said that based on poor workmanship and non-compliance with specifications, they concluded that the Authority did not closely oversee the work of the general contractor. Also, the general contractor had not monitored subcontractors' work.



The Authority was aware that the rehabilitation work did not meet specifications. The Authority's inspectors, prior to our inspections, told us they reported defective work. Our inspectors confirmed the defective work which included patio wall cap drainage problems, missing reinforcement bars, improperly installed doors and warped floor tiles. Further, Ohio State University's Plant and Pest Diagnostic Clinic told the Authority in May 1995 that the soil was not properly prepared. In addition, on July 17, 1996, the Authority's second architect informed the Authority that sod preparation did not meet specifications. The sod, he said, had been installed on top of gravel beds and large rocks.

Initially, the Authority had assigned two inspectors to inspect the rehabilitation work. The Authority reassigned the two inspectors because of budget limitations and lack of seniority of the inspectors. The Authority had one other inspector oversee Lincoln Park rehabilitation. The inspectors reassigned by the Authority were aware that rehabilitation work at Lincoln Park was not in accordance with the specifications.

The first architect did not provide on-site inspections. The architect said the Authority did not hire him to inspect the rehabilitation work. However, the architect's contract showed that the architect was hired for on-site inspections. The Authority did not enforce the inspection requirements. The second architect hired stated that he spent at least 20 hours a week verifying the work of the general contractor.

The second architect told us that the general contractor did not adequately monitor the work performed by the subcontractors, and they did not have the skills to produce quality work. The general contractor was responsible for acceptance of its subcontractors work. The general contractor, however, did not closely supervise them and inspect their work. HUD's Ohio State Office's Construction Analyst said the general contractor was not monitoring subcontractors' work. The architect told us subcontractors told him they did not have to follow the specifications, if the general contractor was not.

Lack of supervision resulted in poor workmanship

As a result of the Authority and general contractor not closely overseeing the rehabilitation, work was not completed in accordance with the specifications.

Furthermore, tenants were living in units that were unsanitary and hazardous.

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Authority Comments

Sod samples for sector Ia and Ib had been tested by the Ohio State University, Plant and Pest Diagnostic Clinic. The results confirmed that the quality of sod is in compliance with the requirements in the specifications.

Approximately 10 to 15 percent of the sod in sector IIa and IIb is not germinating properly. The majority of this non-germinating sod is found at various spots around the buildings. Most of lawns in the court yards of sector II show proper germination.

The sod in court yards and around buildings in sectors III through V show signs of proper germination. The project architect and Authority's staff were aware of most of the problems such as rocks (larger than 1.5" in diameter), weeds, and some open seams at the time of the sod installation and had instructed the contractor several times in the progress meetings to make corrections and to de-weed as required in the specifications. Most of those problems have been corrected accordingly.

The reason for the deterioration of lawns in sector I at this time, more than two years after the initial installation is somewhat difficult to identify. Furthermore, these lawns had lived through the entire 12-month construction warranty period. It is suggested that the Authority should make all necessary corrections through the future landscaping maintenance work for all the sod on sector I.

In the spring of 1997, the Authority will exercise its right to demand the contractor to repair and/or replace all deteriorated sod in sectors II through V. The Authority may either demand an additional bond from the contractor for this work or place an amount of \$21,500 in escrow.

OIG Evaluation of  
Authority's Comments

We did not question the type or quality of sod the Authority installed. The problems with the sod were caused by incorrect soil preparation.

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Pictures we took during October 1996 showed the sod was dead in the courtyards and around the buildings in all sectors. HUD's Ohio State Office inspectors said all of the sod had to be replaced because of incorrect soil preparation.

Sod in Sectors III through V was installed during 1996. Most of the problems had not been corrected. As of October 1996 the lawns had open seams, weeds, and dead sod. Sod installed on stones and debris will not maintain a healthy growth.

The Authority said it could correct the sod problems in sector I with a future landscaping contract. The Authority should hold the contractor responsible for correctly preparing the soil in Sector I.

The \$21,500 the Authority proposed be deposited into an escrow is not adequate. Construction analyst for the HUD Ohio State Office estimated that it would cost \$196,675 to replace the sod.

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## Authority Comments

The bricks being laid wrong side out primarily occurred in sector I construction. The Authority's staff was aware of this poor quality of workmanship in 1993 and had rejected a total of seven brick walls and instructed the contractor to replace with new walls in sector I. A small number of these bricks mixed in several walls were allowed to stay. The project architect and the Authority's staff paid special attention in this matter from sectors II through V to prevent it from re-occurring.

In July of 1996, the architect and the Authority's staff observed the discoloration. The brick manufacturer/ supplier explained that ...once the moisture content in the brick reduces to a degree, this discoloration will not occur. Poor workmanship of brick walls was one of the reasons for the contract termination.

With respect to the efflorescence in the bricks, an amount of \$15,000 from the contract (approximately 5% of the original contract value for sectors II through V waterproofing and tuck-pointing work) is proposed to be placed in an escrow account until this work is complete in the Spring of 1997.

OIG Evaluation of  
Authority's Comments

HUD's Ohio State Office's inspections showed that bricks were laid facing the wrong direction throughout sectors I through IV. Their inspections of sector I was performed after the Authority accepted sector I. The inspection showed that 5 to 10 percent of the bricks were still facing the wrong direction. We did not inspect the bricks in sector V, since the Authority had not yet accepted the contractor's work.

HUD's Ohio State Office's staff advised us they will have to wait until the winter to see if the reduction of the moisture content of the brick corrects the bricks' discoloration.

Based on the Ohio State Office's estimate of \$95,000 to correct the defective brick work, the \$15,000 the Authority proposes to escrow for the defective bricks is not adequate.

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Authority Comments

Most of [the plumbing] fixtures were observed in sector Ia units. Furthermore, the report also identified a small number of these fixtures in sectors Ib and IIa apartment units. The Authority has already instructed the contractor to correct these items under their contract warranty service agreement in October of 1996.

Since all the defective fixtures preliminary identified in the report have already been corrected no remedial action and/or withholding of any contract amount will be proposed.

OIG Evaluation of  
Authority's Comments

HUD's Ohio State Office's staff inspection showed that fixtures were loose in units in sectors I and II, the sectors in which we inspected interior units. The Authority should correct the sinks in all the units we identified. HUD's Ohio State Office, Public Housing Division should inspect the units to determine whether the sinks have been repaired.

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**Authority Comments**

The exterior inspection report provided by HUD auditors and Geotechnical Consultants, Inc. indicated that several planter boxes and walls were lacking vertical rebars. However, the attached pictures #1 and #2 [see page 44] show the existence of vertical rebars in the planter boxes and walls for building 675 and 645, two of the buildings identified with missing rebars in the report. These pictures have demonstrated the conscious effort from the architect and the Authority's staff to ensure the proper installation of the rebars of these walls.

**OIG Evaluation of  
Authority's Comments**

The first picture does not show any reinforcing bars. The second picture shows reinforcing bars installed in the patio walls in back of the units. The brick planters were in front of the units. Therefore, the pictures do not support the Authority's assertions that the Authority ensured the proper installation of reinforcing bars in the planter walls.

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**Authority Comments**

The concrete wall caps were normally installed at the last stage of construction prior to the acceptance of the buildings. By the time that we realized wrong re-cast concrete caps had been ordered and delivered, the construction activities in sector IIa were about 95% completion. The amount of water draining into the patios from this 12" wide cap was minimal. Some patios with pooling water were caused by improper slope of patio and they had been corrected by installing weep holes on the bottom of the walls to allow water draining out to the back yard.

Improper mulching and soil preparation primarily occurred in sector I. Again, this was a part of the reasons that their contract was terminated after sector Ib. Excessive weeds in the planter boxes was attributed to insufficient maintenance staff for landscaping maintenance work.

It is recommended that the Authority should require a five years extended warranty from the contractor for all planter boxes and walls in sectors II and III...[and] acquire a credit amount of \$7,500 for not correcting the pre-cast concrete caps facing the wrong way.

OIG Evaluation of  
Authority's Comments

The Authority will take care of re-mulching and de-weeding of planter boxes in sector I through future landscaping maintenance.

The Authority's statement that the work in sector IIa was 95 percent complete is not a valid reason for accepting the wall caps facing the wrong direction. HUD's Ohio State Office should inspect the units to determine whether the weep holes corrected the problem of pooling water on the patios.

Our inspectors determined that the incorrect mulching and soil preparation occurred throughout sectors I through IV and not just in sector I as asserted by the Authority. Excessive weeds in the planters are attributable to improper mulching and soil preparation resulting in rapid evaporation and uncontrolled weed growth.

The five-year extended warranty for brick planters and walls should be obtained for the entire site not just sectors II and III.

The \$7,500 credit the Authority proposed would cover the cost to repair wall caps facing the wrong direction and for not mulching the soil in the brick planters.

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Authority Comments

Most of [the problems with the doors and the missing hardware] occurred in sector I units according to the preliminary interior inspection report provided earlier. Some of these units in sector Ia were vandalism damages. These doors and frames have been either corrected or replaced in June of 1996. All the apartment entry doors in sectors II and up that were either misaligned or improperly installed had been repaired an/or replaced by the contractor through our punch out inspection process.

All defective doors and frames in sector I and II have been corrected or replaced. Therefore, no remedial action and any credit amount for this finding will be recommended.

OIG Evaluation of  
Authority's Comments

HUD's Ohio State Office's staff inspected doors only in sectors I and II. Problems with doors were found in 17 units located in both sectors. HUD's Ohio State Office's architect said only one door had been damaged because of vandalism,

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and we did not include it in the units we cited. Some metal doors were misaligned, deadbolts did not match the cut-out, and wood doors were installed at an angle. HUD's Ohio State Office Public Housing Division should inspect the units cited to ensure the doors were corrected.

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### Authority Comments

Exterior concrete work in sector I was also a part of the reasons for their contract termination after sector Ib. According to the reinstatement agreement, the contractor provided extended five years warranty on all exterior concrete sidewalks and patios in sector I in lieu of replacing all concrete. At the site visit with all parties on November 13, 1996, it was observed that some concrete sidewalks and patios were cracking due to either earth settlement or abuse by vehicles. Also, there were some control joints in concrete not in place according to the contract in some units of sector II and III. Most of the concrete expansion joints were in place.

All defective concrete observed in sector I that are under the contractor's 5-year extended warranty will be repaired and/or replaced by the contractor. The Authority will inform the contractor to saw cut those missing control joints in the concrete patios for the entire project. An amount of \$5,000 is recommended to be withheld and to be placed into the escrow account until this work is done.

### OIG Evaluation of Authority's Comments

The Authority's proposed actions do not go far enough. The Authority should correct all locations in all sectors where expansion joints are missing. Concrete that does not have expansion joints will likely crack prematurely, settle unevenly, and become a tripping hazard. The contractor's extended five-year warranty should include all sectors where deficiencies were noted. The escrow account should include \$20,700, the amount estimated by our inspectors to be the cost to correct the deficiencies.

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### Authority Comments

In sector Ia units, many floor tiles and wall base moldings were damaged either by the vandalism or by residents occupying units for the past two years. All these defective, broken tiles and wall base moldings... have been repaired and/or replaced by the contractor.

Any damaged tiles and wall base molding in the future will be repaired and/or replaced either by the contractor through the construction warranty service or by the Authority maintenance staff.

OIG Evaluation of  
Authority's Comments

The deficiencies HUD's Ohio State Office's staff cited were caused by defective work. HUD's Ohio State Office should inspect the units to determine whether the damaged tiles and loose moldings have been corrected.

Any tiles or wall based molding damaged during installation or incorrectly installed should be corrected by the contractor.

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Authority Comments

The hot water heaters in the first floor furnace room were installed according to the manufacturer's recommendation. It complies with the recommendation and it has been approved by City Inspectors.

All electrical outlets and wiring in sector I were inspected by HUD inspectors during or right after lead abatement activities. Most of the defects were caused by vandalism. They all have been repaired and/or replaced by the contractor prior to the re-occupancy of units in June of 1996.

In July, HUD inspectors inspected 23 storage sheds in sectors III and IV prior to the completion of the air conditioning wiring. In September and October, the contractor enclosed all electrical wires and A/C lines with metal protective guards and plywood ceilings.

Since all these defects have been corrected,... no remedial action and no withholding of any credit will be recommended.

OIG Evaluation of  
Authority's Comments

The contract specifications require the water heaters to be piped to the floor drains. The Authority did not address the issue of specifications in its comments. Because the hot water heater valves were not piped to the floor drains as required by the specifications, any surge in pressure or temperature could cause the valves to pop off and endanger the tenants and flood the apartment.

HUD's Ohio State Office should inspect the electrical outlets and wiring to ensure the deficiencies have been corrected.

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## Recommendations

We recommend that the Director, Public Housing Division, HUD Ohio State Office:

- 1A. Inspects the interiors of units in sectors II, III, IV and V to determine whether the rehabilitation work in these units was performed in a skillful and workmanlike manner and in accordance with the specifications.
- 1B. Requires the Authority to correct any work not completed according to the specifications and in a workmanlike manner at no further cost to HUD. If the general contractor does not make the repairs the Authority should (1) contract for the repairs or services and back-charge the amount to the general contractor, (2) consider alternate solutions for the defective work, for example, extending the warranties and obtaining a letter of credit from the general contractor.
- 1C. Periodically monitors the Authority's progress in correcting the defective work.
- 1D. Considers imposing administrative sanctions against the general contractor and subcontractors to the full extent of the law.

We also recommend that the Director, Public Housing Division, Ohio State Office, requires the Columbus Metropolitan Housing Authority to:

- 1E. Monitor future rehabilitation contracts to ensure work is performed in accordance with the specifications and in a professional workmanlike manner.

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# Internal Controls

In planning and performing our audit, we considered internal control systems of the Columbus Metropolitan Housing Authority to determine our auditing procedures and not to provide assurance on internal controls. Internal controls consist of the plan of organization, methods, and procedures adopted by management to ensure that resources use is consistent with laws, regulations, and policies; that resources are safeguarded against waste, loss, and misuse; and that reliable data are obtained, maintained, and fairly disclosed in reports.

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## Relevant internal controls

We determined that the following internal controls were relevant to our objectives:

- Management philosophy and operating style;
- Accounting system and controls;
- Segregation of duties;
- Management monitoring method;
- Policies and procedures.

We assessed all the relevant controls identified above.

## Significant weaknesses

It is a significant weakness if internal controls do not give reasonable assurance that resource use is consistent with laws, regulations, and policies; that resources are safeguarded against waste, loss, and misuse; and that reliable data are obtained, maintained, and fairly disclosed in reports.

Based on our review, the following items are significant weaknesses:

- Management monitoring method. The lack of effective monitoring by the Authority resulted in the Authority's acceptance of substandard work. HUD's Ohio State Office's Multifamily Housing Division staff estimated that it would cost \$414,898 to correct the substandard work (see Finding).

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# Follow Up on Prior Audits

An OIG audit of the Columbus Metropolitan Housing Authority's Comprehensive Improvement Assistance Program (89-CH-202-1001) was completed October 21, 1988. The findings related to HUD approval of costs, indirect costs, procurement methods, sole source procurement, and contractor's payroll. All findings were closed.

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Issue Date	December 18, 1996
Audit Case Number	97-CH-204-1003

TO: David M. Kellner, Director, Public Housing Division, Ohio State Office

FROM: Dale L. Chouteau, District Inspector General for Audit, Midwest

SUBJECT: Columbus Metropolitan Housing Authority  
Rehabilitation of Lincoln Park Apartments  
Comprehensive Improvement and Assistance Program  
Comprehensive Grant Program  
Columbus, Ohio

We completed an audit of the Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments. We performed the audit at the request of the Ohio State Office, Public Housing Division. Our audit objectives were to determine whether: the Authority followed Federal procurement procedures in awarding the rehabilitation contract; the work was performed in a workmanlike manner and in accordance with the specifications; and, the cost of change orders was reasonable.

The Authority followed Federal procurement procedures in awarding the contract. The Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments was not in a workmanlike manner and in accordance with specifications. The staff of HUD's Ohio State Office's Multifamily Housing Division inspected the contractor's work and estimated the cost of defective work at \$414,898. The cost of change orders were within reason.

Within 60 days, please give us, for each recommendation made in the report, a status report on (1) the corrective action taken; (2) proposed corrective action and the date to be completed; or (3) why action is considered unnecessary. Also please furnish us copies of any correspondence or directives issued because of the audit.

Should your staff have any questions, please have them contact me at (312) 353-7832.

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# Executive Summary

We completed an audit of the Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments. Our audit objectives were to determine whether: the Authority followed Federal procurement procedures in awarding the rehabilitation contract; the work was performed in a workmanlike manner and in accordance with the specifications; and, the cost of change orders was reasonable.

The Authority followed Federal procurement procedures in awarding the contract. The Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments was not in a workmanlike manner and in accordance with specifications. The cost of change orders were within reason.

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Rehabilitation was not completed in a workmanlike manner or in accordance with specifications

The Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments was substandard. The rehabilitation work was not completed in a workmanlike manner and in accordance with the contract work specifications. Multifamily Housing Division staff from HUD's Ohio State Office estimated the cost of the defective work at \$414,898.

The defective work included sod incorrectly installed for \$196,675; bricks installed with the unfinished side facing outward or discolored for \$95,000; plumbing fixtures loose for \$27,500; brick planters not reinforced, mulched and capped for \$26,663; doors incorrectly installed and hardware missing for \$20,945; exterior concrete expansion and control joints missing for \$20,700; tiles defective and wall base moldings loose for \$20,169; and, other defective work for \$7,246. Neither the Authority nor the general contractor provided the necessary inspections needed to ensure quality rehabilitation work. Furthermore, tenants were living in units that were unsanitary and hazardous.

Recommendations

We are making several detail recommendations to correct the deficiencies reported. We recommend that HUD's Ohio State Office's Public Housing Division inspect the interiors of units not included in our sample to determine whether the rehabilitation work in these units was performed in a skillful, workmanlike manner and in accordance with the specifications. We also recommend the Division require the Authority to correct defective work at no additional cost. The Division should periodically monitor the Authority's progress



in correcting the defective work. The Ohio State Office's Public Housing Division should consider taking sanctions against the contractor.

If the general contractor does not make the required repairs, the Authority should (1) contract for the repairs or services and back-charge the cost to the general contractor, (2) consider alternate solutions for the defective work, for example, extending the warranties. The Authority's future monitoring of rehabilitation contracts should ensure work is correctly performed.

We discussed our finding with the Authority's Executive Director during the audit and provided him the draft finding. We also provided a copy of the draft finding to the Ohio State Office. We held an exit conference with Authority officials on November 12, 1996. The Authority provided written comments to the finding and recommendations. Excerpts from the comments are included in the finding with our evaluation and in Appendix B in their entirety.

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# Introduction

The Columbus Metropolitan Housing Authority was organized on May 8, 1934, pursuant to Section 1078-1 to 1078-41 of the General Code of Ohio, as revised by Section 3735.27 of the Revised Code, effective October 1, 1953. The Authority is governed by a five-member Board of Commissioners. The Executive Director has the overall responsibility for fulfilling the goals and objectives established by the Board of Commissioners. Dennis Guest was the Executive Director. The Authority's books and records were located at 960 East Fifth Avenue, Columbus, Ohio.

The Authority, as of October 31, 1996 owned 4,400 low-income units in 30 projects. Lincoln Park was built in 1941 and had 33 rowhouses with 346 family units. After rehabilitation Lincoln Park will have 29 buildings and 292 units. The rehabilitation included the project's interior and exterior. The contract was signed on September 3, 1992 for \$8,996,505. The Authority approved 22 change orders as of September 6, 1996 for \$2,804,609, bringing the total cost of the rehabilitation to \$11,801,114.

The Authority funded the rehabilitation of Lincoln Park Apartments with Comprehensive Improvement Assistant Program funds from 1987 through 1991 and Comprehensive Grant Program funds from 1992 and 1993.

On October 28, 1994, the Authority terminated the contract with the general contractor because of the Authority's dissatisfaction with the contractor's work and the length of construction delays. The Authority and the contractor agreed to a reinstatement effective November 23, 1994. At about the same time, the Authority terminated the contract of the original architect and, in January 1995 hired another firm.

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## Audit objectives

Our audit objectives were to determine whether: the Authority followed Federal procurement procedures in awarding the rehabilitation contract; the work was performed in a workmanlike manner and in accordance with the specifications; and, the cost of change orders was reasonable.

## Audit scope and methodology

To achieve the objectives, we reviewed HUD Regulations, HUD handbooks and administrative requirements. We interviewed HUD and the Authority's staff to obtain information about awarding of the contracts. We reviewed files at HUD's Ohio State Office to obtain information on the rehabilitation funding and HUD's review of the rehabilitation work. We reviewed files at the Authority to obtain information about awarding the contracts, inspecting and supervising rehabilitation work, reviewing change orders and settling disputes. We also interviewed the Authority's

attorney, architects and a sub-contractors to obtain information regarding the contractor's performance.

To evaluate the quality of the rehabilitation, we requested the staff of HUD's Ohio State Office's Multifamily Housing Division to inspect the rehabilitation work. We accompanied the Division's inspectors. HUD's Ohio State Office hired an independent contractor to determine whether the general contractor properly reinforced the concrete and masonry work and installed sod according to the specifications.

The audit covered the period August 1, 1992, about the time the bid process started for Lincoln Park Apartments, through March 31, 1996. We expanded the coverage as necessary. We performed the on-site audit work between April 1996 and November 1996.

We conducted our audit in accordance with generally accepted government auditing standards.

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# Rehabilitation of Lincoln Park Apartments Was Substandard

The Columbus Metropolitan Housing Authority's rehabilitation of Lincoln Park Apartments was substandard. The rehabilitation work was not completed in a workmanlike manner and in accordance with the contract work specifications. Neither the Authority nor the general contractor provided the tight inspection and supervision needed to ensure quality rehabilitation work. HUD's Ohio State Office's Multifamily Housing Division staff estimated that correcting the defective work would cost \$414,898. Furthermore, tenants were living in units that were unsanitary and hazardous.

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## Contract requirements

The Authority's contract with the general contractor states that the contractor shall furnish all labor, material, equipment and services and complete all work in strict accordance with the drawings and specifications. The contract specifications require the contractor to correct, repair, restore and cure any damage resulting from any defects, omission or failure in workmanship and materials. The general conditions of the contract also state that all work shall be performed in a skillful and workmanlike manner.

## 35 percent of units and all exterior work were inspected

At our request, Construction Analysts from the Multifamily Housing Division of HUD's Ohio State Office inspected Lincoln Park Apartments to determine the quality of the rehabilitation and the cost of correcting the defective work. The Multifamily staff inspected the interior of all 103 units in sectors Ia and IIa, about 35 percent of the project's 292 units. In addition, they inspected the exteriors of all buildings and all land improvements in sectors I through IV. Sector V was not included because the Authority had not yet accepted the contractor's work in the sector. An independent contractor inspected the brick planter boxes, patio slabs, porches and sidewalks with a magnometer for reinforcement steel and wire mesh. A magnometer is an instrument that uses magnetic fields to detect iron and steel. Another independent contractor inspected the sod to determine whether the sod was installed in accordance with the specifications.

## Estimated cost to correct defective work was \$414,898

The Construction Analysts identified defective external and internal work totaling \$414,898. The defects affected virtually

all aspects of the rehabilitation including the sod, brick work, plumbing, electrical and carpentry. The \$414,898 includes only defective rehabilitation work. The Construction Analysts did not cite corrective work needed because of poor maintenance.

The following table shows the defective work and the estimated cost to fix it.

<u>Description of Defective Work</u>	<u>Estimated Cost to Correct</u>
Sod was incorrectly installed	\$196,675
Bricks were laid wrong side out	95,000
Plumbing fixtures were loose	27,500
Brick planters were not reinforced, mulched and capped	26,663
Doors were improperly installed and hardware was missing	20,945
Exterior concrete expansion and control joints were missing	20,700
Tiles were defective and wall base moldings were loose	20,169
Safety valves, electrical outlets and wiring were hazardous	6,596
Other	<u>650</u>
Total	<u>\$414,898</u>

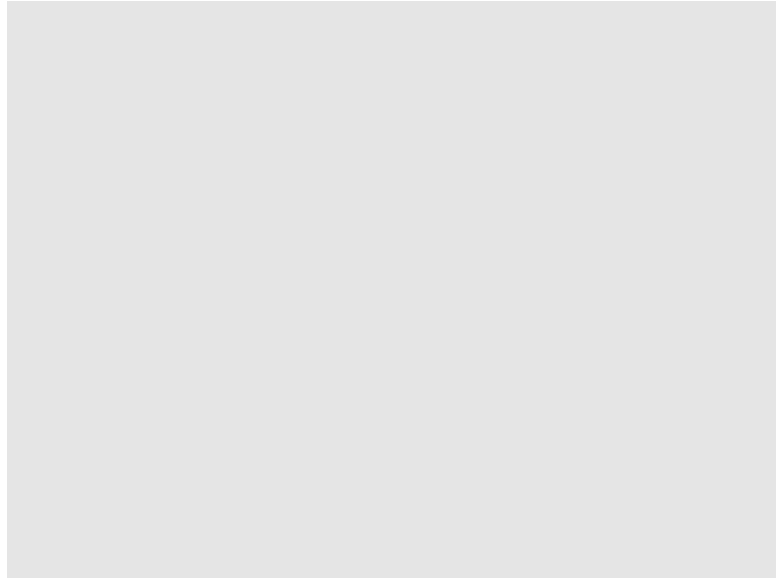
Sod was incorrectly installed

The lawns throughout sectors I through IV were barren and brown; weeds were abundant. The lawns also had wide cracks throughout because the grass had not grown sufficiently to join the squares of sod. Furthermore, the squares of sod had not blended with the underlying base and could be pulled up intact. These conditions were confirmed by inspections made by an independent contractor, HUD's Ohio State Office's staff and Ohio State University's Plant and Pest Diagnostic Clinic.

The lawns were laid in the summer of 1994, fall of 1995, spring, summer and fall of 1996. Similar conditions existed regardless of when the sod was laid.

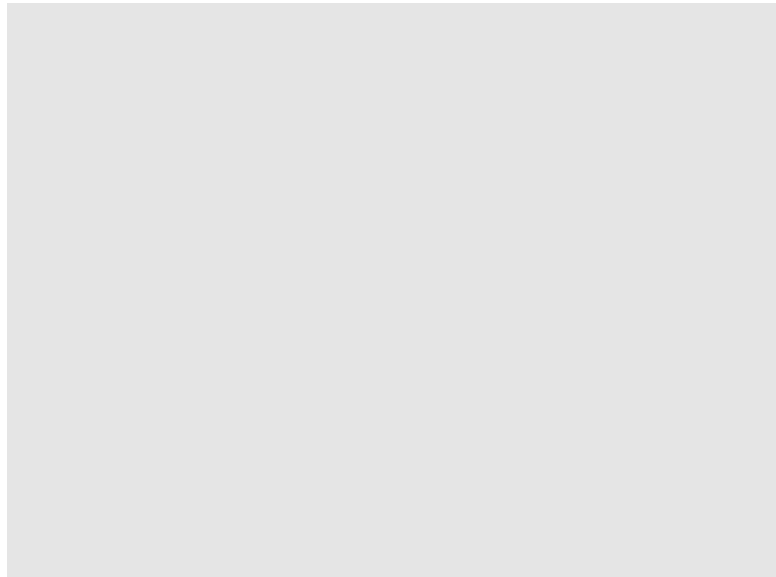
The pictures below show lawns that were typical throughout Lincoln Park.

This sod at this location was laid in Summer 1994. Sod laid on stony surface will not sustain a healthy growth. The lawn had numerous bare areas where sod had died.



Sector Ia, between Building 1770 and Building 630

Sod was installed in Fall 1995.

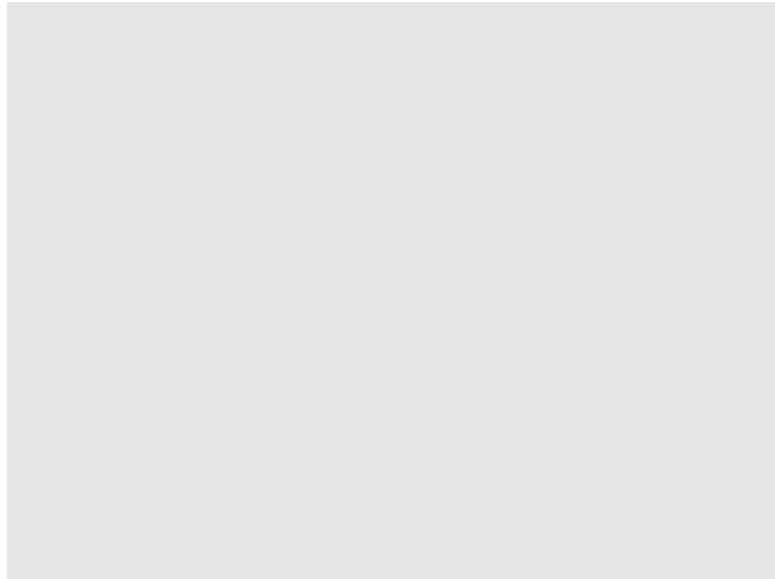


Sector IIa



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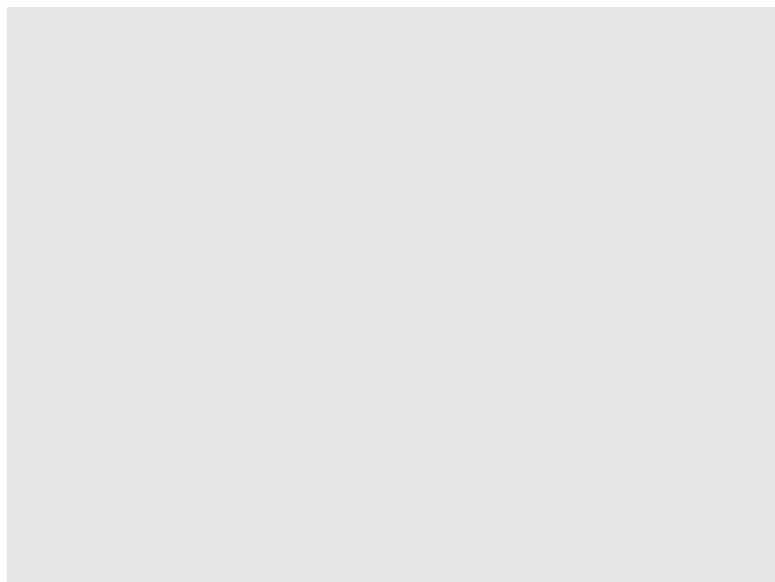
Sod was installed Spring 1996.



**Sector IIb**

The sod was defective because the subcontractor did not prepare the underlying base, as required before laying the sod. The specifications required the contractor to loosen four inches of ground and remove all sticks, roots, rubbish, stones over 1-1/2 inches and other extraneous matter. Without proper preparation, the grass will not root and will eventually die. We and HUD's Ohio State Office's staff lifted the sod at different locations and found the underlying base littered with stones and other debris.

Sod was installed July 1996.



**Sector III**

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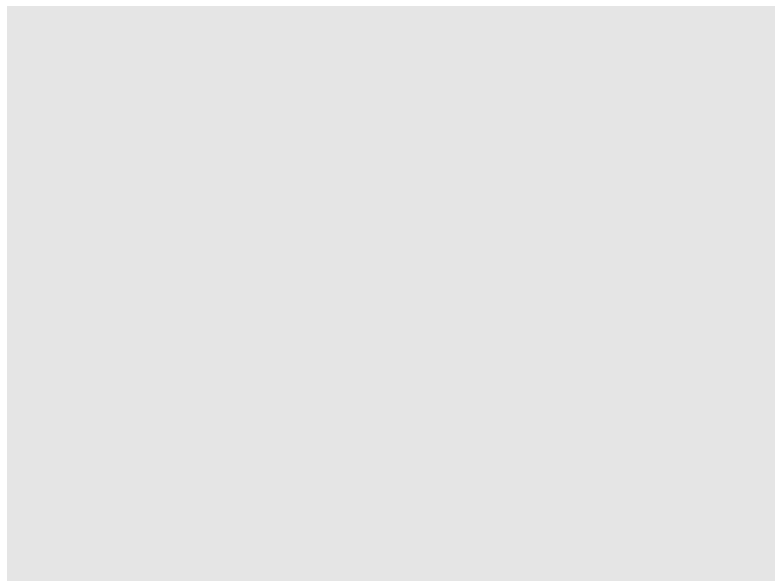
The Authority was aware of sod problems since May 1995. The Ohio State University's Plant and Pest Diagnostic Clinic analyzed the sod in sector I. The sod in sector I was the only sod laid at the time of the University's analysis. The University concluded that the soil was not correctly prepared.

Sod will not root, let alone sustain a healthy growth on unloosened soil loaded with stones and debris. The HUD Ohio State Office's staff recommended that the sod be completely removed, the underlying base properly prepared and new sod laid. The estimated cost in the contract for the sod was \$196,675.

Bricks laid wrong side out

An estimated 5 to 10 percent of the bricks in the new storage sheds and brick planters boxes were laid the wrong side out or were discolored. The masonry specifications stated that the flat finished side of the bricks should face outward. The contractor, however, installed the brick with the unfinished side outward. In addition, some of the bricks had an ashy residue. The bricks that were laid wrong side out or were discolored present no structural problem. However, the Authority paid for rehabilitation work properly completed. HUD's Construction Analysts estimated the cost to correct the defective brick work was \$95,000.

Ashy residue on bricks could not be removed by scrubbing or power washing.



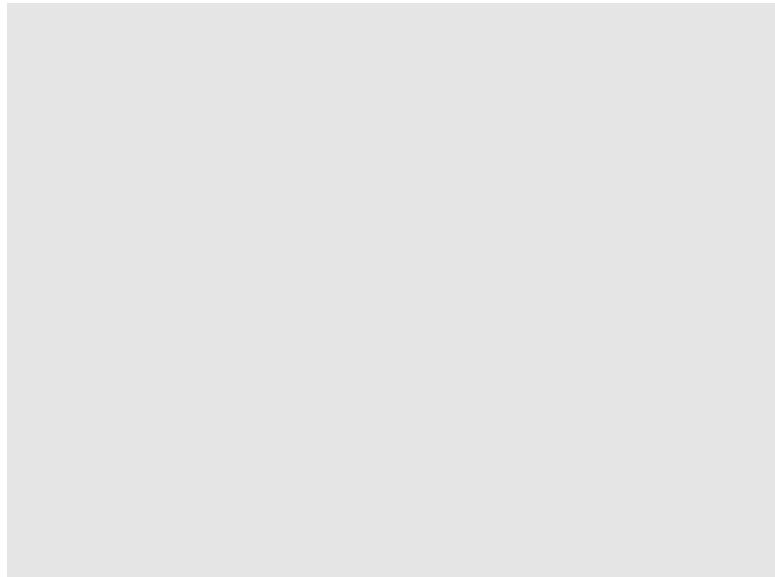
Unit #1745J

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Bathroom and kitchen fixtures were loose

Bathroom and kitchen plumbing fixtures in 75 units were not correctly installed. The specifications stated plumbing fixtures were to be installed in accordance with manufacturer's instructions. Bathroom sinks were not secured to base cabinets and toilets were loose and leaking. Faucets in both the bathrooms and kitchens were loose. The loose plumbing fixtures prevented proper caulking and caused leaks. The estimated cost to correct the bathroom and kitchen plumbing fixtures was \$27,500.

The picture shows a bathroom sink which was not secured to the base cabinet. We lifted the sink to show that it was not secure. Sinks not caulked and not attached to base cabinets may cause leaks and rotting in time.



Unit #640J

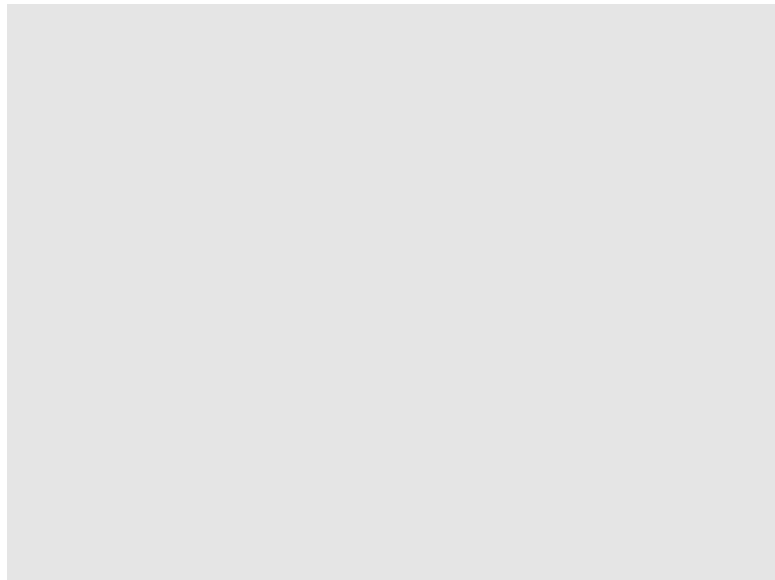
Brick planter boxes were not reinforced and mulched, and patio wall caps were not correctly installed

Brick planter boxes were not reinforced and mulched as required. An independent contractor using a magnometer determined that reinforcing bars were either not installed or improperly installed in 42 of 138 planter boxes through sectors I through IV. Without correctly installed reinforcing bars, the planter boxes are likely to crack, especially in freezing temperatures.

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The contractor also did not prepare, mulch and fertilize the soil in the brick planters, as provided by the specifications. The Ohio State Office's staff observed a contractor's employee discarding debris in the planter boxes. The Ohio State Office's staff also said that dirt in front of the units was used to fill the planters, rather than using the specified soil composition. Further, tenants complained that their planter boxes were full of construction debris hidden under a shallow layer of dirt. Without proper soil preparation and mulching, rapid evaporation and uncontrolled weed growth will occur. The lack of initial fertilizer adversely affects plant growth.

The picture shows a typical brick planter at Lincoln Park Apartments. The planter box was not mulched, prompting weed growth.



#### Unit #640B

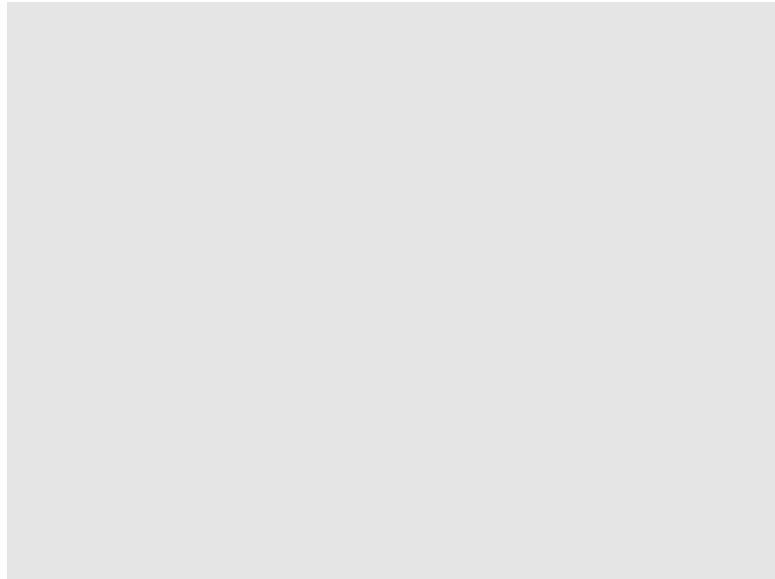
Patio wall caps were not correctly installed. The architect designed the wall caps so that water would move away from the patios. The contractor installed the wall caps backwards. The water drained towards the patios and caused water to pool, which can cause slipping hazards in the wintertime.

The Authority was aware that the wall caps were facing the wrong direction. The Authority decided to accept these wall caps because it would take 6 to 8 weeks to obtain the correct caps. Furthermore, the Authority did not view the additional water on the patios as a significant problem. The Authority also was concerned that while waiting for the correct wall caps the vacant units would be vandalized. The Ohio State Office's staff estimated the cost to correct the planter boxes and patio wall caps was \$26,663.

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Defective wall caps add water to patios. The condition may cause slipping hazards in winter when water freezes.



Unit #674C

Doors were incorrectly installed and hardware was missing

Doors in 17 units were incorrectly installed or missing hardware or stops. The specifications provided for installation in accordance with the manufacturer's instructions. The metal doors were misaligned so they were difficult to open, and the deadbolts did not match the cutouts. The wood doors were installed at an angle and would not close completely. As a result, the doors were difficult to operate. The Ohio State Office's staff estimated the cost of correcting the defective work at \$20,945.

Concrete expansion joints were missing

Concrete expansion and control joints were not installed in 48 locations in sectors I and II. The specifications required the contractor to install expansion joints between abutting concrete curbs, structures, walks and other fixed objects unless otherwise indicated. Because of missing expansion and control joints, the concrete was likely to crack prematurely, settle unevenly and become a tripping hazard. The Ohio State Office's staff estimated that correcting the defective work would cost \$20,700.

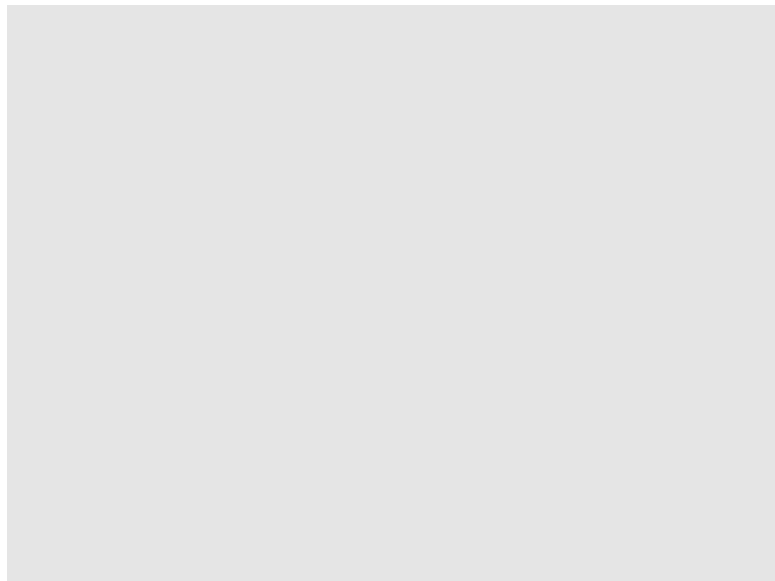
Tiles were defective and broken, and wall base moldings were loose

Defective and broken floor tiles and loose wall moldings were typical in the apartments. Floor tiles were cracked, did not correctly meet door thresholds and contained bumps where the subfloor had not been cleaned prior to laying the floor tiles. The specifications state that unsatisfactory work, such as damaged flooring materials, shall be corrected. The specifications also require moldings to be tightly bonded to the surface.

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The defective and broken tiles and loose wall moldings can cause unsanitary conditions by trapping germs and preventing a thorough floor cleaning, particularly in bathrooms and kitchens. The Ohio State Office's staff estimated the repair cost of the defective tile and loose wall moldings was \$20,169.

Loose wall moldings may cause unsanitary conditions. Wall moldings were loose in most units.



Unit #660E

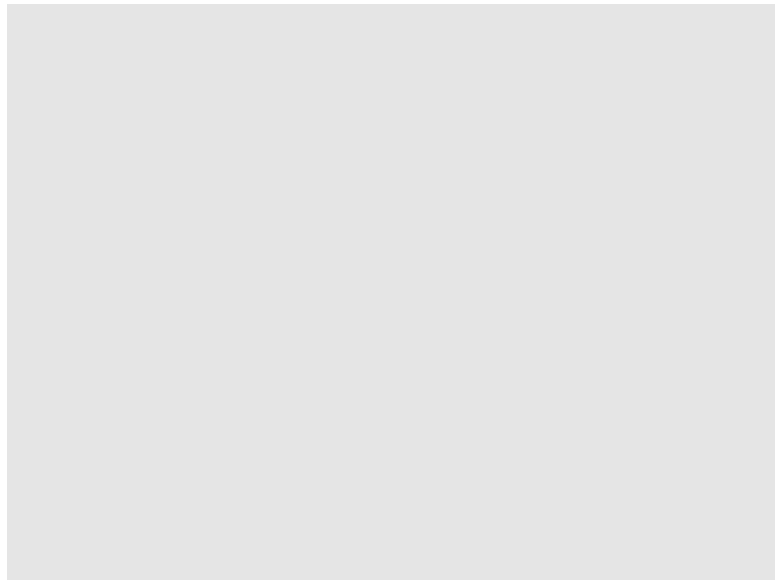
Safety valves, electrical outlets and wiring were hazardous

Hot water valves, electrical outlets and wiring were hazardous. The hot water heaters were located in the first-floor furnace rooms. None of the hot water safety valves were piped to floor drains as required by the specifications. Thus, any surges in pressure or temperature could make the valves pop off, burn tenants and flood apartments.

Electrical outlets and wiring were hazardous. Electrical outlets were not properly recessed or secured in 27 units in sector I as required. In addition, electrical wiring in 23 storage sheds was encased with plastic sheeting. This was a hazard because the sheeting was susceptible to damage, exposing bare wire. The wiring was required to be encased by conduit. The Ohio State Office's staff estimated the cost to correct the defective safety valves, electrical outlets and the electrical wiring was \$6,596.

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Wiring encased in plastic sheeting on wall surface was in violation of electrical code and was a hazard. The wiring should have been encased in conduit.



Unit #684A

Other defective work

Other defects consisted of anchor bolts connecting roofs to the storage sheds were missing for two units and paint was peeling on handrails. Because the roofs were not secured to the building, a strong wind could cause an uplift and blow the roof off the storage buildings. Paint on iron handrails peeled because the handrails were not prepared before painting. The handrails were not cleaned, primed and painted with two finishing coats as provided by the paint specifications. As a result of the peeling paint, the handrails were likely to rust. The Office estimated that the repairs would cost \$650.

The Ohio State Office's Construction Analysts observed that the construction procedures in process in sectors III, IV and V did not follow the specifications. Thus the interior defects found in sectors I and II probably exist in sectors III, IV and V.

The Authority did not provide supervision

Based on HUD's Ohio State Office's staff inspections and the defective work, we conclude that the Authority and the general contractor did not closely supervise the rehabilitation work as it progressed. The HUD Construction Analysts said that based on poor workmanship and non-compliance with specifications, they concluded that the Authority did not closely oversee the work of the general contractor. Also, the general contractor had not monitored subcontractors' work.

The Authority was aware that the rehabilitation work did not meet specifications. The Authority's inspectors, prior to our inspections, told us they reported defective work. Our inspectors confirmed the defective work which included patio wall cap drainage problems, missing reinforcement bars, improperly installed doors and warped floor tiles. Further, Ohio State University's Plant and Pest Diagnostic Clinic told the Authority in May 1995 that the soil was not properly prepared. In addition, on July 17, 1996, the Authority's second architect informed the Authority that sod preparation did not meet specifications. The sod, he said, had been installed on top of gravel beds and large rocks.

Initially, the Authority had assigned two inspectors to inspect the rehabilitation work. The Authority reassigned the two inspectors because of budget limitations and lack of seniority of the inspectors. The Authority had one other inspector oversee Lincoln Park rehabilitation. The inspectors reassigned by the Authority were aware that rehabilitation work at Lincoln Park was not in accordance with the specifications.

The first architect did not provide on-site inspections. The architect said the Authority did not hire him to inspect the rehabilitation work. However, the architect's contract showed that the architect was hired for on-site inspections. The Authority did not enforce the inspection requirements. The second architect hired stated that he spent at least 20 hours a week verifying the work of the general contractor.

The second architect told us that the general contractor did not adequately monitor the work performed by the subcontractors, and they did not have the skills to produce quality work. The general contractor was responsible for acceptance of its subcontractors work. The general contractor, however, did not closely supervise them and inspect their work. HUD's Ohio State Office's Construction Analyst said the general contractor was not monitoring subcontractors' work. The architect told us subcontractors told him they did not have to follow the specifications, if the general contractor was not.

Lack of supervision resulted in poor workmanship

As a result of the Authority and general contractor not closely overseeing the rehabilitation, work was not completed in accordance with the specifications.

Furthermore, tenants were living in units that were unsanitary and hazardous.

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Authority Comments

Sod samples for sector Ia and Ib had been tested by the Ohio State University, Plant and Pest Diagnostic Clinic. The results confirmed that the quality of sod is in compliance with the requirements in the specifications.

Approximately 10 to 15 percent of the sod in sector IIa and IIb is not germinating properly. The majority of this non-germinating sod is found at various spots around the buildings. Most of lawns in the court yards of sector II show proper germination.

The sod in court yards and around buildings in sectors III through V show signs of proper germination. The project architect and Authority's staff were aware of most of the problems such as rocks (larger than 1.5" in diameter), weeds, and some open seams at the time of the sod installation and had instructed the contractor several times in the progress meetings to make corrections and to de-weed as required in the specifications. Most of those problems have been corrected accordingly.

The reason for the deterioration of lawns in sector I at this time, more than two years after the initial installation is somewhat difficult to identify. Furthermore, these lawns had lived through the entire 12-month construction warranty period. It is suggested that the Authority should make all necessary corrections through the future landscaping maintenance work for all the sod on sector I.

In the spring of 1997, the Authority will exercise its right to demand the contractor to repair and/or replace all deteriorated sod in sectors II through V. The Authority may either demand an additional bond from the contractor for this work or place an amount of \$21,500 in escrow.

OIG Evaluation of  
Authority's Comments

We did not question the type or quality of sod the Authority installed. The problems with the sod were caused by incorrect soil preparation.

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Pictures we took during October 1996 showed the sod was dead in the courtyards and around the buildings in all sectors. HUD's Ohio State Office inspectors said all of the sod had to be replaced because of incorrect soil preparation.

Sod in Sectors III through V was installed during 1996. Most of the problems had not been corrected. As of October 1996 the lawns had open seams, weeds, and dead sod. Sod installed on stones and debris will not maintain a healthy growth.

The Authority said it could correct the sod problems in sector I with a future landscaping contract. The Authority should hold the contractor responsible for correctly preparing the soil in Sector I.

The \$21,500 the Authority proposed be deposited into an escrow is not adequate. Construction analyst for the HUD Ohio State Office estimated that it would cost \$196,675 to replace the sod.

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## Authority Comments

The bricks being laid wrong side out primarily occurred in sector I construction. The Authority's staff was aware of this poor quality of workmanship in 1993 and had rejected a total of seven brick walls and instructed the contractor to replace with new walls in sector I. A small number of these bricks mixed in several walls were allowed to stay. The project architect and the Authority's staff paid special attention in this matter from sectors II through V to prevent it from re-occurring.

In July of 1996, the architect and the Authority's staff observed the discoloration. The brick manufacturer/ supplier explained that ...once the moisture content in the brick reduces to a degree, this discoloration will not occur. Poor workmanship of brick walls was one of the reasons for the contract termination.

With respect to the efflorescence in the bricks, an amount of \$15,000 from the contract (approximately 5% of the original contract value for sectors II through V waterproofing and tuck-pointing work) is proposed to be placed in an escrow account until this work is complete in the Spring of 1997.



OIG Evaluation of  
Authority's Comments

HUD's Ohio State Office's inspections showed that bricks were laid facing the wrong direction throughout sectors I through IV. Their inspections of sector I was performed after the Authority accepted sector I. The inspection showed that 5 to 10 percent of the bricks were still facing the wrong direction. We did not inspect the bricks in sector V, since the Authority had not yet accepted the contractor's work.

HUD's Ohio State Office's staff advised us they will have to wait until the winter to see if the reduction of the moisture content of the brick corrects the bricks' discoloration.

Based on the Ohio State Office's estimate of \$95,000 to correct the defective brick work, the \$15,000 the Authority proposes to escrow for the defective bricks is not adequate.

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Authority Comments

Most of [the plumbing] fixtures were observed in sector Ia units. Furthermore, the report also identified a small number of these fixtures in sectors Ib and IIa apartment units. The Authority has already instructed the contractor to correct these items under their contract warranty service agreement in October of 1996.

Since all the defective fixtures preliminary identified in the report have already been corrected no remedial action and/or withholding of any contract amount will be proposed.

OIG Evaluation of  
Authority's Comments

HUD's Ohio State Office's staff inspection showed that fixtures were loose in units in sectors I and II, the sectors in which we inspected interior units. The Authority should correct the sinks in all the units we identified. HUD's Ohio State Office, Public Housing Division should inspect the units to determine whether the sinks have been repaired.

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**Authority Comments**

The exterior inspection report provided by HUD auditors and Geotechnical Consultants, Inc. indicated that several planter boxes and walls were lacking vertical rebars. However, the attached pictures #1 and #2 [see page 44] show the existence of vertical rebars in the planter boxes and walls for building 675 and 645, two of the buildings identified with missing rebars in the report. These pictures have demonstrated the conscious effort from the architect and the Authority's staff to ensure the proper installation of the rebars of these walls.

**OIG Evaluation of  
Authority's Comments**

The first picture does not show any reinforcing bars. The second picture shows reinforcing bars installed in the patio walls in back of the units. The brick planters were in front of the units. Therefore, the pictures do not support the Authority's assertions that the Authority ensured the proper installation of reinforcing bars in the planter walls.

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**Authority Comments**

The concrete wall caps were normally installed at the last stage of construction prior to the acceptance of the buildings. By the time that we realized wrong re-cast concrete caps had been ordered and delivered, the construction activities in sector IIa were about 95% completion. The amount of water draining into the patios from this 12" wide cap was minimal. Some patios with pooling water were caused by improper slope of patio and they had been corrected by installing weep holes on the bottom of the walls to allow water draining out to the back yard.

Improper mulching and soil preparation primarily occurred in sector I. Again, this was a part of the reasons that their contract was terminated after sector Ib. Excessive weeds in the planter boxes was attributed to insufficient maintenance staff for landscaping maintenance work.

It is recommended that the Authority should require a five years extended warranty from the contractor for all planter boxes and walls in sectors II and III...[and] acquire a credit amount of \$7,500 for not correcting the pre-cast concrete caps facing the wrong way.

OIG Evaluation of  
Authority's Comments

The Authority will take care of re-mulching and de-weeding of planter boxes in sector I through future landscaping maintenance.

The Authority's statement that the work in sector IIa was 95 percent complete is not a valid reason for accepting the wall caps facing the wrong direction. HUD's Ohio State Office should inspect the units to determine whether the weep holes corrected the problem of pooling water on the patios.

Our inspectors determined that the incorrect mulching and soil preparation occurred throughout sectors I through IV and not just in sector I as asserted by the Authority. Excessive weeds in the planters are attributable to improper mulching and soil preparation resulting in rapid evaporation and uncontrolled weed growth.

The five-year extended warranty for brick planters and walls should be obtained for the entire site not just sectors II and III.

The \$7,500 credit the Authority proposed would cover the cost to repair wall caps facing the wrong direction and for not mulching the soil in the brick planters.

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Authority Comments

Most of [the problems with the doors and the missing hardware] occurred in sector I units according to the preliminary interior inspection report provided earlier. Some of these units in sector Ia were vandalism damages. These doors and frames have been either corrected or replaced in June of 1996. All the apartment entry doors in sectors II and up that were either misaligned or improperly installed had been repaired an/or replaced by the contractor through our punch out inspection process.

All defective doors and frames in sector I and II have been corrected or replaced. Therefore, no remedial action and any credit amount for this finding will be recommended.

OIG Evaluation of  
Authority's Comments

HUD's Ohio State Office's staff inspected doors only in sectors I and II. Problems with doors were found in 17 units located in both sectors. HUD's Ohio State Office's architect said only one door had been damaged because of vandalism,

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and we did not include it in the units we cited. Some metal doors were misaligned, deadbolts did not match the cut-out, and wood doors were installed at an angle. HUD's Ohio State Office Public Housing Division should inspect the units cited to ensure the doors were corrected.

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### Authority Comments

Exterior concrete work in sector I was also a part of the reasons for their contract termination after sector Ib. According to the reinstatement agreement, the contractor provided extended five years warranty on all exterior concrete sidewalks and patios in sector I in lieu of replacing all concrete. At the site visit with all parties on November 13, 1996, it was observed that some concrete sidewalks and patios were cracking due to either earth settlement or abuse by vehicles. Also, there were some control joints in concrete not in place according to the contract in some units of sector II and III. Most of the concrete expansion joints were in place.

All defective concrete observed in sector I that are under the contractor's 5-year extended warranty will be repaired and/or replaced by the contractor. The Authority will inform the contractor to saw cut those missing control joints in the concrete patios for the entire project. An amount of \$5,000 is recommended to be withheld and to be placed into the escrow account until this work is done.

### OIG Evaluation of Authority's Comments

The Authority's proposed actions do not go far enough. The Authority should correct all locations in all sectors where expansion joints are missing. Concrete that does not have expansion joints will likely crack prematurely, settle unevenly, and become a tripping hazard. The contractor's extended five-year warranty should include all sectors where deficiencies were noted. The escrow account should include \$20,700, the amount estimated by our inspectors to be the cost to correct the deficiencies.

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### Authority Comments

In sector Ia units, many floor tiles and wall base moldings were damaged either by the vandalism or by residents occupying units for the past two years. All these defective, broken tiles and wall base moldings... have been repaired and/or replaced by the contractor.

Any damaged tiles and wall base molding in the future will be repaired and/or replaced either by the contractor through the construction warranty service or by the Authority maintenance staff.

OIG Evaluation of  
Authority's Comments

The deficiencies HUD's Ohio State Office's staff cited were caused by defective work. HUD's Ohio State Office should inspect the units to determine whether the damaged tiles and loose moldings have been corrected.

Any tiles or wall based molding damaged during installation or incorrectly installed should be corrected by the contractor.

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Authority Comments

The hot water heaters in the first floor furnace room were installed according to the manufacturer's recommendation. It complies with the recommendation and it has been approved by City Inspectors.

All electrical outlets and wiring in sector I were inspected by HUD inspectors during or right after lead abatement activities. Most of the defects were caused by vandalism. They all have been repaired and/or replaced by the contractor prior to the re-occupancy of units in June of 1996.

In July, HUD inspectors inspected 23 storage sheds in sectors III and IV prior to the completion of the air conditioning wiring. In September and October, the contractor enclosed all electrical wires and A/C lines with metal protective guards and plywood ceilings.

Since all these defects have been corrected,... no remedial action and no withholding of any credit will be recommended.

OIG Evaluation of  
Authority's Comments

The contract specifications require the water heaters to be piped to the floor drains. The Authority did not address the issue of specifications in its comments. Because the hot water heater valves were not piped to the floor drains as required by the specifications, any surge in pressure or temperature could cause the valves to pop off and endanger the tenants and flood the apartment.

HUD's Ohio State Office should inspect the electrical outlets and wiring to ensure the deficiencies have been corrected.

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## Recommendations

We recommend that the Director, Public Housing Division, HUD Ohio State Office:

- 1A. Inspects the interiors of units in sectors II, III, IV and V to determine whether the rehabilitation work in these units was performed in a skillful and workmanlike manner and in accordance with the specifications.
- 1B. Requires the Authority to correct any work not completed according to the specifications and in a workmanlike manner at no further cost to HUD. If the general contractor does not make the repairs the Authority should (1) contract for the repairs or services and back-charge the amount to the general contractor, (2) consider alternate solutions for the defective work, for example, extending the warranties and obtaining a letter of credit from the general contractor.
- 1C. Periodically monitors the Authority's progress in correcting the defective work.
- 1D. Considers imposing administrative sanctions against the general contractor and subcontractors to the full extent of the law.

We also recommend that the Director, Public Housing Division, Ohio State Office, requires the Columbus Metropolitan Housing Authority to:

- 1E. Monitor future rehabilitation contracts to ensure work is performed in accordance with the specifications and in a professional workmanlike manner.

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# Internal Controls

In planning and performing our audit, we considered internal control systems of the Columbus Metropolitan Housing Authority to determine our auditing procedures and not to provide assurance on internal controls. Internal controls consist of the plan of organization, methods, and procedures adopted by management to ensure that resources use is consistent with laws, regulations, and policies; that resources are safeguarded against waste, loss, and misuse; and that reliable data are obtained, maintained, and fairly disclosed in reports.

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## Relevant internal controls

We determined that the following internal controls were relevant to our objectives:

- Management philosophy and operating style;
- Accounting system and controls;
- Segregation of duties;
- Management monitoring method;
- Policies and procedures.

We assessed all the relevant controls identified above.

## Significant weaknesses

It is a significant weakness if internal controls do not give reasonable assurance that resource use is consistent with laws, regulations, and policies; that resources are safeguarded against waste, loss, and misuse; and that reliable data are obtained, maintained, and fairly disclosed in reports.

Based on our review, the following items are significant weaknesses:

- Management monitoring method. The lack of effective monitoring by the Authority resulted in the Authority's acceptance of substandard work. HUD's Ohio State Office's Multifamily Housing Division staff estimated that it would cost \$414,898 to correct the substandard work (see Finding).

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# Follow Up on Prior Audits

An OIG audit of the Columbus Metropolitan Housing Authority's Comprehensive Improvement Assistance Program (89-CH-202-1001) was completed October 21, 1988. The findings related to HUD approval of costs, indirect costs, procurement methods, sole source procurement, and contractor's payroll. All findings were closed.

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# Authority Comments



CMHA BOARD OF COMMISSIONERS  
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Dennis S. Guest, EXECUTIVE DIRECTOR

November 19, 1996

Mr. James J. Sobota, Senior Auditor  
HUD Office of Audit  
200 North High Street, Room 334  
Columbus, Ohio 43215

Dear Mr. Sobota:

This is CMHA's official response to the IG Audit Finding pertaining to the rehabilitation activities at the Lincoln Park housing development.

Attached are detailed responses to each of the construction defects outlined in the Audit. With respect to the two major defects of poor sodding and "sloppy" brick installation/planter box construction, CMHA agrees to:

1) In the Spring of 1997 require that the general contractor replace any sod which is defective. Please note that in previous correspondence, CMHA submitted test results from the Ohio State University which indicated that the sod was of the appropriate quality.

2) Seek a combination of credits, extended warranties and escrowing of funds to resolve planter box and other brick construction problems.

The other defects enumerated in the report have been repaired where appropriate. CMHA will tour the development with HUD Area Office staff to verify these corrections. It is important to note, however, that the deficiencies noted in the IG Report were found in units occupied by residents for over one year; units which had been vacated for lead abatement work and subsequently in the process of being repaired because of vandalism and units which CMHA had not accepted because they were still being modernized.

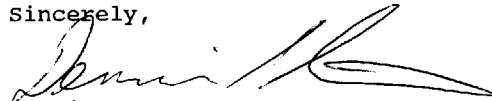
CMHA disagrees with the audit finding criticizing the agency for poor supervision. There were problems during construction because of inadequate on-site supervision by the

Mr. James J. Sobota  
November 19, 1996  
Page Two

general contractor and shortcomings on the part of the architect. However, CMHA replaced the architect and suspended the contract of the general contractor until assurances were received of improved quality of construction work. Subsequent to these actions, the progress and quality of rehabilitation activity improved significantly. The termination and reinstatement agreement for the general contractor were previously submitted to your office.

If you or your staff have any future questions, please do not hesitate to contact me.

Sincerely,



Dennis S. Guest  
Executive Director

Attachment

**SUMMARY OF RESPONSES TO  
HUD AUDIT FINDING FOR  
LINCOLN PARK REHABILITATION**

After a site visit with HUD auditors on November 13, 1996, and further evaluation of these findings, the following chart will summarize CMHA's proposal of corrective actions:

<u>Description of Defective Work</u>	<u>Proposed Corrective Actions</u>
1. Sod laid on stony surface HUD estimated \$196,675	Additional bond or escrow \$21,500 until Spring of 1997.
2. Bricks laid wrong side out and discoloration HUD estimated: \$95,000	Discuss credit with general contractor. Escrow \$15,000 for delay of water repellent.
3. Plumbing fixtures were loose HUD estimated: \$27,500	All have been corrected; No corrective action proposed.
4. Brick planters were not reinforced, grouted, capped HUD estimated: \$26,663	5-year extended warranty for all planter boxes. A credit of \$7,500 for concrete caps.
5. Door improperly installed HUD estimated: \$20,945	All have been corrected; No corrective action proposed.
6. Exterior concrete expansion joints were missing. HUD estimated: \$20,700	5-year extended warranty on all concrete in sectors 2-5. Escrow \$5,000 for saw cutting control joint till completion.
7. Tiles were defective and wall base molding were loose. HUD estimated: \$20,169	All have been corrected; No corrective action proposed.
8. Safety valves, electrical outlets/wirings were hazardous HUD estimated: \$ 6,595	All have been corrected; No corrective action proposed.
9. Firestop sealant in furnace room. HUD estimated: \$ 6,324	All units passed inspection by City Inspector; Finding is unclear; no corrective action proposed.



**Proposed Corrective Actions:**

The reason for the deterioration of lawns in sector 1 at this time, more than two years after the initial installation and residents occupying this sector, is somewhat difficult to identify. Furthermore, these lawns had lived through the entire 12-month construction warranty period. Therefore, it is suggested that CMHA should make all necessary corrections through the future landscaping maintenance work for all the sod on sector 1.

The lawns in sectors 2 through 5 are still under the twelve-month construction warranty period according to the contract documents. In the Spring of 1997, CMHA will exercise its right to demand the contractor to repair and/or replace all deteriorated sod in sectors 2 through 5. To ensure that this work will be done by the contractor in next Spring, CMHA may either demand an additional bond from the contractor for this work or place an amount of \$21,500.00 (approximately 15% of original landscaping contract value for sectors 2 through 5) in an escrow account until the work is done.

**2.) Bricks laid wrong side out and some discolored:**

The bricks being laid wrong side out primarily occurred in sector 1 construction. CMHA staff was aware of this poor quality of workmanship in 1993 and had rejected a total of seven (7) brick walls and instructed the contractor to replace with new walls in sector 1. A small number of these bricks mixed in several walls were allowed to stay because the number of bricks did not warrant for total replacement of these brick walls. At that time, the project architect and CMHA staff determined that any attempt to replace those pieces would make the general appearance of entire walls worse. The project architect and CMHA staff paid special attention in this matter from sectors 2 through 5 to prevent it from re-occurring. The detailed exterior inspection report provided by HUD inspectors did not indicate any of these bricks being observed in sectors 2 through 5.

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Page 4

In July of 1996, the architect and CMHA staff observed the discoloration of some bricks in sector 2(B) and had immediately consulted with the brick manufacturer. The brick manufacturer/supplier, Boral Bricks, Inc., explained that this discoloration (efflorescence) is not uncommon and it is primarily caused by the capillary action of the soluble salts content in the saturated brick. Once the moisture content in the brick reduces to a degree, this discoloration will not occur. We instructed the contractor to delay the water repellent spray on new bricks for at least three months to allow moisture content to reduce.

**Proposed Corrective Actions:**

As shown in HUD's inspection report, there were no wrong side out bricks being observed in sectors 2 through 5. Therefore, no remedial action will be proposed for these sectors regarding brick work.

Poor workmanship of brick walls was one of the reasons for their contract termination after sector 1 renovations. All the remedial actions regarding the poor workmanship had been analyzed and resolved through the contract reinstatement agreement. Furthermore, it is determined by the project architect and HUD inspectors that there will not be any safety concerned for these small number of wrong side out bricks. Therefore, no remedial actions will be proposed.

With respect to the efflorescence in the bricks, the contractor has been instructed to delay the water repellent spray on all new brick walls from sectors 2(B) through 5. An amount of \$15,000 from the contract (approximately 5% of the original contract value for sectors 2 through 5 waterproofing and tuckpointing work) is proposed to be placed in an escrow account until this work is complete in the Spring of 1997.

**3.) Bathroom and Kitchen fixtures were loose:**

Most of these fixtures were observed in sector 1(A) units according to the preliminary interior inspection report provided earlier. The picture of a loosed sink bowl in 640 #J (sector 1A) was probably taken in May or June of 1996 during or after the lead paint abatement activities. After the lead abatement activities, CMHA had instructed the contractor to recondition these units. All these loose sinks and plumbing fixtures in sector 1(A) have been repaired and/or replaced and those units are currently occupied. Furthermore, the report also identified a small number of these fixtures in some of sectors 1 (B) and 2(A) apartment units. CMHA has already instructed the contractor to correct these items under their contract warranty service agreement in October of 1996.

**Proposed Corrective Actions:**

Since all the defective fixtures identified in the preliminary interior inspection report have already been corrected. At this present time, no remedial action and/or withholding of any contract amount will be proposed.

**4.) Brick planter boxes were not reinforced, grouted, mulched, and capped:**

The exterior inspection report provided by HUD auditors and Geotechnical Consultants, Inc. indicated that several planter boxes and walls were lacking of vertical rebars. However, the attached pictures #1 and #2 show the existence of vertical rebars in the planter boxes and walls for building 675 and 645 which are two of the buildings identified with missing rebars in the report. These pictures were taken during the construction in 1995. Other similar photographs for buildings 1720, 1745, and 635 reflecting the existence of vertical rebars and grouting are available in CMHA's file. These pictures have demonstrated the conscious effort from the architect and CMHA staff to ensure the proper installation of the rebars of these walls.

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The project architect and CMHA staff were aware of some of the pre-cast concrete wall caps facing the wrong directions. These concrete wall caps were normally installed at the last stage of construction prior to the acceptance of the buildings. By the time that we realized wrong pre-cast concrete caps had been ordered and delivered, all the construction activities in sector 2(A) were about 95% completion. The project architect and CMHA staff determined that the amount of water draining into the patios from this 12" wide cap was minimal. Some patios with pooling water were caused by improper slope of patio and they had been corrected by installing weep holes on the bottom of the walls to allow water draining out to the back yard. Some were rejected and completely replaced through our punch out inspections.

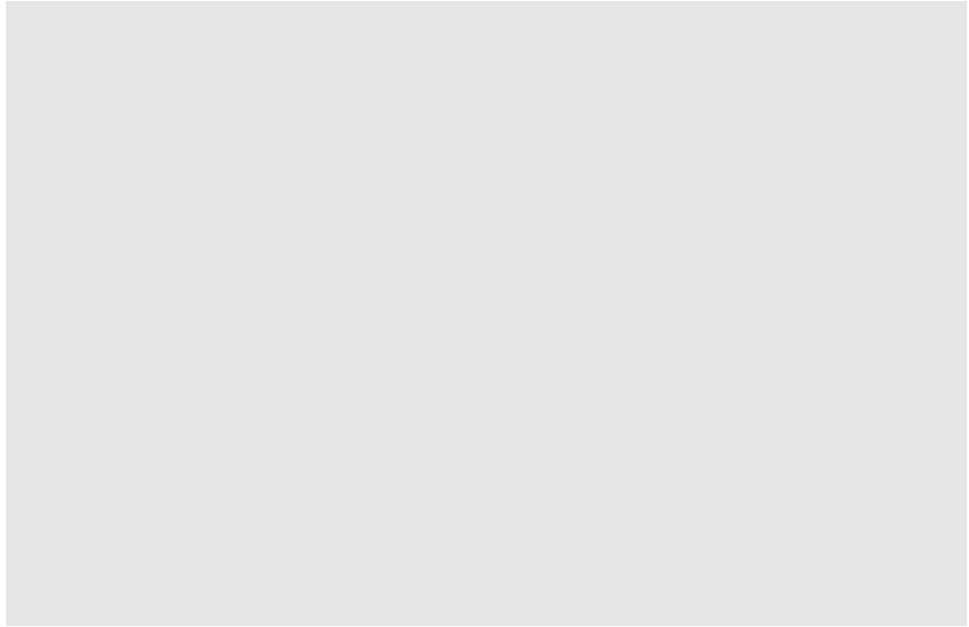
Improper mulching and soil preparation primarily occurred in sector 1. Again, this was a part of the reasons that their contract was terminated after sector 1(B). Excessive weeds in the planter boxes was attributed to insufficient maintenance staff for landscaping maintenance work.

**Proposed Corrective Actions:**

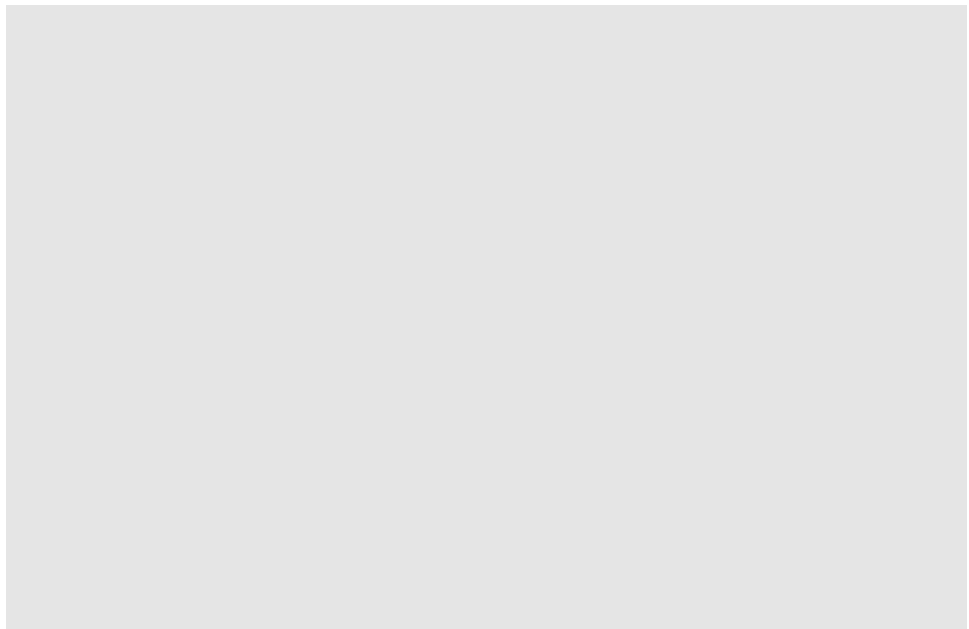
It is recommended that CMHA should require a five (5) years extended warranty from the contractor for all planter boxes and walls in sectors 2 and 3.

Any attempt to remove and reinstall the pre-cast concrete caps will just make the general appearance of these caps worse. It is recommended to acquire a credit amount of \$7,500 for not correcting the pre-cast concrete caps facing the wrong way.

CMHA will take care of re-mulching and deweeding of planter boxes in sector 1 through future landscaping maintenance.



*Picture #1: Planter walls construction at building 675*



*Picture #2: Garden walls construction at building 645*

**Proposed Corrective Actions:**

All defective concrete observed in sector 1 that are under the contractor's 5-year extended warranty will be repaired and/or replaced by the contractor. CMHA will inform the contractor to saw cut those missing control joints in the concrete patios for the entire project. An amount of \$5,000 is recommended to be withheld and to be placed into the escrow account until this work is done. With respect to the missing wire mesh in some concrete sidewalks and patios, it is recommended to acquire a five-year extended warranty for all concrete from sector 2 through 5.

**7.) Tiles were defective and broken, and wall base moldings were loose:**

No specific locations of this type of situation were indicated in this report. In sector 1(A) units, many floor tiles and wall base moldings were damaged either by the vandalism or by residents occupying units for the past two years. All these defective, broken tiles and wall base moldings indicated in the preliminary interior inspection report have been repaired and/or replaced by the contractor prior to the re-occupancy of these units in June of 1996. All floor tiles and wall base moldings work in the subsequent sectors have been thoroughly inspected by the project architect and CMHA staff prior to the final acceptance of the buildings.

**Proposed Corrective Actions:**

Since all defective floor tiles and wall base moldings in sector 1 have been corrected, no corrective actions and withholding of any credited amount will be recommended for this finding. Any damaged tiles and wall base molding in the future will be repaired and/or replaced either by the contractor through the construction warranty service or by CMHA maintenance staff.

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**8.) Safety valves, electrical outlets, wiring were hazardous:**

The hot water heaters in the first floor furnace room were installed according to the manufacturer's recommendation. The manufacturer's recommendation indicates that the temperature and pressure relief valve piping should be terminated to a nearby floor drain; not into floor drain and it must have a 6" air gap between floor drain and the pipe outlet. The current floor drain in the furnace room is generally located about 6" to 12" away from the relief pipe outlet. It complies with the recommendation and it has been approved by City Inspectors.

All electrical outlets and wiring in 27 units in sector 1 were inspected by HUD inspectors during or right after lead abatement activities. Most of the defects were caused by the vandalism. They all have been repaired and/or replaced by the contractor prior to the re-occupancy of these units in June of 1996.

In July, HUD inspectors inspected 23 storage sheds in sectors 3 and 4 prior to the completion of the air conditioning wiring. In September and October, the contractor enclosed all electrical wires and A/C lines with metal protective guards and plywood ceilings in the storage sheds as per contract documents. This final product and completed work had been shown to the HUD auditors during the site visit on November 13, 1996.

**Proposed Corrective Actions:**

Since all these defects have been either corrected or completed through the process of construction and apartment re-conditioning, no remedial action and no withholding of any credit will be recommended.

**9.) Firestop sealant for penetrations through walls:**

*This finding is somewhat confusing. The total number of units (103 units) cited in sector 1(A) is incorrect. There are only a total of 52 units in sector 1(A). No specific location indicated in the description of defective work also makes it difficult to verify.*

*In 1993, the project architect had consulted with the City of Columbus Regulation Division regarding the issue of firesafing in the furnace room and party walls. As a result, fire rated mineral wool was used in between studs and beams behind fire rated drywall. A 2-hour rating fireproofed caulking product named Metalcaulk was used for all wall penetrations. During the rough-in inspection, the City of Columbus inspectors specifically inspected and approved all firesafing materials installation for each unit prior to the installation of drywall. This finding seems to contradict city inspector's inspection. Without further testing of the caulking material used in place, it is difficult to determine which inspection is correct.*

**Proposed Corrective Actions:**

*Prior to obtaining the detailed locations of units and the result of material testing, no action can be recommended.*



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# Distribution

Secretary's Representative Midwest  
Director, Public Housing Division, Ohio State Office (2)  
Director, Multifamily Housing Division, Ohio State Office (2)  
State Coordinator, Ohio State Office (2)  
Director, Field Accounting Division, Midwest  
Field Controller, Midwest  
Assistant General Counsel, Midwest  
Public Affairs Officer, Midwest  
Assistant to the Deputy Secretary for Field Management, SDF (Room 7106)  
Acquisitions Librarian, Library AS (Room 8141)  
Deputy Chief Financial Officer for Finance, FF (Room 10164) (2)  
Chief Financial Officer, F (Room 10166) (2)  
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Comptroller/Audit Liaison Officer, PF (Room 4122) (3)  
Assistant Director in Charge, U.S. GAO 820 1st St. NE, Union Plaza, Building 2, Suite 150,  
Washington D. C. 20002 (2)