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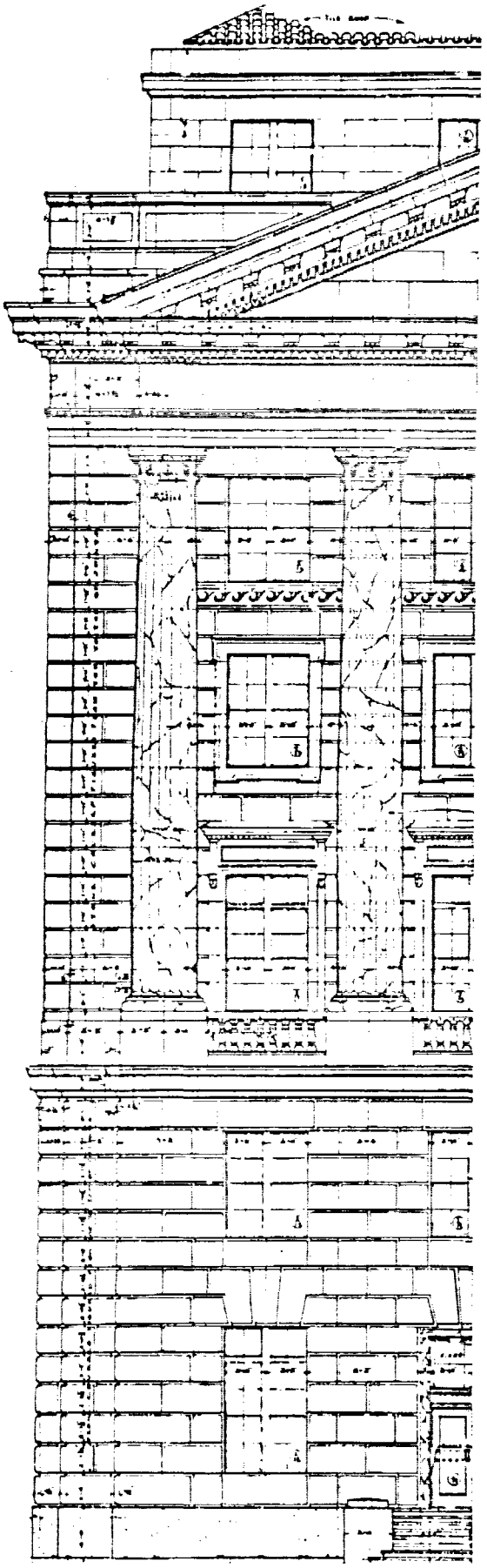

HISTORIC STRUCTURES REPORT

INTERNAL REVENUE SERVICE BUILDING

WASHINGTON, D.C.

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Historic Structures Analysis and Report

INTERNAL REVENUE SERVICE BUILDING

1111 Constitution Avenue, N.W.
Washington, D.C.

for the

General Services Administration

National Capital Region

Project No. RFTP/IFB/GS-03B-98361/99038

March 1981

Building Conservation Technology, Inc.
1555 Connecticut Avenue, N.W.
Washington, D.C. 20036

PREFACE

The following Historic Structures Report was prepared for the U.S. General Services Administration, National Capital Region, Region 11, for the purpose of providing guidelines for current and future modifications of the Internal Revenue Service Building at Constitution Avenue and 12th Street, N.W., Washington, D.C. in such a way as to preserve the historic integrity of the structure and for further documenting the development, architectural resources, and present condition.

The contents of the report are in response to the contract scope of work comprising a discussion of the Federal Triangle development and the Internal Revenue Service's construction and development; a description of the IRS Building and a statement of significance; an inventory of significant spaces and details; materials conservation analysis; mortar analysis; paint analysis; and exterior masonry and metals cleaning analysis, which served as a basis for the criteria for restoration and reuse; and procedures for conserving existing historic fabric, restoring significant elements in areas of high importance, and inserting new systems without compromising the integrity of the historic areas. This work is complete, with the exception of a follow-up report on the masonry cleaning tests, to be prepared in April, 1981 after the panels have been subjected to a complete weathering cycle.

The initial work was conducted on-site between December 1979 and June 1980 and the report was prepared by Sarah M. Sweetser, Pamela W. Hawkes, Mary L. Oehrlein, and Mary Jane Wells of Building Conservation Technology, Inc. Section II, D, Structural Survey, was prepared by the Office of James Madison Cutts, Structural Engineers, Washington, D.C.

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I
CONSTRUCTION HISTORY and DESIGN DEVELOPMENT

I. CONSTRUCTION HISTORY

Introduction

The Internal Revenue Service Building was the first of the 20th century U.S. Government structures built within the area of land between Pennsylvania and Constitution Avenues and 15th Street known as the Federal Triangle. Its construction between 1928 and 1936 marked in limestone and marble the resolve of the Federal government to make a permanent home for its scattered offices on a radically new, larger scale in the heart of downtown Washington, D.C. When the main section of the building was occupied in June of 1930, it contained 1,104,000 square feet or about one-eighth of the total gross floor area for all 47 existing Federal buildings in the District.[1] The plans to create a monumental Federal presence, as envisioned by the McMillan plan of 1902 and adapted by the Public Buildings Commission in 1917, were thus well on the way to reality (Fig. 1).

Design Development

First Designs

The earliest designs for the IRS Building have not been found, but it is obvious from the correspondance between Edward Bennett and Louis Simon that there was a design prepared as early as November of 1926, before the well known master plan for the Federal Triangle buildings was formulated. Simon, later to become the Supervising Architect from 1933 to 1939, was then superintendent of the architectural section of the Office of the Supervising Architect of the Treasury under James Wetmore.[2] Bennett, an eminent Chicago architect, was Consulting Architect of the Treasury and served as chairman on the Board of Architectural Consultants appointed by the Secretary of the Treasury in 1926. Their discussion indicates that the early design of the IRS Building, guided only by the fashion for public buildings of that time, was classical in character, mentioning "segmental versus arched window heads" in the 18th century manner.[3] In January of 1927, Simon submitted to Bennett another set of drawings including a front elevation which showed end and central pavilions, a pediment, segmental arched window heads, keystones, and an attic story with pilaster treatment. Although these elements all appear on buildings later built within the Federal Triangle, they are not part of the existing Revenue design. Simon also described placement of the building on the lot to provide for maximum coverage of the ground while allowing for the widening of 10th, B and C Streets. There was also consideration at this early date for the "sub-surface storage of automobiles"--an underground parking garage.[4] Bennett's response to Simon's design in January of 1927 indicates that the building had gone through several earlier studies. He mentions the building having a two story base and agrees that segmental arched windows would be appropriate here

and at the General Accounting Office as well. Bennett specifically mentions decorative sculpture in stone and bronze and suggests that it be designed in the "style of the French 18th century, keeping the elements large and sculpturesque, in the modern manner."[5]

Federal Triangle Master Plan

The finished design of this early scheme for the IRS Building, "to be of the same height as the National Museum and classical in character," was submitted to the Fine Arts Commission in April of 1927.[6] By the next day, the Commission notified the Secretary of the Treasury that they desired "giving the Triangle a treatment similar to the Louvre in Paris, with colonades, open courts, and arched driveways, and an extended facade for units of a very large building, rather than many individual buildings."[7] It was further stated that the

> purpose of the Congress. . . had been not only to clean up the south side of Pennsylvania Avenue, but also to develop between that avenue and the mall a series of notable buildings which. . . shall represent the dignity and power of the nation. In regard to the treatment of the Triangle itself, East and West streets may be disregarded as open streets. . . provision for the necessary passage of vehicles and pedestrians may be secured, as in the case of the Louvre and other buildings in Paris, by carrying passages through the buildings themselves. This will enable buildings to be created of a size commensurate with the dignity of the government and its functions. These buildings should have ample open courts treated so as to give two fronts to the buildings, an interior front and an exterior front. The courts should not be used for the parking of automobiles.[8]

In early May, the Fine Arts Commission sent a response to Simon on the first design submitted for the IRS Building. Predictably, it stated that the "time has come to study the Triangle as a whole, to fix the cornice lines, the courts and other such details before work on any one building shall begin."[9] However, in addition, it recommended that the "facade as drawn was much too elaborate. . . that in carrying out the scheme for building in the Triangle, there should be a distinct line of demarkation between the monumental buildings of the first class, to be occupied by heads of Departments, and subordinate buildings to be occupied by bureaus."[10] Thus, the new design guidelines dictated a new design from Simon with less pretentious detailing than had been previously planned by he and Bennett, as well as a postponement of construction.

According to the "Unified Architectural Composition Plan" publicized by the Commission of Fine Arts in July of 1927, the Internal Revenue Service Building was to form half of a "Great Circle," measuring 500 feet in diameter at the intersection of

12th Street and the former C Street. Open arcades would skirt the circle on the ground floor levels of the Internal Revenue Service and Post Office Department Buildings opposite. The other facades of the buildings along Constitution and Pennsylvania Avenues would carry the seven story cornice line and red pantile roof of the rest of the complex. Only on the Great Circle would the roofing design and material be changed to dark gray slate mansards emulating the Place de la Vendôme in Paris.

As voiced by the Secretary of the Treasury, Andrew W. Mellon, the benefits of the large scale plan were that: (1) the grouping of the new buildings placed them in such relation to each other that the transaction of public business would be facilitated; (2) in reclaiming the south side of Pennsylvania Avenue, the opportunity was presented to dignify that thoroughfare as an important artery between the Capitol and the White House, and by the rehabilitation of B Street, a second important line of circulation was created connecting the Capitol with the Lincoln Memorial and the bridge to Arlington; (3) the proposed grouping gave recognition to the plan of L'Enfant. Mellon further stated that the "new fangled notions in architecture will not be allowed to sway the character of the great monumental structures."[11]

Final Plans

By September of 1927, Simon had developed a new set of plans and submitted them to the Commission of Fine Arts for review. The Board of Architectural Consultants had agreed on a 97½ foot cornice line and a base of 42 feet to remain consistent throughout the area. The Revenue Building design, a monumental structure and very similar to the new Department of Commerce Building, was approved. Because the IRS Building was used only by a bureau rather than as a departmental headquarters, the sculptural bronzes and stonework originally planned by Simon would not be included and, unlike its highly decorated neighbors, the IRS Building was to be unadorned. The large row of columns along the Constitution Avenue facade were envisioned as helping to break the monotony of the wall plane. In execution, the colonade design provided space for a narrow promenade which offered a spectacular view of the mall area.

The IRS Building was to have an irregularly shaped plan, with monumental facades paralleling the Pennsylvania and Constitution Avenues and 10th Street, and a portion of the 12th Street facade curved to accommodate the "Great Circle." Only part of the semicircle would be built in the first section of the Revenue Building to be erected. The rest of the design would have to wait: first, for the remainder of the property to be acquired along Pennsylvania Avenue, and second, for the seemingly inevitable demolition of the Old Post Office building at the corner of Pennsylvania Avenue and 12th Street. At that time, the Pennsylvania Avenue elevation would be completed to match the design along 10th Street and Constitution Avenue and the second half of the semi-circle with flanking pavilion would close off the "Great Circle."

Site Preparation

Acquisition

The site for the building was acquired through the Public Buildings Act of 1926, which authorized construction funding for the Federal Triangle. The original plan covered the entire block between 10th and 12th Streets, B Street and Pennsylvania Avenue, but several problems led to the decision to begin construction of the structure on the south half of that site only.

Founded in 1792, the IRS had been a minor branch of the Treasury until the Income Tax was instituted in 1913. By the 1920's, most of the 6,000 employees of the Bureau of Internal Revenue were housed in temporary wood frame and stucco "fire traps" built along B and 15th Streets. The working conditions were considered "absolutely appalling" by the press of the day,[12] and it was generally recognized that new, more permanent quarters were needed.

As important as the regard for the human condition was concern for the safety of the tax records. In the temporary structures, there was a constant threat of fire which could easily destroy the country's revenue accounts. Illustrative of this danger at that time, the Secretary of the Public Building Commission reported that "even with prohibitions against smoking and great care to avoid fire risks, 603 fires have started in the last eight years /1923-1931/, and but for the special vigilance of the guards, any one of these might have proved disastrous."[13] In July of 1926, a month after the Public Building Act was signed, the decision was made to proceed as soon as possible with the construction of both the IRS Building and the Department of Commerce Building in order to speed the resolution of dangerous conditions which threatened both clerks and records in the temporary buildings.[14]

Planning and construction of the new building was expedited by the fact that several years earlier, the government had purchased the south part of the lot, extending along B Street from 10th to 12th Streets and the site of the Farmer's Market, as well as Square 324, behind the Old Post Office, for a postal bag repair shop which had never been built. Square 350, which was to be taken over by condemnation in 1926, bounded by 10th, 11th, "little B" and C Streets was occupied by delapidated row wholesale houses which dealt "principally in seeds, grains, fertilizers, chicken and other produce."[15] The northwest corner site, where the Victorian Post Office stood, could be cleared about ten years after the construction of new office space, but until then, the offices in the "Gibraltar of ugliness" were too valuable a commodity.[16]

The northeast corner block, square 349, had not been acquired by the time construction of the main building began. Two popular

establishments were situated on the block, and their acquisition and demolition had to be handled with diplomatic skill in order to maintain popular support for the Federal Triangle project. One of these was Harvey's Restaurant, a four story building with a cast iron facade built in 1866. Originally called "Harvey's Ladies' and Gentlemen's Oyster Saloon," the restaurant served the political and literary leaders of the nation, including every president from Grant to FDR, Mark Twain, Walt Whitman and Thomas Nast.[17] The Presidents' Theater next door was the site of the earliest playhouse in the city, and hosted inaugural balls for John Quincy Adams, Andrew Jackson, Martin Van Buren, William Henry Harrison and James K. Polk.[18]

Farmer's Market

Reclamation of the land occupied by the Farmer's Market since 1870 also became more difficult than expected. The resistance was not based on local objections to the Federal Triangle scheme, for the District Commissioner stated that "we are just as anxious as anyone to see these new model, modern workshops for the government go up."[19] However, as a letter dated July 28, 1926 to the Board of Commissioners of the District of Columbia from their corporate counsel pointed out, the market was "patronized largely by householders and retail dealers in the city, and /was/ a well known municipal institution."[20] The District challenged the right of the federal government to take back the property without financial retribution for the cost of moving the market place, charging that the Public Buildings Act of May 25, 1926 specified only the taking of lands belonging to the government that were conveniently located and available for the purpose of the new office structures. A further stipulation was that the Secretary of the Treasury could only acquire a new site by "purchase, condemnation, or exchange." In a well-publicized battle, the D.C. government based its case on the word "exchange."[21]

At first, the federal government denied the financial responsibility for the market relocation and would only pay for the demolition and removal of the market sheds. However, when it appeared that the market dispute could continue indefinitely and hold up the entire project, the Treasury Department acquiesced and paid $2,500 for the removal, marking and storage of the western half of the sheds on the grounds of Gallinger Hospital in Anacostia. Acting Supervising Architect of the Treasury, James Wetmore explained in a letter to the District Commissioners dated March 10, 1928: "As it is the intention to re-erect these sheds, they shall be carefully dismantled: the separate parts marked, and a diagram prepared showing the original placing of the parts."[22] The site for the market wagons was relocated to the south side of B Street between 6th and 12th Streets, N.W.

Clearing Begun

Even while the market site was in question, Signey L. Hechinger was hired to demolish the structures on the block behind the Old Post Office. By December 31, 1926, Square 324 was leveled. In July of 1926, the owners of the buildings in Square 350 were alerted to the government plans for acquisition, but made no response. Condemnation proceedings were first discussed between the Treasury and Justice Departments in September of 1926, but were not formally initiated until January of 1927.[23] The condemnation of the land was finalized in October of 1927 and with title to the land assured, ground was broken one month later on Square 324, though the sites of the market and Square 350 had yet to be cleared.

Excavations and Foundations

While obtaining the land to build the massive structure had been legally complex, the start of excavations opened new areas of concern. On November 22, 1927, one day after digging had begun, the Evening Star reported: "Excavations in the Internal Revenue Building site just south of the Post Office Department Building have struck water. . . the steam shovel. . . after going down only a few feet has already opened two or three sources of running water." Pumps were brought in to keep the hole cleared, and the excavation was made deeper along the 11th Street edge "in order that other water found in the square. . . will run to this lowest point."[24] At first, it was suspected that the water came from an old water main. Unfortunately, that was not the case, and as the excavation progressed, the water problem increased. To further aggravate the problem, the spring and summer of 1928 were especially wet so that by August, the excavation was flooded and construction halted. Ten pumps worked to reduce the water level, which, after an especially heavy downpour, measured over 20 feet deep in an elevator pit.[25]

By the end of August, more "Artesian wells of good clear water" had been exposed and the engineers were puzzled as to the water's origins.[26] Designs for the piles driven for the foundations had to be adjusted to compensate for the greater depth to solid ground.

A less serious, but archeologically interesting, encumbrance, was the discovery of wood pilings at the west end of the excavations near 11th and C Streets. These had been part of a wharf that had stood along the Tiber Creek, long since filled in.[27] The pilings were "8 by 12 inches in diameter, 8 to 12 feet long;" and they had been driven closely together to extend over a length of 400 feet.[28] Since they interfered with footings for the new structure, they were removed and destroyed.

By early September, 5,500 out of the total 8,000 piles had been hammered into place by the Raymond Concrete Pile Company. Several concrete piles had been ruined by wells, water percolating up through the freshly poured concrete, washing the cement out of

the bottom of the pile, and thereby weakening the structure.[29] Despite these adversities, the piles were driven within the expected time period. New wells were capped as they were encountered. Though there had been a shortage of drinking water in the city throughout its history, the water from the wells below the IRS Building was quickly dismissed as unfit for use. Possible contamination from construction or the unknown source of the water was one consideration. The other was the added expense of pumping equipment.[30] So the water source was sealed off below the new structure.

Besides the ten water pumps, equipment on the site included six pile drivers, four steam shovels, seven concrete mixers and a huge fleet of trucks.[31] The latter was another source of complaints, this time from citizen and business groups. The construction site was active for long hours with trucks hauling the soil away at a rapid pace. Their route passed through residential neighborhoods of Capitol Hill near Lincoln Park on the way to a landfill area along the Anacostia River. By the end of a hot July, protests arose from the Lincoln Park Citizens Association, "claiming that they are being kept indoors during the present hot weather with windows tightly closed to avoid clouds of dust, that they cannot hear each other talk from 4 o'clock in the morning until long after dark, and that their houses are being shaken to pieces and their furniture ruined by the dirt."[32] Likewise, a delegation of business men from the area near the excavations also complained about the "dust nuisance."[33] One of the residents had counted more than one truck a minute either leaving or returning, this starting as early as four o'clock in the morning. The ambitious plan for construction of the new Federal City could not continue without consideration for public opinion and support, and by the first of August, truck traffic was restricted to the hours between 7 a.m. and 7 p.m.

The concrete foundations were laid between June and November of 1928 by the F. W. Mark Construction Company of Philadelphia at a cost of $607,000 (Figs. 2 and 3).

A $5,799,000 contract for construction of the superstructure was awarded to the James Baird Company, Inc. of Washington and New York on January 21, 1929. Work began eight days later. The structural steel was erected between March and July of that year.

Exterior Masonry

There was some problem in obtaining the proper marble for the exterior columns and pilasters (Fig. 4). The plans and specifications had called for a clear faced Tennessee Tavernelle marble, which has a pink cast and is noted for its low porosity and high compressive strength. But, due to the size of the blocks needed for the column drums, it was doubtful whether the marble could be obtained without some veining. Consequently, in April of 1929, it was decided to obtain the marble from two separate companies, the Gray Knox Marble Company and the Georgia Marble Company, both located near Knoxville, Tennessee. In addition, the Gray Knox Company provided the 16 pilasters on 10th Street, four pilasters on Constitution Avenue, 14 columns on Constitution Avenue and four along 10th Street and the marble trim for the nine exterior entrances. To fill their large order, the company found it necessary to use two quarries to match the color and quality required by the architects.[34] Marble was also supplied by the Georgia Company Quarry in Nelson, Georgia for use in 14 columns on the south elevation, which would be mixed with the other marble in a symmetrical arrangement. The eight columns in the circular portion of the building near 12th and C Streets are also of Georgia marble, as is all the marble window trim and pilasters in the 12th Street pavilion and in the arcade on the circle.[35]

The Gray Knox Company had difficulty in obtaining sound marble in the sizes and colors needed for the column drums. As late as July 20, 1929, the weekly report noted:

> the prospect for obtaining stock from the Gray Knox Quarries becomes more discouraging each day. All Tennessee marble-men are optimists and always filled with the hope of encountering a ledge of sound marble: a possibility, but from present indications and past experience, the changes for finding sufficient sound marble to complete the contract on time, seem very remote.[36]

Within a week, however, the optimism paid off as a large ledge of sound stone, 55 feet long, 18 feet wide and 12 feet high was channeled at the Anderson Quarry for the Gray Knox Company.[37] In August, the ledge, estimated at 100,000 cubic feet, was broken loose.[38] By mid-October, sufficient good marble had been quarried to complete the columns, and on October 21, 1929, Engineer Gray reported to the Supervising Architect that the final shipment of the Gray Knox marble had been made.

For the most part, the marble was all "machined," that is, sections were run through planers, carborundum lathes, or other machines to cut to size and shape. The flutes in the column drums were cut by machine, an operation which required constant monitoring to control the quality.[39] In fact, the Supervising

Architect's office detailed Edward D. Gray, a construction engineer, to Knoxville to oversee the operations and to make weekly reports to the Washington office on the progress of the marble work. Handwork was only used in fitting the blocks together, applying the sand finish, or carving, which is not extensive on the Doric and Ionic column and pilaster capital designs used on the IRS Building.[40] Hand carving of a four panel leaf ornament in the soffit of the abacus of the Doric columns along Constitution Avenue was omitted and plain panels made.[41]

The marble for the entrance and window trim was given a honed or smooth finish to match the limestone facings, except for the windows at the third and fourth floors on the circle and the pavilion, which were finished to match the columns and pilasters.[42] Approval was originally given to a steel shot finish submitted by the Gray Knox Company, but it proved to be impossible mechanically to apply the finish to curved fluting, and, the shot rusted and stained the marble an ugly brown color. The final solution was a sand-blast finish which gave the desired effect from a distance.[43]

During construction, it was decided to use Vermont Verde Antique marble instead of cardiff green[44] for the spandrel panels in the courtyards as had been indicated on the construction drawings.

Limestone supplied by the Indiana Limestone Company, Bedford, Indiana was used for all other work on the street facades of the building and on the circle, including the main cornice and modillions (Fig. 5). Varigated limestone was originally intended for use throughout, but was discovered to create a checkerboard appearance when used in large expanses, particularly in the architrave lintel course above the long row of columns on the south elevation. It was therefore decided to use select gray for all the work where big sizes occurred, including the soffit of the ceiling over the colonade.[45] The only sculptural detail in limestone on the exterior of the building are the eagles surrounding the cartouche at the main entrance on Constitution Avenue (Fig. 3). These were carved by the Indiana Limestone Company.

The dressed surface of the stone to be used around the entrances was given a picked or hammer point finish (Fig. 6). The stone was all steam cleaned during construction to enhance the color and texture, as recommended by the manufacturer.[46] The only other departure from the original specifications for limestone was the substitution of a brick for concrete backing for the cornice, with alternating depths of face stones. This keying of the masonry units was thought to provide a more stable architectural element for the long expanses of the cornice.[47]

Roofing

All of the buildings in the Federal Triangle have the same type of roof, clay pan and cover tile.[48] The only exception is found on the upper roof and mansards of the buildings which comprise the "Great Circle." Here, black, unfading Pennsylvania slate was used.[49]

As specified, the slate of the upper roof slope was set in "Barretts-Elastigum," a mastic over an asphalt membrane. As early as June of 1930, during the first summer after completion, the combination of radiant heat, the absorptive ability of the black slate and the plasticity of the mastic caused the slates to slip out of place. With a slope of 3½ inches to the foot, this slippage was enough to cause buckling of the slate in the rows near the eaves and gaps near the ridges of up to 3 inches. To remedy this situation, practically every piece of slate had to be lifted and reanchored with a copper strip nailed to the roof decking.[50]

The roof was insulated with a material called "Insulite," which was placed between the ceiling beams and fastened to the concrete roof deck with 16 penny nails when a temperature reading was taken in August of 1930 to test the effectiveness of the material, the outside temperature was 103 degrees, the slate roof was 134 degrees, and the attic was found to be 92 degrees.[51]

Promenades

Roofing material was needed for the promenade behind the colonnade on the third floor and around the seventh floor. Originally, the specifications called for an asphalt membrane over the concrete slab placed under promenade tiles. The flashing material was changed during construction to 4 pound sheet lead, which also was carried through the walls below the columns and balustrade to act as a damp course protecting the parapet wall from vertical moisture penetration. The material was then covered with 6 by 9 by 1 inch gray flint promenade tile manufactured by the Ludowici-Celadon Company.[52]

Drainage System

The flashing on the pitched roofing surfaces was sheet copper. Above the seventh floor, the rain water drainage was collected in interior copper gutters which connected to pipes that drained across the attic floor to the wall lines of the corridor partitions. The downspouts dropped through chases in these partitions to the third floor ceiling, where they connected with horizontal runs in the floor space of the third floor corridor ceilings that connected to larger drains to the basement.[53]

Sheet lead was used on the entire upper surface of the main cornice in place of the originally specified plaster bitumastic

membrane.[54] This surface drained inward to downspouts along the balustrade parapet wall, which connected to pipes within the chase around the sixth floor, and from there to the interior downspout system.

Exterior Metal Details

Bronze

The exterior entrance doors were made of polished bronze while the door frames and transoms were given a "reddish brown color medium statuary finish."[55]

Interior Finishes

While the exterior of the Internal Revenue Service Building was designed to blend with the monumentality of the others in the Federal Triangle, the emphasis of the interior was on practical office space. There were very few original decorated ceremonial spaces within the IRS Building, and even fewer survive unchanged.

The main lobby in the center of the Constitution Avenue facade was the most elegant of the building's interiors. Finished with several types of marble and stone, an ornate coffered and polychromed ceiling and bronze doors, the space set a tone of grandeur that corresponded more closely with the new concept of Constitution Avenue outside as a ceremonial way than with the actual character of the office building inside.

Interior rooms were designed for ultimate flexibility and minimal upkeep, key words in modern office design (Fig. 7). The rooms had no cornices or other types of decorative trim, so that partitions could be easily moved without concern for patching or replacing decorative moldings. Crucial to the success of the plan was the use of floor-to-ceiling movable metal partitions to divide the large expanses of floor space on either side of the central corridors. The goal of the design was flexibility, anticipating the growth and changes that would affect the Bureau throughout the life of the building.

Floors

Flooring used in the building varied in terms of materials and design. The entrance and elevator lobbies were floored in different types of marble with a constrasting color for the baseboards and borders. In the public corridors, the floor was

furnished in Tennessee terrazzo set within brass strips and bordered by McMullen light gray marble.

Special uses called for special flooring. In the seventh floor Court Room, the flooring was cork tile set in a checkerboard pattern of light and dark brown trimmed with bands of cardiff green honed Champlain black marble (Fig. 8). Bathroom floors were 3 by 3 inch gray tile with the same size black tile used as a border. Stairs had slate treads set within the iron frames. Six by 6 inch quarry tile was used in the pump room in the basement and in the cafeteria and kitchen rooms on the seventh floor, including the "dishwashing room, salad room, bake shop, colored dining room and soda fountain room."[56] Mastic floors were originally specified for these rooms, but it was later felt that the material would not be able to stand up to constant "mop and water." All floor tile, terrazzo and slate were supplied by the American Mosaic Company of Washington, D.C.

All the office space was originally designed to have wood floors,[57] but cost and maintenance considerations led the architects to select a mastic composition laid on cement, called "Masticomp." To allow easy cleaning of the flooring, all radiators which were not placed behind screens were hung on the wall, eliminating feet which would obstruct the floor mops. The only wood flooring installed in the building was put in the Commissioner's office, a checkerboard parquet design.

Within the first month of the building's occupation, problems with the flooring were encountered. As reported by the Inspection Engineer:

> Every object bearing on the floor, with a base of less than 1½ inch digs into the floor and under office chairs the floor has the appearance of streets of cobble stones in miniature form. In a few cases, the rollers have pulled the 1/8" mastic surface into bubble form. The heels on high heel shoes form half moons in the mastic.[58]

To protect the flooring, rubber tips and casters were therefore put on all the chairs, and only rubber tired trucks were used to move heavy equipment through the offices.[59]

Walls

The main entrance vestibule and lobby in the center of the south side of the building was lined with walls of gray mankato stone, a limestone with a porous surface similar to Travertine marble. Originally intended to be polished, the architects decided during construction to have it finished with a honed surface which diminished the appearance of the holes in the surface.[60] The stairs flanking the lobby were of the McMullen light gray marble which was also used for the wainscoting there,

throughout the first floor hallways and at the other elevator lobbies. The 10th Street lobby and outer vestibule and the secondary entrances at the south corners of the building had the McMullen light gray marble for the entire wall surface.

The original Commissioner's office had mahogany paneling around the room to the height of the window sills. The upper walls were plaster with a moulded plaster cornice.[61]

The eight Hearing Rooms and the Court Room also had paneling of mahogany with beaded edged flush panels in wainscoting that extended from the green marble baseboards to the cornice level (Fig. 9). The plans had called for mahogany finished Rakuda or American black walnut, but this was changed during construction to African mahogany to be given a walnut finish.[62] The Court Room on the seventh floor had a molded wood cornice, 10½ inches in height at the top of the paneling. A screen of eight columns separated by curtains was set out from the wall about four feet behind the Judge's bench.

Permanent interior walls were masonry, terra cotta tile covered with wire mesh lath and plaster. The typical wall treatment was plaster above the baseboard without any decorative treatment, cornice or ceiling ornament.

The use of the 400 metal partitions throughout the office spaces was a new innovation and viewed as a valuable fireproof measure (Fig. 10). They had steel frames with either solid metal or glazed panels. The glass could be clear or frosted, depending upon the needs of a particular office. The partitions had slate baseboards to match those used on the permanent walls of the offices. Most of the partitions had doors for interoffice access. In most cases, the steel was grained to imitate either mahogany or walnut, though in some offices the finish was a flat color.

Several rooms, singled out for privacy or for the accommodation of noisy machinery had walls and ceilings especially treated to minimize the sound level. The eight Hearing Rooms were given acoustical plaster ceilings, while the rooms along the south end of the 10th Street side of the first floor had acoustical plaster walls (Fig. 11). The telegraph room on the fourth floor along the north side of Court A had normal plaster on the walls below sill level, separated by a parting bead from the acoustical plaster on the upper walls and ceiling. Two large rooms on the third floor whose exact uses are unknown (bays originally numbered 3117 to 3121) had ½ inch acoustical tile applied to the upper walls and ceiling starting at the point five feet above the floor. The dishwashing room on the seventh floor was soundproofed with 3/4 inch tile on the upper walls and ceiling.[63]

The walls in the toilet rooms were covered with 6 by 6 inch tiles to a height of 6 feet, above which the walls were plastered. The stalls were divided by wall-hung marble partitions, closed off with paneled wood doors (Fig. 12).

Ornamental Plaster

The main lobby ceiling, 75 feet by 32 feet, contains 276 elaborate coffers with rosettes. The coffer panels inset with waterleaf moldings were surrounded by banding with molded inset panels. The entire ceiling was surrounded by a 6 inch dentiled cornice. The lobby corridors, stairwells and vestibule had flat ceilings with molded plaster cornices.

Doors

The doors throughout the interior of the building were of a single large panel design set in metal frames with metal trim and transom frames. Most of the doors were mahogany with either solid wood or glazed panels, which were plate pattern glass, polished on the hall face with pressed pattern design on the room side. Doors with glazing had transoms glazed to match. The wood was given a walnut finish and all the metal trim was grained to match the wood. Hollow metal doors were used for the toilet rooms, service areas and closets and the stairways. These were also painted to imitate walnut. The stairway doors had clear wire glass panels above solid metal panels. All the others were solid metal panels. The only doors not trimmed in metal were the inside of the toilet rooms where McMullen light gray marble, matching the stall partitions was used. The service doors in the basement were manufactured by the Dahlstrom Metallic Door Company.

Originally, the solid wood transoms above the doors into the Hearing Rooms on the second floor were fixed, but within the first year of occupancy, the need for better ventilation caused the transoms to be made operable. However, in the request for the change from the Secretary of the U.S. Board of Tax Appeals, it was mentioned that:

> We will have to also consider the matter of sound coming from the Hearing Rooms into the corridor. Some of the petitioners before the Board have a habit of raising their voices during the progress of a sharply contested case, and it is, of course, necessary that this be considered in revising any system of ventilation.[64]

During construction, it was suggested that a door be cut from the east side of the cafeteria on the seventh floor into the hall near the entrance to the court room, to provide a second entrance. However, complaints from the Court of Customs and Patent Appeals regarding the potential disturbance of the traffic and cooking smells caused cancellation of these plans, at that time.[65]

Windows

All the exterior steel window frames and sash were supplied by the Campbell metal window company. On the interior, they were each equipped with sash poles and hangers, by Smythe and Company.[66]

The typical interior sill was also steel with a curved deflector on the underside and a support for hanging the radiators. Windshields of wood and glass were installed on 2700 office windowsills.[67] These permitted the windows to be opened for ventilation without creating drafts across the desk tops.

In September of 1930, as the kitchen and cafeteria spaces were being finished, it was decided to furnish fly screens on the entrance doors on the west side, and rolling screens on all the windows. W. J. Beamer of Greensboro, North Carolina, was awarded the contract for $1,188 to build the screens, the doors to have mahogany frames 2 inches thick.[68]

Awnings had been used on government buildings since the mid-19th century to provide shade from the summer sun. This system proved uneconomical, as the cloth awnings required regular upkeep and were particularly susceptible to fires caused by people throwing matches and other smoking materials out the windows. In 1927, over 700 awnings had to be repaired by the government's shops.[69] In 1930, twenty awning fires were calculated to have disrupted numerous employees for an average of 15 minutes each.[70]

The superintendent of the Maintenance Division thus advocated the use of venetian blinds which:

> are greatly superior to any other type of shading for use in Federal building. . . The best shade is of a type which will obviate the use of awnings on account of the heavy expense for renewals, repairs and maintenance. The venetian blinds are made of cedar or bass wood slats about 2-3/8 inches wide, which can be adjusted to various angles. . . to entirely exclude direct sunlight, but leave openings sufficiently wide for the admission of light and air. . . the light is reflected. . . affording a soft diffused lighting effect which is very satisfactory in offices.[71]

He further indicated the impracticality of narrow slat shades; "when lowered will not entirely exclude the sunlight. . . but the openings between the strips are so narrow that it will greatly retard circulation of air."[72]

Unfortunately, his logic did not prevail when the building was constructed. The Supervising Architect of the Treasury's office advised the use of narrow slat wood shades which had been tested on some windows in the Interior Department. Their advantage was they rolled on spring rollers, had guides at each side to prevent flapping in the wind, and cost half the price of venetian blinds.[73] Shades for the 3000 windows were originally installed, made by the Woodwebb Shade Manufacturers, Inc. of Washington, New Jersey.[74]

Paint

Painting for the IRS Building began with the shop coat for the structural steel, composed of red lead (95% grade), linseed oil, and turpentine. Paint applied to the steelwork on-site was "Goheen's Carbonizing Coating," used in lieu of another coat of red lead.[75]

During construction, all metal doors, frames and transom stiles through the building were grained to match the walnut wood doors. Some of the metal office partitions and sheet metal shelving in the Library were also covered with walnut graining. The doors themselves, as well as the mahogany wainscoting, were stained with a mahogany or walnut finish and varnished.

The original room numbering and lettering was applied in gold leaf directly on the wood or metal surfaces. Because the original scheme had caused considerable confusion, in 1931, all the rooms were renumbered in gold leaf at a cost of $11,000. A note in the Supervising Architect's files in this remarks, "I am in favor of renumbering, not because I think the scheme is better, but because the Internal Revenue can no longer blame us."[76]

Office partitions not grained were painted a flat color. Metallic fixtures such as the radiators, radiator shields and the window frames and sills, were given three coats of paint, the radiators themselves finished with a hard enamel paint manufactured by the Benjamin Moore and Company.

In common painting practice, plaster is allowed to cure for a period of one year before being painted. However, the Commissioner was anxious to have his suite of rooms completed by the time the building opened. Against the advise of the Supervising Architect's office, the rooms in the southwest corner of the third floor were painted in May of 1930.[77] The remainder of the wall painting was not advertised for bids until March of 1931.

Several rooms received special paint treatments. The two dark rooms located within Room 7335, the Photostat Room, were given three layers of black paint.[78] While most of the rooms were to be painted with a mixture of lead, oil, turpentine and oil dryers, the specifications called for painting the Telephone Switchboard Room, Room 2326, with lead and oil paint only, as it was thought that the vapors from the turpentine and oil dryers were corrosive to the telephone equipment.[79] The basement areas, ceilings, walls and columns were to be coated with two applications of cold water paint.

On May 11, 1931, a $78,869 painting contract was awarded to the Alliance Construction Company of New York City, also known as the Alliance Sand Blasting Corporation. The specifications called for three coats of oil based paint on top of a sizing coat to be applied to all the plaster in the building, excluding

the ornamental plaster ceiling in the main lobby on Constitution Avenue. The acoustical plaster, such as used on the ceiling of the Hearing Rooms, was to be treated with specially prepared paint, to promote its soundproofing properties.[80]

There had been a great deal of local interest in the painting contract on this building, since the Depression had created a large surplus of unemployed, skilled workers in the city. The D.C. Committee on Employment wrote the Supervising Architect in January of 1931 asking when the building would be painted, and promoting the Painters Union Local 368.[81] The people of Washington needed work, and a project the size of the Revenue Building was of obvious interest. This interest did not stop when the final contract was awarded to an out-of-town company. Within three months after the contract was awarded, the Alliance Construction Company was accused of violating the Bacon-Davis Act by paying less than the prevailing rate of wages on a Government job, and working the men longer than eight hours a day. There was also unofficial speculation that the painters were newly arrived immigrants, fresh from the docks of New York. The Alliance Company answered that they were paying $8 per day, or 60¢ more than the prevailing open shop rate in Washington, and that their painters had to work after hours when painting offices where people worked during the day.[82] Nonetheless, the local painter's union held to their claim that the local union wage of $11 per day was the prevailing scale, and this interpretation was upheld by Secretary of Labor William N. Doak. This interpretation of the Bacon-Davis Act established a precedent which formed the basis for similar claims by local unions throughout the country.[83]

The only spaces not included in the general painting contract for the plasterwork in the IRS Building were the entrance vestibules, lobbies and major elevator lobbies on Constitution Avenue, 10th and 12th Street and the Circle. In December of 1931, $36,000 was budgeted for the painting in these spaces. There were no murals planned for the building, but some decorative painting. The ceiling of the main entrance lobby on Constitution Avenue had textured glaze over the gold, more intricate marbling with several tones of over-glazing, and decorative ornamental painting over the gold surfaces on the bandings between the coffers. The plaster wall and ceiling surfaces at the second floor lobby visible from the main entrance received an additional coat of colorless waterproof varnish, probably to heighten its reflectance.[84] All of the decorative painting was completed by the end of 1932.

Mechanical Systems

Lighting

The exterior lighting fixtures included the large bronze lantern hanging in the archway of the driveway into the service court. Its overall length was 11 feet and it weighed 300 pounds, suspended from 1½ inch bronze pipe. Normal air currents drawing through the archway caused the fixture to swing as much as 1½ inch at the bottom, and when the wind was really blowing, the movement of the fixture was decidely greater. Four guy wires were attached to steady the lantern, and wind braces were recommended for more permanent support. By December of 1930, bronze brace rods had been installed.[85]

The service court had a cast and wrought iron lantern with opaque glass and a pine cone decoration on top. This sat on the granite wall at the beginning of the ramp into the underground garage. The only other exterior lamps on the building at the time of completion were small fixtures with opal glass in the soffit of the exterior entrance archways.

Lighting throughout the offices, service areas and stairs of the IRS Building was provided by simple incandescent fixtures designed according to standard government electrical schedules. The stairs had single-branch sconces with clear, pressed glass globes which were mounted on either side of the walls at each landing. The offices and service areas had pendant fixtures with white opaque globes on brass chains, manufactured by the Miller Company in Meridan, Connecticut.

Special lighting fixtures for the building were designed under a separate contract, supplied primarily by the Beardslee Chandelier Manufacturing Company and installed by the Electrical Contracting Company of Washington, D.C. at a total cost of $36,000. All special interior fixtures were made of cast bronze, hand finished to a "medium statuary bronze color,"[86] and included: six chandeliers in the courtroom; three chandeliers in the Commissioner's Room; 18 chandeliers in the Commissioner's Study, Conference Room and support staff rooms; four sconces in the Constitution Avenue lobby alcoves; two ceiling fixtures in the stairhalls flanking the main lobby; 36 chandeliers in the eight hearing rooms; 523 lanterns for the 10th Street vestibule, the Circle vestibule, minor lobbies on the first floor, elevator lobbies and the corridors on all floors; 34 lanterns for the Constitution Avenue lobby and stair hall on the first and second floors; nine lanterns for the 10th Street and Circle lobbies; and 28 desk lamps.[87]

Several changes were made in the fixture designs once fabrication had begun. The main lighting in the Constitution Avenue lobby was provided by large standards on bases of Mankato stone with green marble baseboards. The original globes were of

glass with raised etching and an etched line which formed the collar. According to the contract specifications, the standards, as well as several other fixtures in the building, were to have had "opal glass" globes. However, when the contractor submitted samples of the glass, made from an opal core heavily covered with crystal glass, the Supervising Architect's office rejected them. Apparently the etched surface specified by the designer was not a standard finish for opal glass and thus all globes which received etched surfaces had to be added to the original contract amount.[88] Many of the fixtures, such as the chandeliers in the hearing rooms and the lanterns in the corridors, were left with a matte finish instead of the etched luster finish.[89]

The court room chandeliers originally had clear, candle-like bulbs, which provided too bright a light for the judges. These were quickly covered with shades which softened the light.[90]

Heating

Heat for the building was originally supplied by seven coal-fed high-pressure Kewanee boilers located directly underneath the center of the service court (Fig. 13). The coal bunker was adjacent to the boiler room and was filled through three trap doors in the paving along the south wall of the service court (Fig. 14).[91] Both rooms were waterproofed by the Hydroseal Waterproofing Company of Philadelphia. In case of emergencies, a boiler-fed pump and two centrifugal condensation return pumps were installed on the heating system in the boiler room. The steam was fed into radiators, the majority of which were wall hung to allow easy maintenance of the floors. The only standing radiators were those behind metal grills in the public spaces, hearing and court rooms and the passageways to the courtyards, where standard support system of the window sill hangar was not available.

Early in the design phase, consideration had been given to the possibility of a centralized heating, lighting and power plant to serve all the new buildings in the Triangle. However, after considering the costs of labor and material and the favorable rates quoted by PEPCO at the time the IRS Building was constructed, the idea was judged uneconomical. Further discussions regarding the possibility of a centralized heating plant were stopped when it became clear that it would be a visual intrusion in the monumental grouping. There was already a power plant of PEPCO located at 14th and B Streets, N.W., but this was determined to be obsolete and uneconomical.[92]

When the IRS Building was constructed, air conditioning had been used only in a "few bank and office buildings, notably an office building in San Antonio, Texas, another in Detroit, Michigan . . . and the House of Representatives Chamber in the U.S. Capitol . . . at a cost of $160,000."[93] The cost of installing the air conditioning system in both the IRS and Commerce Buildings was estimated at $2,250,000. The only other building in the Triangle for which any air conditioning apparatus had been considered at

that time was the Archives Building, where concern was strictly for the preservation of documents, rather than the comfort of the occupants. Authorities doubted that the new system would be satisfactory to the IRS employees, "especially when they realize that the windows must be kept closed."[94] It was decided that the system would add too much to the overall cost of the IRS and Commerce building projects and therefore was not installed. Subsequently, the problems of good air circulation in the massive buildings were acknowledged, and all the later buildings in the Federal Triangle were constructed with air conditioning systems.

Ventilation

Ventilation in the building was achieved through natural means. All office spaces had window openings to the outside, including the periphery of the sixth floor, which had clerestory vent windows hidden behind the balustrade of the exterior elevation. Light and air was provided through a small enclosed shaft which projected through the flat roof behind the balustrade at the seventh floor level. Clear glass skylights admitted light through the roof of this shaft, while glazed sash on the outside wall could be pivoted to admit air. In the offices, operable transoms above the doors encouraged the flow of fresh air into the rooms and corridors while windshields at the sill level of the double hung sash directed the air up above the room's occupants, preventing drafts. Fans hung on either side of the windows supplemented the natural ventilation system (Fig. 15). Similar to common multi-blade desk fans, they could be placed to push either fresh air from the window, or warm air from the radiator, in any direction across the room.

Other spaces with special ventilation problems, such as the garage, cafeteria and restrooms, had mechanical systems which vented through the roof. A large fan and air shaft for the garage was located next to the elevator bank in the northeast corner of the building. A fan with telescoping shaft to allow the hood to be raised or lowered, depending upon the need, was installed over the photostat equipment in Room 7335.[95]

Plumbing

As early as 1927, chilled-water drinking fountain systems were considered an advantageous and economical amenity in office buildings. The amount of time required to send messengers and laborers to get ice, as well as the cost of the ice itself, was eliminated,[96] and in a city with hot summer months, this consideration was important. By 1931, the ammonia compressor and chilled water system was operable in the IRS Building, the water being circulated by a centrifugal pump.[97] The porcelain enamel drinking fountains, mounted on the walls, had nickel plated traps and valves. On the first floor corridors, where the marble wainscot was used on the lower part of the wall, splash boards of the same colored marble were installed behind the fountains to protect the plaster.

An automatic sprinkler system was installed in the paint shops, the plumbing shop, typewriter repair room, electrician's shop and carpenter shop. The sprinkler heads were set to go off when the surrounding temperature reached 212°F.

Pneumatic Tube System

A pneumatic tube system costing $28,000 was installed,[98] which sped mail through the central portions of each floor of the building. The central desk (Fig. 16) was located in the southwest corner of quarter "C" in Room 1123, where the mail was gathered, placed in capsules and sent through the steel tubes to terminals on the upper floors. The tubes traveled vertically in a straight line above the central desk and then extended horizontally above the furred ceiling in the hallways to stations on all the upper floors. There were twelve three-capacity stations in all, six in the rooms immediately above the central desk, and one each in Rooms 2124, 3016, 4012, 4045 and 4214. Note that the station marked B-3 in Room 3016 was within the original Commissioner's suite of offices.[99]

Clocks

The building was equipped with a synchronized system of 861 electric Telechron clocks, the largest of its kind at the time of construction.[100] The clocks had bells and buzzers which were activated from the master clock and synchronized through it with standard time signals sent daily over the telegraph lines of the country. The master clock was provided with a circuit-closer which automatically closed the circuit or relay once each minute. The secondary clocks, located on the wall immediately adjacent to the hall door frame in each office and the court and hearing rooms, were provided with electro-magnets connected in series. When the master clock circuit closed, the magnets were energized, attracting an armature which moved the hands forward one minute. The clocks had an additional conduit system related to the fire alarm and watchman's system. Fire alarm systems were located at major corridor intersections and other appropriate areas, with boxes located in vertical rows throughout the building on a single riser which was cross-connected with others in the attic and basement. The watchman's time-detector system was usually located directly below the alarm. In the seventh floor Court Room, an annunciator or visual indicator was installed in place of the bells and buzzers.

Telephone

There were 1,400 telephones installed in the building. Public phone stations on all seven floors totaled 46. The main switchboard room was originally located in Room 2326.

Elevators

Before construction began, the Supervising Architect's office asked that metal cabs be used in lieu of wood, as the latter was not fireproof. It was suggested that a metal cab with a wood veneer would be a better solution to the problem.[101] The construction of the 15 passenger and two freight elevator cabs and machinery was let under a separate contract to the Otis Elevator Company for $279,000. The cabs were lined in walnut with a simple geometric decorative inlaid border. A narrow bronze grill with a shield design was at the cornice level, open for air circulation. The two speed electric elevator gates were the open grill type with the same eagle and shield motif as was used in the new Department of Commerce Building.

The elevator indicators above the first floor included a flashing green light "UP" and a red light "DOWN" that only lit up when the cab was within one floor from which a signal had been sent. This proved unsatisfactory to the early occupants who could not tell easily if an elevator was in service or not. The indicator system was then altered to show the exact location and direction of the cars at all times, similar to the indicators on the first floor. In addition, 49 illuminating signs were placed in the corridors to show the location of the elevators, like the signs used above the public telephone booths. Also, elevators that were not manned during off peak hours were given illuminated "NOT RUNNING" signs, after the occupants complained about waiting for shut down elevators.[102]

The freight elevators were originally to have an electric opener for their three doors. However, the design was unfeasible for the elevator technology of the time, and Otis was only able to furnish a triple door that was partially manual.[103]

Due to the stringent testing requirements dictated by the Supervising Architect's office, the governor cables on 13 of the elevators had to be replaced within the first year of operation.[104]

Special Furnishings

Court and Hearing Rooms

The furnishings for the Court Room on the seventh floor, the railings, Judge's bench, desks and the shelving in the library were relocated from the old Court Room in the National Savings Bank Building.[105] The other libraries had sheet metal bookshelves which first were green, but after protests from the Court, the metal was grained in imitation of walnut. The Hearing Rooms were

equipped were new mahogany finished chairs and settees.[106] New benches in the Court Room were made of mahogany.

Kitchen

At the start of the project, it was decided to furnish the kitchen with electrical appliances instead of gas. The Albert Pick-Barth Company supplied and installed the equipment for $35,500 in the fall of 1930.[107]

Completion of Construction

The building's 700,000 square feet of office space was first occupied on June 1, 1930 (Figs. 17 and 18). The contract had been completed 16 months ahead of schedule, for which the contractor was awarded an additional $30,000. The total construction costs at that time were $6,395,026.33.

The building's first occupants included: 3,391 employees of the Bureau of the Internal Revenue; 147 for the U.S. Board of Tax Appeals; 22 from the U.S. Court of Customs and Patent Appeals; and 252 from the Public Buildings and Public Parks Commission.[108] The total number of occupants was 3,812, which only filled part of the space designed for 4,500 workers.

The Extension

With the repeal of the 18th Amendment in 1933, and the end of Prohibition, the duties of the Bureau of the Internal Revenue were suddenly and sharply increased. Despite the great size of their new structure, more offices and specialized laboratories were needed for the Division of Distilled Spirits. By December of 1933, the U.S. Government had acquired claim to Square 349 between 10th and 11th Streets, bounded on the north by Pennsylvania Avenue and on the south by C Street (Fig. 19). Though it was not yet feasible to demolish the old Post Office Department Building, thereby clearing the way for completion of all new construction on the site as intended in the Federal Triangle master plan, it was decided to proceed with the construction of the northeast section of the IRS Building. Tenants on the site were ordered to vacate by February 1, 1934.

Design

Because the general form and exterior appearance of the annex building was dictated by the "Unified Architectural Composition Plan" adopted by the Board of Architectural Consultants, and also by the appearance of the main portion of the IRS Building, it did not take long to develop construction documents for what was referred to as "The Extension." Between May and February of 1934, the drawings for everything from location plans to interior details were developed. Most of the drawings were taken directly from the set prepared for the construction of the main building, and a note on materials and finishes sums up the general approach to the design. It reads: "All work in the new extension shall match corresponding work in similar locations in present building in color, profile, jointing, texture, finish and detail, except as otherwise indicated."[109]

In elevation, the extension completes the symmetry of the facade of the entire building along 10th Street, mirroring the southern third of the facade on the other side of the central pavilion. The exterior detailing duplicates exactly the 1930 structure. On Pennsylvania Avenue, the elevation repeated the Constitution Avenue design of the centralized three story colonnade, using pilasters instead of columns. Because the rest of the design was to be continued in an addition that would replace the old Post Office, the colonnade was only partially completed. The end wall on 11th Street was unadorned brick, waiting for the proposed addition. The exterior stone was the same select gray limestone, pink and gray granite and Tennessee marble used on the main building. The roofing tile also matched the grays, tans and browns of the main building and were supplied by the Mifflin Hood Company. Roof drains and sheet metal work were installed by the J. Edward Linck Sheet Metal Works. The exterior and vestibule bronze entrances were supplied by the Cincinnati Manufacturing Company; the glazing contractor was Pittsburgh Plate Glass Company. The Lehigh Iron Works manufactured wrought iron grills for the windows in the arcade.

Plan

The building plan for the extension is essentially L-shaped, projecting from the northeast corner of the original building along 10th Street to Pennsylvania Avenue, where it turns west and extends as far as 11th Street. The bottom of the L is actually V-shaped in plan, formed by two corridors of rooms which branch out from a point near the main lobby. On the exterior, the north branch follows the angle of Pennsylvania Avenue. The south branch is perpendicular to the rest of the building, creating the east end of what was to be a large rectangular court enclosed by the last segment of the building that would replace the old Post Office building. An open arcade in the center section of the first floor of the 10th Street side of the building provides pedestrian access to this court, and was to be mirrored by a similar arcade on the far side, that would lead into the Great Circle.

Special Interior Finishes

The interiors of the extension match the spaces and detailing of the main building with few exceptions. The principal lobby on the corner of 10th Street and Pennsylvania Avenue and the elevator lobbies on the six floors above match the details and appearance of the corresponding lobbies further to the south on 10th Street (Fig. 20). However, the marble flooring of the lobby space on the first floor was extended along the northern corridor to the point at which it divides. All the interior marble was supplied by the Tennessee Marble Company and the marble and terrazzo flooring was installed by the Standard Art, Marble and Tile Company.

Nonetheless, some changes were made in the interior finishes. In the offices, asphalt tile was substituted for the mastic flooring used in the main building (Fig. 21). Analysis of the flooring materials in the IRS and Commerce Buildings by the consulting architects had indicated that the quality of the mastic flooring could not be assured when the contracts were awarded to the lowest bidder. Asphalt tile had many of the advantages of cold mastic flooring in terms of resistance to moisture damage and ease of cleaning. The manufactured tile size elements enabled a better control over the quality and the installation of the material as compared with the mastic flooring, which had to be applied in five or six successive coats in the field. It was also easier to repair or replace, and less expensive.[110]

Walnut was used instead of mahogany for the interior doors, perhaps for no better reason than the doors in the original building, which were actually African mahogany, had been stained with a walnut finish. Correspondance between the Supervising Architect's office and the general contractor, John McShain, document the number of submissions which were made on the door finishes, before it was finally pointed out that it would be impossible to get walnut with a walnut stain to exactly match the mahogany with a walnut stain.[111]

The most noteworthy rooms in the extension were the entrance vestibules, main lobby and the elevator lobbies at the corner of 10th Street and Pennsylvania Avenue, which matched the detailing in the main building.

The original toilet rooms had enameled metal partitions instead of the marble used in the main building.

The only specialized spaces in the new extension were the laboratories for the Distilled Spirits Division along the northern corridor on the seventh floor.

In 1937, the decorative painting completed the work on the extension. This involved only the ceilings of the elevator lobbies and the first floor corridors and vestibules. Unlike the Main Lobby, which had received several types of gilded,

marbled and textured glazed finishes, the decorative painting here entailed only flat colors: white, tan gray, brown, gold, light gray, cream and buff.

Landscape

In September of 1938, plans were developed for planting and parking in the new court formed within the "L" of the extension.[112] Enclosed by a brick wall that extended along the line of 11th Street to the end of the new building, the area contained parking for 47 cars, encircled by banks of English Ivy and several species of yews. The area leading into the new arcade to 10th Street was clear for pedestrian traffic only. All of the automobile access was from 11th Street.

Alterations

12th Street Arcade - 1935

At the same time that the extension was being built, the arcade of the main building at 12th Street received a limestone ceiling (Fig. 22). The vaulting had originally been finished with stucco, which apparently cracked and needed constant repair. With the construction of the stone vaulted arcade at the new Post Office Department Building and its section of arcade along the Circle, it was decided to replace the deteriorated stucco with limestone to match. Also, ten large pendant fixtures of cast bronze with ground glass globes were installed to match those used in the arcade at the Post Office Department Building. Bronze grills were placed over the smaller doorways on either side of the arched doorway on the endwall of the 12th Street pavilion, to mirror the design of the new Post Office building.

Interior Changes - 1954 to 1961

In 1954, the rooms between 3309 and 3319 were converted into a room for lectures, classes and exhibits.[113] The space was divided into three sections: bays for 3319 and 3317 were converted into a storage and projection room; bays 3315 to 3311 were finished with a stage at the lower end framed by a proscenium arch; and bay 3309 became the backstage area. The original mastic flooring was covered with asphalt tile in a checkerboard pattern of marblized black and dark green, surrounded by a black border. Doors flanking the room on the side walls immediately next to the stage had cast iron panels decorated with a stylized leaf design. The stage wall had walnut wood trim with the walls covered by a plastic wall covering.

Alterations were also made in 1954 to the Cashier's section on the first floor in Rooms 1002 to 1016.[114] Asphalt tile was

laid over the mastic flooring. The old counter which had originally extended in the position of a wall between Rooms 1014 and 1016 was removed, and the public space greatly enlarged. The new counter of baked enamel and linoleum extended parallel to the south wall of bays 1004 to 1008 to the west wall. The bronze grill door that had originally been at the door to Room 1016 was moved to 1002. New hinged grills were placed on the lower portions of the windows behind the ventilation windshields.

In 1969, a new computer center was installed on the sixth floor in the rooms within the pavilion and along the Circle in the northwest corner of Court A.[115]

Air Conditioning Installation

As early as 1934, major changes in the building's mechanical system were undertaken. An air conditioning plan was drawn up for several rooms in the Constitution Avenue side of the third floor, Rooms 3030-3036. In 1947, a five ton air conditioning unit was added to Rooms 1515 through 1533 on the east side of the first floor, where, undoubtedly, the heat generated by the accounting machinery was not sufficiently relieved by the natural ventilation system. In 1963, a centralized system was installed to cool the major portion of the building.[116] Around the courtyard, several of the glazed window openings were replaced with louvred grills to accommodate air intakes for the basement. Because all the duct work for the system had to be placed under the original ceiling line, new suspended acoustical tile ceilings were constructed below the level of the air conditioning ducts throughout the building, in all the offices, corridors, vestibules and Hearing Rooms (Figs. 23 and 24). The only exceptions to this practice were the entrance lobbies on Constitution Avenue and 10th and 12th Streets, and the Court Room on the seventh floor.

Construction of new ceilings necessitated the removal of all the original incandescent lighting fixtures remaining in the corridor and office spaces. New florescent fixtures were installed. All of the glazed and solid paneled transoms above the interior doors were replaced with metal louvers. At the same time, the clock outlets originally centered above the doors were moved to the side of the door from below the new ceiling. Metal partitions were lowered to the underside of the suspended ceiling, and alarm gongs, elevator and illuminated exit signs were rearranged as well. During this period, many of the rooms in the building still had the original decorative grained finish on the door architraves and transoms. With the installation of the air conditioning, the natural ventilation system was abandoned and the wall fans, sash poles and windshields were removed.

Interior Renovations - 1964 to 1968

While the office spaces and corridors were being altered by the installation of the air conditioning and the new suspended ceilings and lights, the commissioner's office suite was modernized.[117] All the original wood paneling and plaster cornices were removed and discarded. The general plan of the space was altered, creating larger rooms in bays 3000 to 3002 and 3304. Movable partitions of oiled teak or walnut and off-white vinyl wallcoverings were installed. The radiator grills were reused and painted to match the wallcovering. A metal pan acoustical ceiling system was installed with large rectangular florescent lighting fixtures. The hall doors were changed to oiled teak or walnut and painted on the corridor side to match the hall color scheme. The wall between the reception area and the hall was removed and a metal and frosted glass entrnace with walnut doors installed. All the toilets in the suite were completely redone with new fixtures, floor, wall and ceiling finishes and a pantry was installed in the closet area adjoining the commissioner's toilet.

Also as a result of the installation of air conditioning, most of the original metal partitions in the general office spaces were replaced by steel and glass partitions that extended between the side walls of the bays across the windows.[118] In this way, private offices were formed along the outside walls with general secretarial spaces just inside the corridor walls.

The judge's quarters around the periphery of the second floor were also renovated.[119] The exposed lavatories just inside the hall doors were enclosed in small closets with new coat racks and louvered doors (Figs. 25 and 26). New radiator screens were installed over the existing radiators and attached to the existing metal sills. The walls were covered with vinyl wallcovering and several judges had walnut plywood bookcases installed. Drywall enclosures replaced the earlier movable metal partitions.

As part of the modernizing program of the building from 1964 to 1967, the toilets throughout the building were renovated.[120] Ceramic tile, 2 inch square, was laid directly over the original tile floor. The tile wainscoting and marble partitions were removed and replaced with 4 inch square ceramic wall tile, and baked enamel toilet stalls. The new dropped ceiling was made of aluminum panels.

In 1965, the etched glass globes on the lamp standards in the main lobby on Constitution Avenue were replaced with simple aluminum reflectors with a bronze finish.[121] These bowl-shaped reflectors cast the light upward to the ceiling.

In 1966, the Chief Counsel's library was built on the fourth floor in the west section of Court A.[122] The original room partitions on either side of the hall were removed, but the corridor

flooring was not disturbed. White vinyl asbestos tile flooring and a suspended luminous ceiling were installed. The open area was divided into reading area, stacks, circulation desk, storage and some offices, separated by new glass and metal partitions.

Visitor's Center - 1968

In November of 1968, a visitor's center to be placed in the middle of the main lobby on Constitution Avenue was designed by Kissiloff and Wimmershoff of New York. A two story structure was designed with a black carrera glass exhibition space cover and an open balcony reached by stairs flanking either side. In order to install the 20 by 23 foot structure with overhanging balcony above, all the lamp standards and their stone bases had to be removed and stored in the basement. Planters, stage platforms and various other lobby accretions were removed as well. Four steel tube columns were anchored directly into the marble floor, and steel beams carrying the upper floor were anchored into the stone walls. The structure was removed in 1974 and the lobby restored to much of its original appearance. The standards and their bases were reinstalled, and all the bronze and stonework in the lobby was cleaned at that time.

Auditorium - 1972

In 1972, a new auditorium replaced the old Court Room on the seventh floor. All the original wood paneling, doors and door frames were permanently removed and replaced with modern wood paneling and suspended ceilings. All the Court furnishings and the wood trim and entablature around the entrance door were taken out as well.

Automatic Elevators

The switch-over from manual to automatic elevators began in 1974. The old signal fixtures over the elevator doors were replaced with modern indicators with bronze faceplates. The original bronze paneled elevator doors at the first floor were reinforced for high speed power door operation. The original entrance frames and sills on all the floors were reused. The original wood paneled cabs were removed and replaced by modern cabs. All the call button fixtures were replaced as well. The only elevators that remain in their original condition are those in the bank on the Circle.

Miscellaneous

Changes were proposed to raise the marquee on the service platform in Court A in 1962, but were not carried out.

At some point, the original lighting fixtures for the arcade at the Circle were replaced with the existing lanterns, and

similar lantern sconces were placed on either side of all the exterior entrances.

The heating system was removed from the building to a centralized plant. The boiler rooms were converted into space for the air conditioning equipment.

Footnotes

[1]Annual Report of the Director of the U.S. Office of Public Buildings and Public Parks of the National Capital (Washington, D.C.: U.S. Government Printing Office, 1930), p. 10. (Hereafter referred to as Annual Report, Director of Public Buildings and Parks.)

[2]Lois Craig, The Federal Presence (Cambridge, Mass.: Massachusetts Institute of Technology Press, 1977), p. 328.

[3]Letter dated January 3, 1927 to Louis A. Simon from Edward H. Bennett, National Archives, Record Group 121, General Correspondance, 1910-1939, Entry 31, Box 1341. (Hereafter referred to as NARG.)

[4]Ibid.

[5]Letter dated January 11, 1927 to Louis A. Simon from Edward H. Bennett, NARG, Box 1341.

[6]The Commission of Fine Arts, Minutes of the meeting on April 14, 1927.

[7]Ibid.

[8]Ibid.

[9]Letter dated May 5, 1927 to the Secretary of the Treasury from The Commission of Fine Arts, NARG, Box 1341.

[10]Ibid.

[11]The Washington Evening Star, December 12, 1927, p. 1. (Hereafter referred to as The Star.)

[12]The Star, June 6, 1926, p. 1.

[13]American Civic Annual, Vol. IV, 1932, p. 90.

[14]The Star, June 28, 1926, p. 1.

[15]Ibid., August 21, 1926, p. 1.

[16]Ibid., January 26, 1934, p. B-2.

[17]James M. Goode, Capital Losses (Washington, D.C.: Smithsonian Institution Press, 1979), p. 258.

[18]The Star, August 31, 1928, p. 2.

[19]Ibid., September 4, 1926, p. 2.

[20]NARG, Box 1341.

[21]Letter dated July 28, 1926 "to the Commissioners" (of the District of Columbia) from the Corporation Counsel, D.C., NARG, Box 1341.

[22]NARG, Box 1341.

[23]The Star, January 15, 1927, p. 1.

[24]Ibid., November 22, 1927, p. 1.

[25]Ibid., August 13, 1928, p. 2.

[26]Ibid., August 29, 1928, p. 1.

[27]Ibid., June 30, 1928, p. 27.

[28]Letter dated August 8, 1928 to the Acting Supervising Architect of the Treasury (hereafter referred to as "Supervising Architect") from Construction Engineer in charge, Neal A. Melick (hereafter referred to as "Melick"), NARG, Box 1341.

[29]The Star, October 11, 1928, p. 2.

[30]Ibid., September 9, 1928, p. 2.

[31]Ibid., July 29, 1928, p. 4.

[32]Ibid., July 28, 1928, p. 3.

[33]Ibid., July 19, 1928, p. 12.

[34]Letter dated May 13, 1929 to Supervising Architect from Warren G. Noll, Senior Architect, NARG, Box 1342.

[35]Letter dated April 9, 1929 to Supervising Architect from James Baird Company, NARG, Box 1342.

[36]Weekly Report, dated July 20, 1929, from E. D. Gray Construction Engineer, Field Force, Office of Supervising Architect of the Treasury, Knoxville, Tennessee, NARG, Box 1342.

[37]Ibid., dated July 27, 1929.

[38]Ibid., dated August 17, 1929.

[39]Letter dated May 13, 1929 to Supervising Architect from Warren G. Noll, Senior Architect, NARG, Box 1342.

[40]Weekly Report, dated July 27, 1929 from E. D. Gray Construction Engineer, Field Force, Office of Supervising Architect of the Treasury, Knoxville, Tennessee, NARG, Box 1342.

[41]Letter dated May 31, 1929 to Supervising Architect from Baird Company, NARG, Box 1342.

[42]Letter dated May 13, 1929 to Supervising Architect from Warren G. Noll, Senior Architect, NARG, Box 1342.

[43]Weekly Report, dated June 8, 1929 from E. D. Gray, Construction Engineer, Field Force, Office of Supervising Architect of the Treasury, Knoxville, Tennessee, NARG, Box 1342.

[44]Letter dated May 20, 1929 to Baird Company from Supervising Architect, NARG, Box 1342.

[45]Letter dated May 21, 1929 to Baird Company from Supervising Architect, NARG, Box 1342.

[46]Letter dated June 17, 1929 to Supervising Architect from Warren G. Noll, Senior Architect, NARG, Box 1342.

[47]Letter dated May 16, 1929 to Supervising Architect from Melick, NARG, Box 1342.

[48]Letter dated July 10, 1929 to Supervising Architect from Baird Company, NARG, Box 1342.

[49]Letter dated July 5, 1929 to Supervising Architect from Baird Company, NARG, Box 1342.

[50]Letters dated June 26 and August 22, 1930 to Supervising Architect from Melick, NARG, Box 1343.

[51]Letter dated November 19, 1930 to Supervising Architect from Melick, NARG, Box 1343.

[52]Letters dated August 5 and 8, 1929 and May 27, 1930 to Supervising Architect from Melick, NARG, Box 1343.

[53]Letter dated November 6, 1929 to Supervising Architect from Melick, NARG, Box 1342.

[54]Letter dated August 5, 1929 to Melick from Baird Company, NARG, Box 1342.

[55]Letter dated June 6, 1929 to Baird from Supervising Architect, NARG, Box 1342.

[56]Invoice dated October 6, 1931 from the Standard Art Marble and Tile Company, NARG, Box 1343.

[57]Letter dated January 17, 1929 to Honorable David A. Read from Carl T. Schuremaer, Assistant Secretary of the Treasury, NARG, Box 1341.

[58]Letter dated June 30, 1930 to Supervising Architect from Baird Company, NARG, Box 1342.

[59]Annual Report, Director of Public Buildings and Parks, 1930, p. 19.

[60]Letter dated April 16, 1929 to Supervising Architect from Baird Company, NARG, Box 1342.

[61]"Details of Commissioner's Office" on Drawing #215, of the Contract Documents for Bureau of Internal Revenue Service, Washington, D.C., 1928 (hereafter referred to as "Contract Documents").

[62]Letter dated September 12, 1929 to Baird Company from Supervising Architect, NARG, Box 1343.

[63]Letters dated October 9, 1929 to Baird Company from Melick; November 12, 1929 to Supervising Architect from Baird Company; November 23, 1929 to Baird Company from Supervising Architect; and August 2, 1930 to Supervising Architect from Melick, NARG, Box 1343.

[64]Letter dated September 29, 1930 to Melick from Robert Tracy, Secretary, U.S. Board of Tax Appeals, NARG, Box 1343.

[65]Letter dated February 6, 1930 to Supervising Architect from William J. Graham, Presiding Judge, U.S. Court of Customs and Patent Appeals, NARG, Box 1343.

[66]Letter dated April 23, 1930 to Supervising Architect from Melick, NARG, Box 1343.

[67]Annual Report, Director of Public Buildings and Parks, 1931, p. 19.

[68]Letters dated August 2, October 31 and November 7, 1930 to Supervising Architect from Melick, NARG, Box 1343.

[69]Annual Report, Director of Public Buildings and Parks, 1927, p. 3.

[70]Ibid., 1930, p. 31.

[71]"Memorandum for Acting Supervising Architect," dated May 20, 1930 from Superintendent, Maintenance Division, Treasury Department, NARG, Box 1343.

[72]Ibid.

[73]Memorandum dated May 23, 1930 from L. A. Simon, Superintendent, Architectural Division, Treasury Department, NARG, Box 1343.

[74]Annual Report, Director of Public Buildings and Parks, 1931, p. 19.

[75]Letters dated March 6 and 14, 1929 to Supervising Architect from Baird Company, NARG, Box 1342.

[76]Letter dated January 9, 1931 to Supervising Architect from David Burnett, Commissioner of Internal Revenue, NARG, Box 1343.

[77]Letter dated May 5, 1930 to Supervising Architect from Assistant Commissioner to Bureau of Internal Revenue, NARG, Box 1343.

[78]Letter dated March 26, 1930 to Supervising Architect from Melick, NARG, Box 1343.

[79]Letter dated January 14, 1931 to Baird Company from Melick, NARG, Box 1343.

[80]Letters dated May 11, June 22 and 30, 1931 to Supervising Architect from Alliance Construction Company (hereafter referred to as "Alliance"), NARG, Box 1343.

[81]Letter dated January 29, 1931, NARG, Box 1343.

[82]The Star, August 7, 1931, p. B-1.

[83]The Star, August 15, 1931, p. A-2.

[84]Annual Report, Director of Public Buildings and Parks, 1932, p. 10.

[85]Letter dated October 3, 1930 to Supervising Architect from Inspection Engineer, Treasury Department, and contract dated November 18, 1930 awarded to William F. Betzell, NARG, Box 1343.

[86]General note on Drawing #245 of the Contract Documents, December 13, 1929.

[87]Ibid.

[88]Letter dated July 10, 1930 to Supervising Architect from the Electrical Contracting Company, NARG, Box 1343.

[89]Letter dated November 13, 1930 to Baird Company from Supervising Architect, NARG, Box 1343.

[90]Letter dated January 16, 1934 to Supervising Architect from W. J. Graham, Presiding Judge, NARG, Box 1343.

[91]Letter dated May 2, 1929 to Supervising Architect from Melick, NARG, Box 1342.

[92]Letter dated September 13, 1926 to Baird Company from Supervising Architect, NARG, Box 1342.

[93]Memorandum dated May 17, 1929 to Assistant Secretary Schuneman from Superintendent, Mechanical Engineering Division, p. 2, NARG, Box 1342.

[94]Ibid., p. 5.

[95]Letter dated August 28, 1930 to Melick from Supervising Architect, NARG, Box 1343.

[96]Annual Report, Director of Public Buildings and Parks, 1927, p. 3.

[97]Letters dated February 11 and 27, 1931 to Supervising Architect from Baird Company, NARG, Box 1343.

[98]Proposal dated May 31, 1929, NARG, Box 1342.

[99]Drawings #PT480 and #PT481, Contract Documents, dated April 18, 1929.

[100]The Star, January 12, 1929, p. B-1.

[101]Letter dated May 8, 1928 to York and Sawyer architects from Supervising Architect, NARG, Box 1341.

[102]Letter dated February 25, 1931 to Supervising Architect from Assistant Commissioner, Bureau of Internal Revenue, NARG, Box 1343.

[103]Letter dated September 14, 1929 to Supervising Architect from Otis Elevator Company, NARG, Box 1343.

[104]Letter dated April 28, 1931 to Supervising Architect from Melick, NARG, Box 1343.

[105]Letter dated May 27, 1930 to Baird Company from Supervising Architect, NARG, Box 1343.

[106]Letter dated June 10, 1930 to Supervising Architect from Board of Tax Appeals, NARG, Box 1343.

[107]Letter dated April 14, 1930 to Supervising Architect from Melick, NARG, Box 1343.

[108]The Star, June 5, 1930, p. 3.

[109]Public Buildings Service Drawing #E-101 of Contract Documents for Construction of "Extension to the Internal Revenue Building, Washington, D.C., May 15, 1934."

[110]Memorandum in Post Office Department Building file dated June 1, 1931, "Re: Materials for Finished Flooring" from Delano and Aldrich, Architects, New York, NARG, Box 1348.

[111]Letter dated April 22, 1935 to Supervising Architect from John McShain Company, General Contractor, NARG, Box 1343.

[112]Public Buildings Service Drawing #T-1B, "Extension to the Internal Revenue Building, Planting Plan and Parking Area," September 13, 1938.

[113]Public Buildings Service Drawings #27-CR-307 to #27-CR3-316, "Lecture, Class and Exhibit Room, Internal Revenue Building, Washington, D.C.," March 26, 1954.

[114]Public Buildings Service Drawing #27-CR3-323, "Alterations to Cashiers Section, Internal Revenue Building, Washington, D.C.," November 8, 1953.

[115]Public Buildings Service Drawing #21-691, "Sixth Floor Computer Room Expansion, Internal Revenue Building, Washington, D.C.," October 3, 1969.

[116]Public Buildings Service Drawing #27-370, "Air Conditioning, Internal Revenue Building, Washington, D.C., " April 18, 1963.

[117]Public Buildings Service Drawing #27-11-529-A to #27-13-531-A, "Renovation of Special Areas, Third Floor, Southwest Quadrant, Internal Revenue Building, Washington, D.C.," November 3, 1964.

[118]Public Buildings Service Drawing #27-11-517, "Plan, Elevations and Details of New Partitions, Installation of Air Conditioning, etc., Internal Revenue Building, Washington, D.C.," August 4, 1965.

[119]Public Buildings Service Drawings #27-11-637 to #27-11-640 "Renovation of Judges Chambers, Internal Revenue Building, Washington, D.C.," n.d.

[120]Public Buildings Service Drawing #27-267, A-35, "Toilet Renovation Plans, Internal Revenue Building, Washington, D.C.," March 1963.

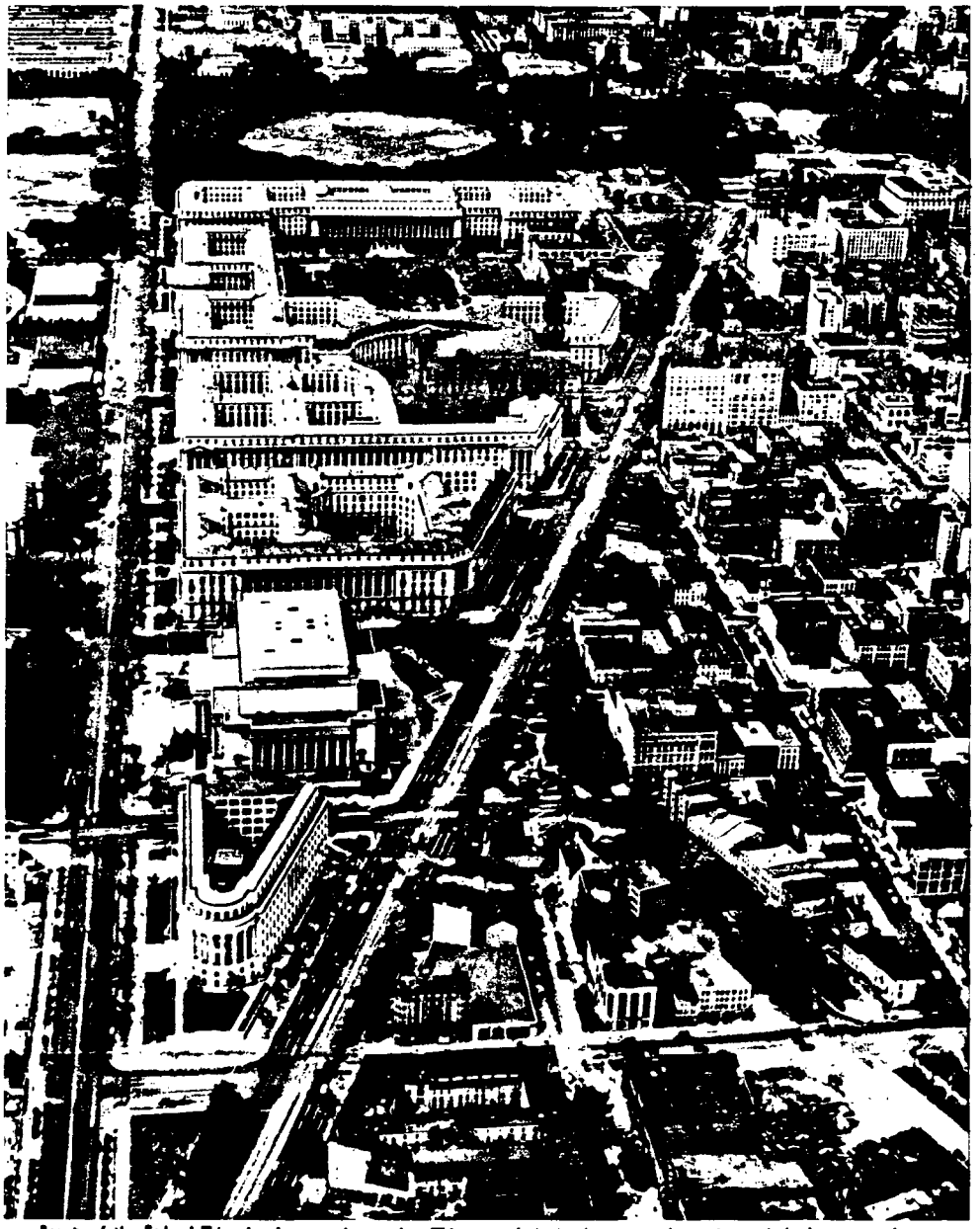
[121]Public Buildings Service Drawing #27-625, "Lobby Lighting, Internal Revenue Building," March 24, 1965.

[122]Public Buildings Service Drawing #27-11-651, "Chief Counsel's Library, Renovations, Internal Revenue Service, Washington, D.C.," August 9, 1966.

Sunday Star

DECEMBER 17, 1939.

5c WASHINGTON and SUBURBS
10 CENTS ELSEWHERE



Beauty of the Federal Triangle—from another angle. This unusual air view has captured more impressively than any we have seen the architectural pattern of the triangle and the classic symmetry of the buildings grouped within it. Standing out as if etched against the background of the Ellipse and White House area are the Commerce, Labor, Post Office, Bureau of Internal Revenue, Justice, Archives and Federal Trade Commission Buildings. Conspicuously out of place is the old towered Post Office Building, which eventually will come down.
Fairchild Aerial Surveys Photo.

Fig. 1. The Federal Triangle as built. The IRS Building is the fourth structure above the point.

Fig. 2.
IRS Building site, looking northeast (3/6/29). The back of the Old Post Office and President's Theater are in the upper left corner, and market stalls along Indiana Avenue in the upper right. From the IRS, Facilities Management Division (hereafter referred to as FMD).

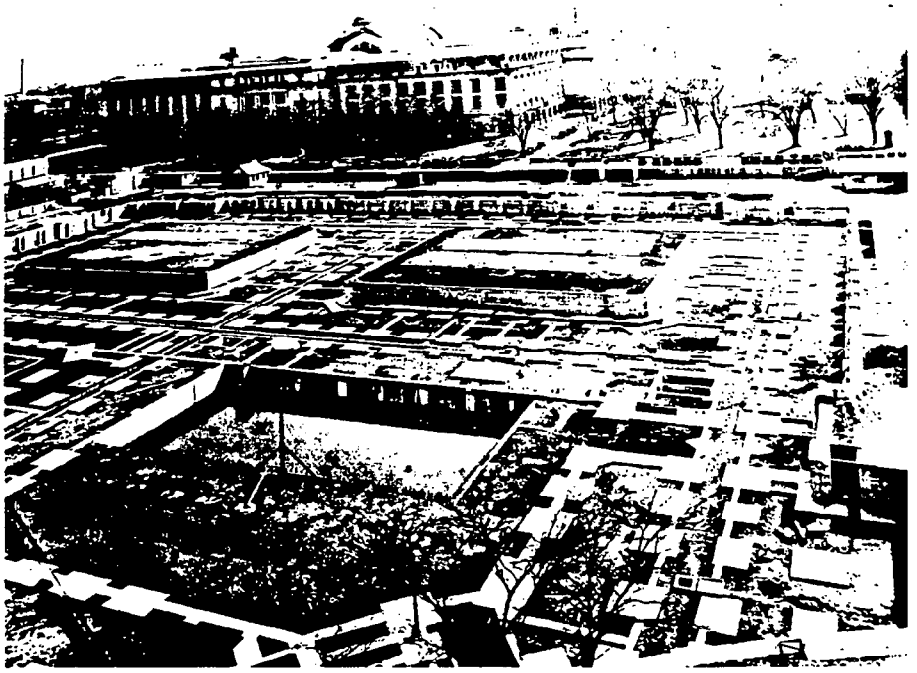


Fig. 3.
IRS Building site looking south (3/6/29) towards the Museum of Natural History. Foundations are in place. Excavation for underground garage is full of water, indicating problems from wells that plagued the site. From the IRS, FMD.

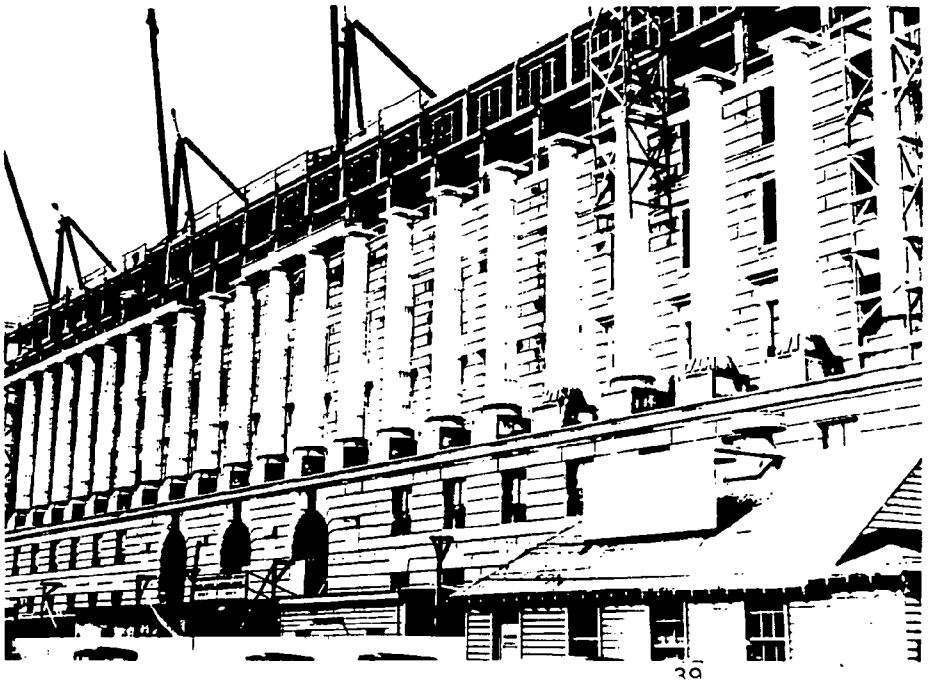


Fig. 4.
Marble columns of the Constitution Avenue colonnade erected in place (11/1/29). From the IRS, FMD.

Fig. 5.
Construction of limestone walls of 12th Street pavilion (10/3/29).
From IRS, FMD.

Fig. 6.
Detail of hammer point finish on limestone blocks. Marble reveal of main entrance is to the left.

Fig. 7.
Typical office space before installation of movable metal partitions (4/1/30). From the IRS, FMD.

Fig. 8.
The original Court Room on the seventh floor at time of completion (5/1/30). The railing and judge's rostrum were relocated from the Court's previous location. Note the checkerboard pattern of cork floor and mahogany paneled walls. From the IRS, FMD.

Fig. 9.
Typical Hearing Room (5/1/30). From the IRS, FMD.

Fig. 10.
Typical office metal partition, grained to imitate wood (6/2/30). From the IRS, FMD.

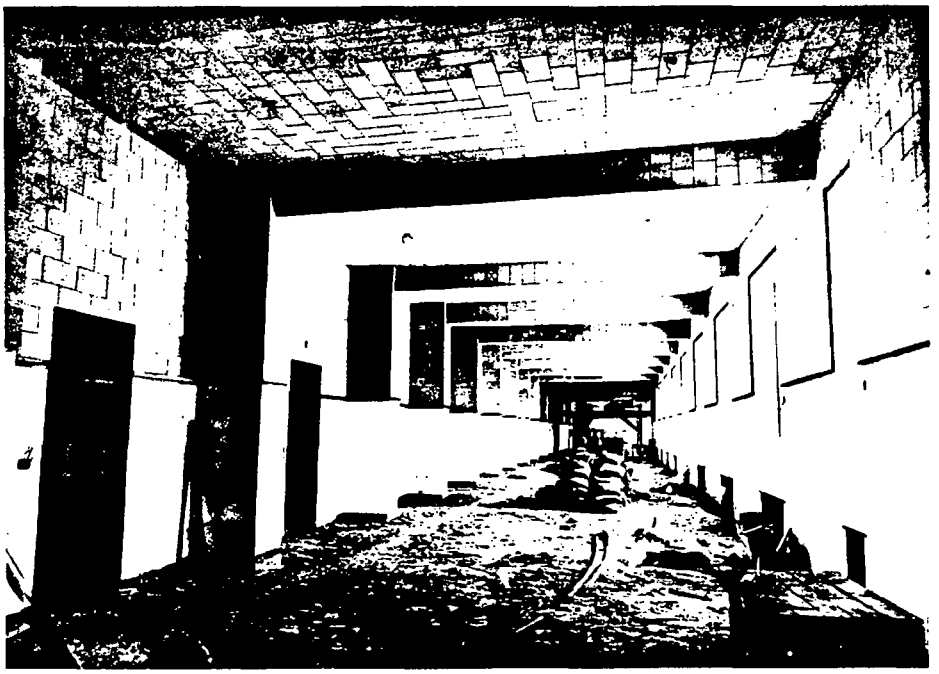


Fig. 11.
Acoustical tile on walls and ceilings of first floor rooms along south end of 10th Street (2/1/30). Rooms were probably to be occupied by clerks using mechanical calculators or other noisy equipment. From the IRS, FMD.

Fig. 12.
Original "water-closet" stalls with marble partitions (6/16/30). From the IRS, FMD.

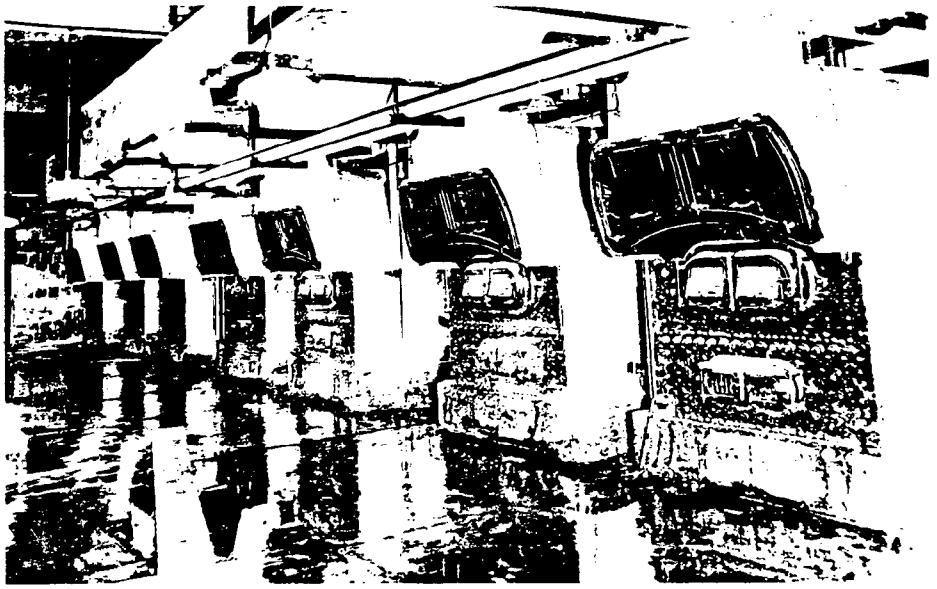


Fig. 13.
Original boiler room (6/16/30). From the IRS, FMD.

Fig. 14.
Trap doors for coal bunker, along south wall of Service Court (6/16/30). From the IRS, FMD.

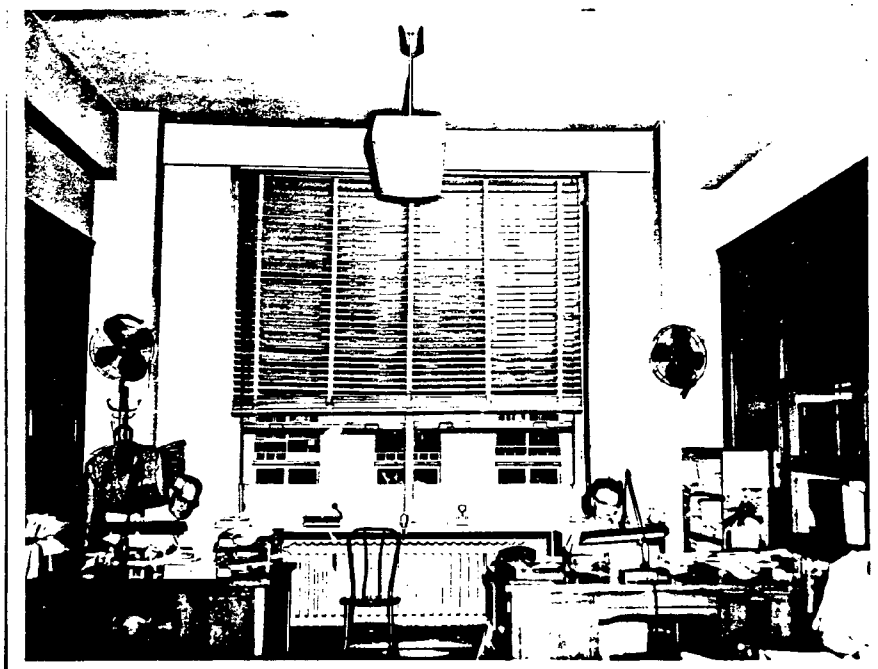


Fig. 15.
Typical office view showing original ventilation elements including windshields at window sills and fans flanking the window (8/3/64). The light fixture is not original. From the GSA Region 11 Library, Washington, D.C.

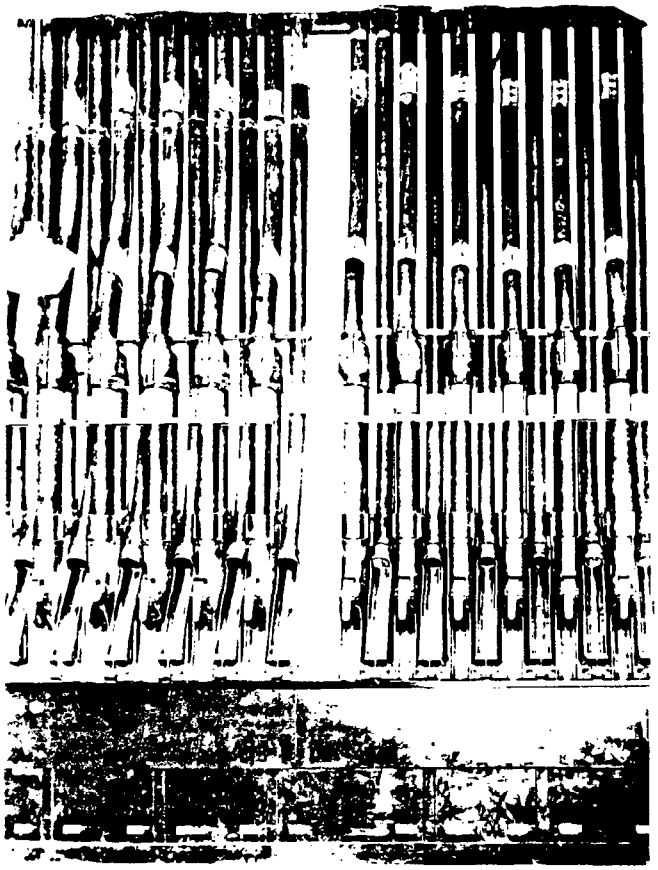


Fig. 16. (left)
Central desk of pneumatic tube system located in Room 1123 (6/16/30). From the IRS, FMD.

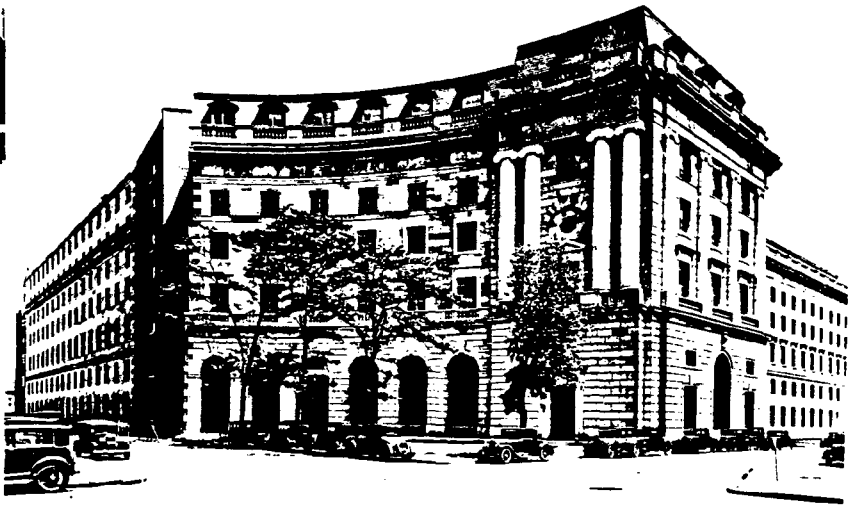


Fig. 17. (above)
IRS Building from the southeast (6/30).
From the GSA Region 11 Library, Washington, D.C.

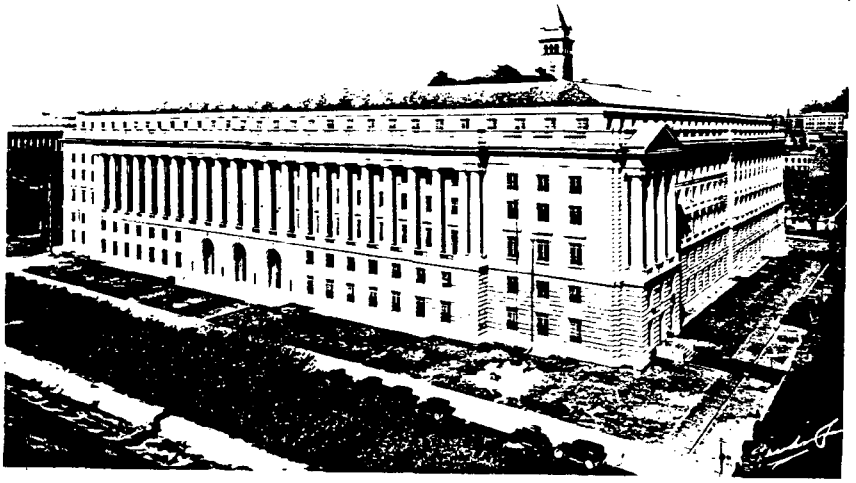


Fig. 18. (left)
IRS Building, 12th Street Circle and Pavilion facades (6/30).
From the GSA Region 11 Library, Washington, D.C.

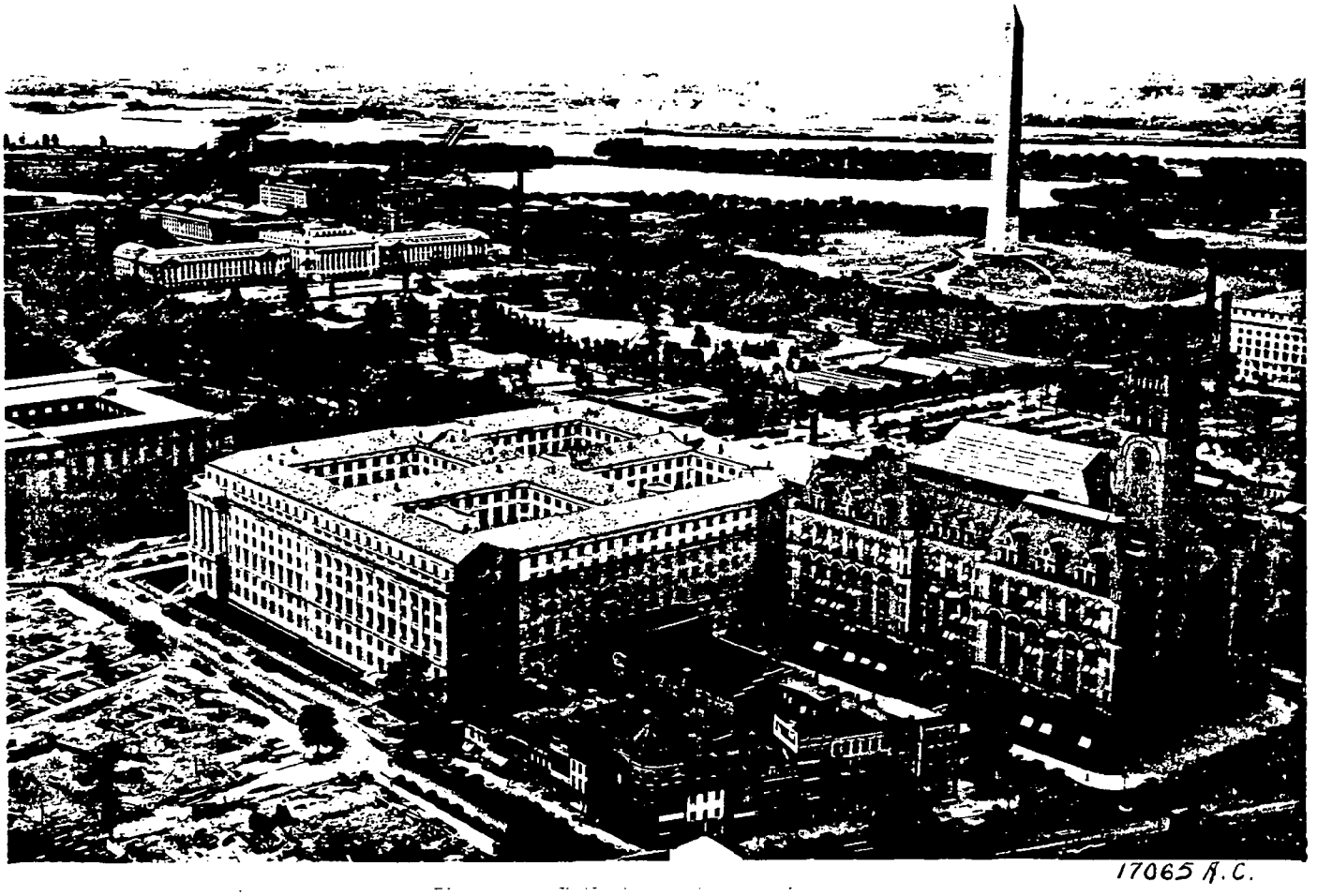
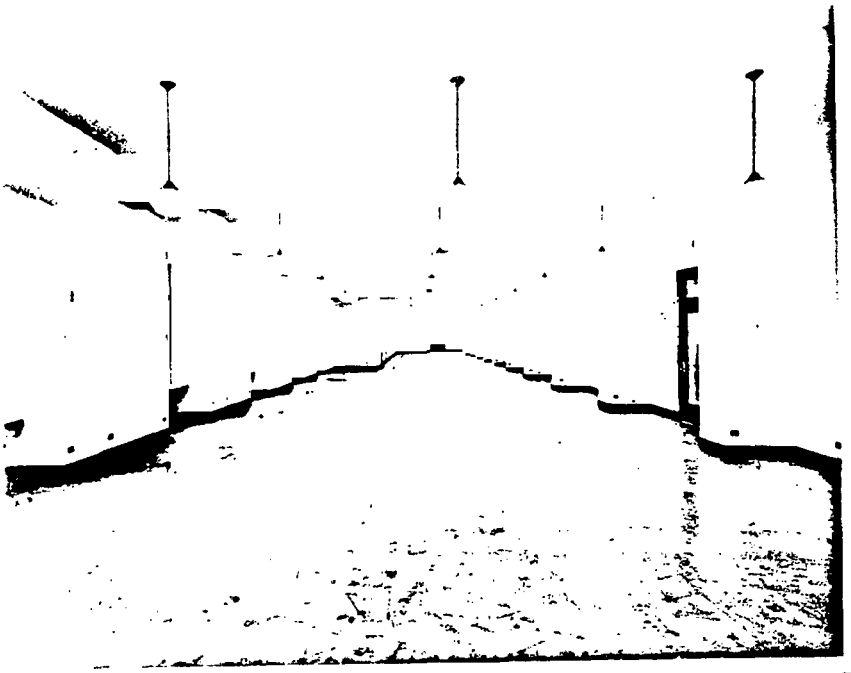


Fig. 19. The site of the IRS Extension in the center foreground (7/31). From George Gurney, National Collection of Fine Arts.

Fig. 20. Second floor elevator lobby of the Extension during construction (6/29/35). From the IRS, FMD.



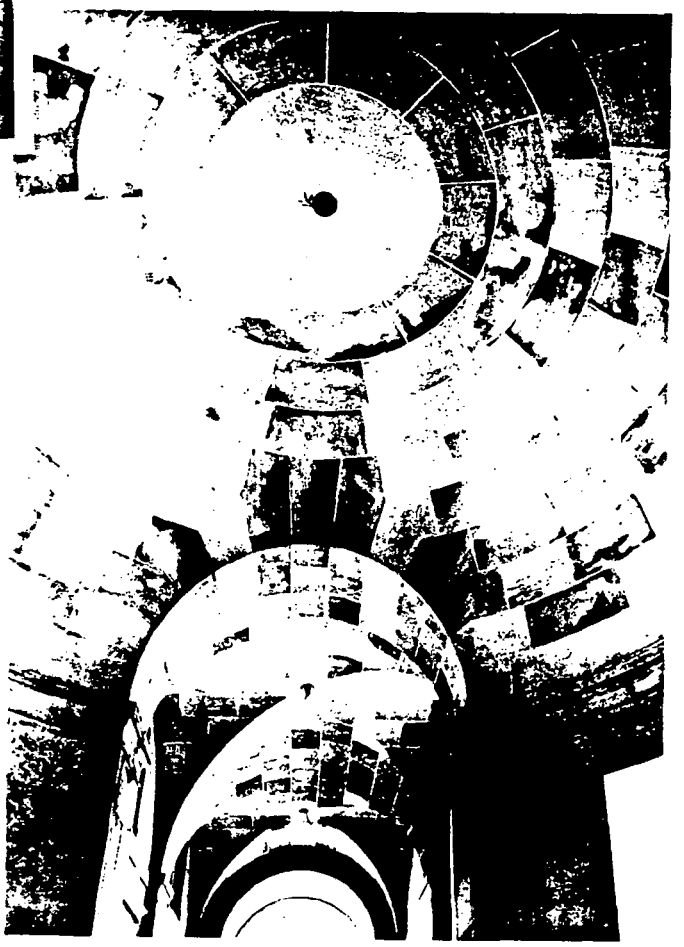


Fig. 21. (above)
Typical office space in the Extension.
From the GSA Region 11 Library, Washington, D.C.

Fig. 22. (right)
New limestone ceiling in 12th Street arcade (8/1/35). From the IRS, FMD.

Fig. 23. (below)
Typical office after air conditioning was installed. Most of the fans have since been removed (8/3/64). From the GSA Region 11 Library, Washington, D.C.

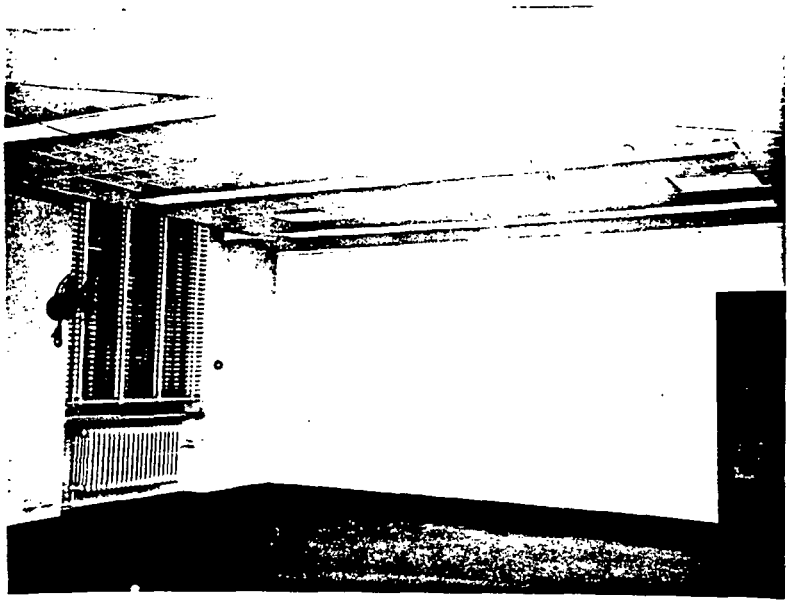
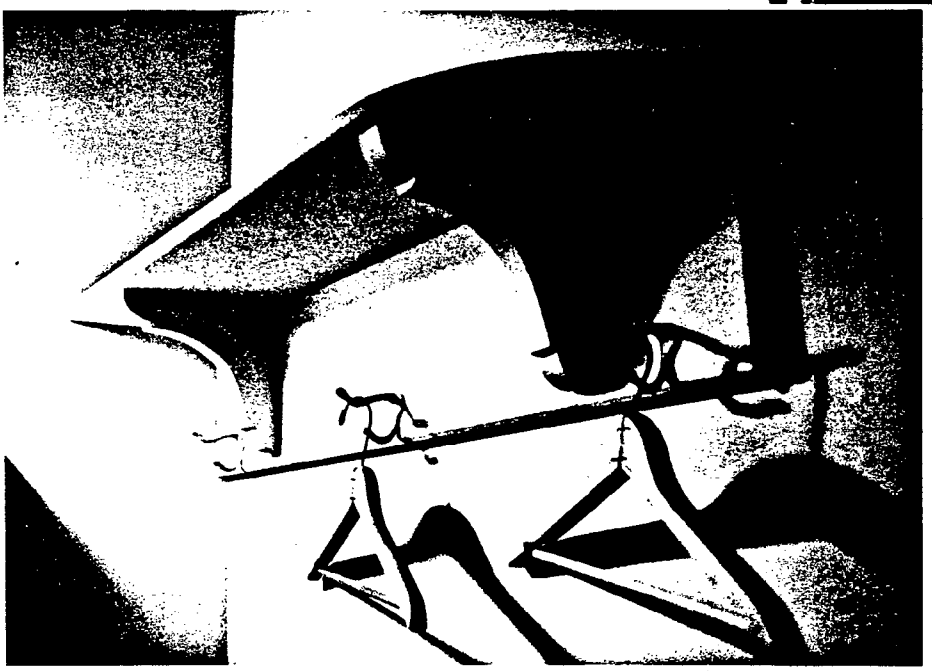


Fig. 24. (above)
Typical corridor after air conditioning was installed (8/3/64). From the GSA Region 11 Library, Washington, D.C.

Fig. 25. (right)
Original lavatory sinks remain in the Judge's offices on the second floor where they were enclosed in closets.

Fig. 26. (below)
Typical lavatory coat rack from improvements made in second floor Judge's quarters.



II
ARCHITECTURAL DESCRIPTION

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Introduction

The Internal Revenue Service Building is located in the center of the Federal Triangle complex in Washington, D.C. It is bounded on the north by Pennsylvania Avenue, the east by 10th Street, the south by Constitution Avenue, and the west by 12th Street. The northwest corner of the block is occupied by the old Post Office Department building, separated from the IRS Building by segments of 11th and C Streets. Except for the victorian Post Office structure, all of the adjoining buildings; the Justice, Commerce and Post Office Departments were built in the 1930's according to the master plan for the Federal Triangle. The IRS Building was constructed between 1928 and 1936.

The IRS Building is rectangular in form with a circular section on its northwest corner facing 12th Street and an L-shaped arm (originally referred to as "The Extension") from the northwest corner on 10th Street. An additional structure was planned to stretch from the northwest corner of the main building towards Pennsylvania Avenue and then east to the west wall of the Extension. This structure was to complete the Great Circle on 12th Street. However, since the master plan for the Federal Triangle was developed, the Old Post Office which occupies the site has been declared a landmark and cannot be demolished. Thus, the original design for the building and the Circle will never be finished.

The main building has four interior courts which divide the great mass of the building and provide the inner offices with daylight and ventilation. Of these courts, three are landscaped and the fourth is a service court, accessible by an arched driveway entrance on 12th Street. The building is seven stories in height, although the architectural treatment of the exterior walls gives the illusion of five stories. The sixth floor is located behind the main cornice and the seventh floor is set back behind the balustrade. This type of vertical massing is similar on all of the Federal Triangle buildings, although the individual decorative details and devices differ on each. The general architectural style for the Federal Triangle, as chosen by the Fine Arts Commission, was the 18th century French Renaissance style, which in turn derived its inspiration from the Italian Renaissance architecture. Characteristics of this style include the use of colossal Roman architectural orders to detail and proportion of the facades, which are architecturally treated as three horizontal areas; the base or podium, the column and wall area or piano nobile, and the attic or parapet. The IRS Building is one of the more simple interpretations of this style in the Federal Triangle.

Exterior

Wall Treatment

Constitution Avenue was envisioned by the planners of the Federal Triangle as the great ceremonial boulevard of the city between the U.S. Capitol, the Lincoln Memorial and Memorial Bridge to Arlington. This facade contains the main entrance to the IRS Building and received the most elaborate decorative treatment of all of the building's elevations. The pavilion and circular wall at the north end of the 12th Street elevation also received special decorative attention, since it was to form the east side of the Great Circle. The remaining facades have the same general chracteristics as the Constitution Avenue elevation.

The Constitution Avenue elevation (Fig. 27) has a rusticated limestone base of 14 courses which extends from the pink granite base course or stair at ground level through the second floor to form the first horizontal division. Above the first floor windows, the rusticated design resembles a jack arch with the three central keystones extending vertically through two courses. The smaller second floor windows have no special decorative stonework. One course of stone above these openings is a belt course at the third floor level which separates the base from the upper wall plane. The Constitution Avenue elevation is 27 bays wide. All except the first and last three bays of the base project approximately four feet from the building plane. In the center of the base are three adjoining arched openings (Fig. 28),two stories high. The arches are emphasized by rustication and have projecting scroll voussoirs for keystones, which reach the bottom of the belt course. The limestone blocks immediately adjoining these openings have a rough picked finish. The reveals of the entrance openings are of pink marble, carved with Doric pilasters. Four limestone cartouches detailed with carved eagles flank the openings at the second floor level (Fig. 27). The belt course above the entrance openings carries a quotation carved in the stone: "Taxes are what we pay for a civilized society, Oliver Wendell Holmes."

The upper floors are dominated by a three story colonnade which extends above the projecting base. Above the third floor belt course, a balustrade motif defines the beginning of the piano nobile or principal stories, the third to the fifth floor. On the unprojected wall surfaces on either end of the facade, this motif is detailed with 6 urn-like balusters located along the sill of the third floor windows. On the colonnade, a balustrade separates the column bases. The wall surface of the three-story piano nobile is smooth faced limestone ashlar. Rusticated limestone, more finely detailed than the base of the wall, serves as quoining on either end of the elevation, and faces the wall surface behind the colonnade. Pilasters shadow the pairs of columns at either end of the colonnade.

The Doric columns are each constructed of nine marble sections. The neckings of the capitals have been decorated with patera and the echinus with an acanthus leaf molding (Fig. 30). Four fluted marble pilasters are located directly behind the coupled end columns of the colonnade and accentuates the projection of the colonnade from the building wall plane. A narrow promenade, with access from the third floor corner suites, extends between the facade wall and the column base.

In the classical tradition of proportion, the third floor windows are the same size as those on the first, and decrease in height through the fifth floor. The decorative window treatments emphasize the differences between the floors. All third floor window treatments emphasize the differences between the floors. All third floor window frames have flat pediments, with a simple cornice, detailed with an egg and dart motif, and supported by two decorative consoles. The recessed panel beneath the cornice is framed with an acanthus border. The fourth floor window surrounds have a molded architrave and dog ears on all four corners. The fifth floor windows do not have any decorative frame, but visually rest on a sill course with a wavelike Vitruvian scroll pattern (Fig. 30).

The facade is capped by a Corinthian entablature, which begins at the sixth floor level. This is composed of three horizontal divisions; an architrave detailed with an acanthus molding, a plain frieze, a denticulated band beneath an acanthus detail with a bead and reel border and a modillioned cornice. Another balustrade with paneled piers sits atop the facade at the seventh floor level.

The seventh floor walls are set back 6 feet behind the balustrade and are faced with smooth limestone ashlar, finished at the eave with a simple limestone coping. A low clay pan tile roof covers the entire building.

The 10th Street elevation is the longest of the building, extending over 600 feet from Constitution to Pennsylvania Avenue (Fig. 31). Two pedimented prostyle porticos of three bays each mark each end of the elevation. A minor entrance is located in the rusticated base of each; the openings have rusticated jack arches, with simple marble reveals, gray granite steps and cheek blocks. The south portico has four marble columns, the north portico has four limestone columns. Two end pilasters, identical to those on Constitution Avenue, mark the sides of each of the porticos on the facade wall. The porticos have Doric pediments with undecorated tympanums. The center 16 bays of this facade project slightly from the building plane for the entire height of the wall. Centered in the 10th Street elevation is a major entrance with a single wide stair and three flat arched openings, each of similar size and design as the portico entrances (Fig. 31). Above this central entrance, beginning at the third floor level, is a screen of 18 limestone, unfluted pilasters of the Doric

order offering a visual abstraction of the Constitution Avenue colonnade design. The window treatment of the upper floors matched that along Constitution Avenue (Fig. 33).

A street level arcade with three arched openings approximately 1½ stories high is centered between the projecting central bays and the north portico. It was intended to be a pedestrian entrance to an interior court, which when completed would open onto the Great Circle. The stonework of the arched openings is picked out in the rustication treatment. Balustrades matching those at the seventh floor level extend across the bottoms of the openings. Beyond this railing, the arcade has a vaulted limestone ceiling, and arched openings to the court beyond. Small doors with iron gates provide access to the ground floor of the building on either side.

On the Pennsylvania Avenue facade (Fig. 34), the five bays nearest the corner of 10th Street and Pennsylvania Avenue are identical to the unpilastered bays on 10th Street. The remaining six bays project several feet and have a screen of eight limestone pilasters similar to those on 10th Street. The final design of this facade is incomplete because the last section of the building was never constructed. It was meant to imitate the Constitution Avenue elevation on a simpler scale. A plain parapet type wall over the projecting section replaces the balustrade used on the other facades. A granite faced areaway wall extends in front of the projecting bays at ground level.

The west end of the Pennsylvania Avenue wing of the Extension is still brick where the continuation of the Pennsylvania Avenue facade and the Grand Circle was to have been constructed. Unlike the exposed brick wall on the circle (Fig. 44), this wall has been painted white.

The fourteen bays on the south end of the 12th Street facade (Fig. 35) repeats the basic wall design established on the Constitution Avenue facade. Small one story entrances are located on the second bay in from each end (Fig. 36). These have rustication designed to emphasize jack arches over the doorways, marble reveals, granite steps and cheek blocks. Beyond this wall area, a large two-story arched opening marks the driveway entrance to the service court (Fig. 37). The driveway itself is constructed with one groin vault in the center, with small barrel vaults on either end. There are two entrances off of this driveway, each have limestone Gibbs-like surrounds in which every other keystone projects and is finished with a rough picked finish (Fig. 38). Small windows with wrought iron grills flank each of the doors. A large pavilion projects from the north end of the elevation, and introduces the quarter circle which cuts across the northwest corner of the building (Fig. 39).

Because the circular elevation on the northwest corner of the 12th Street facade was to form part of the Great Circle with the Federal Building (New Post Office) across the street, its decorative details mirror those of the other federal building. The circular

elevation has a three-sided pavilion at its corner, directly opposite the south pavilion of the New Post Office. The decorative details on both are identical. The pavilion projects from the curved arcade wall and its north and south facades, each one bay wide, are identical except for the first floor openings. The rusticated base of smooth faced limestone has a flat pediment opening leading to the arcade on the north and an arched opening leading to the arcade on the south. The north opening has a plain cornice with dentils beneath, supported by two consoles with acanthus leaf motifs. Directly above this is a marble panel with bronze lettering announcing the name of the building. The balustrade detail seen on the other facades of the building projects from the third floor line and is supported by two pairs of decorative consoles. Four half engaged fluted Ionic columns of marble, arranged in pairs on either side of the window bay, extend from the third to the sixth floor (Fig. 40). The third and fourth floor window openings are contained within an arched formed of slightly recessed limestone ashlar. The third floor window frame is marble and similar to the framed opening below it on the first floor. It is pedimented and has a carved bundle of reeds in the panel beneath of the cornice. The fourth floor window is circular, approximately two feet in diameter, and framed with a simple marble surround. The Vitruvian scroll sill course and the fifth floor window treatment match those on the other street elevations and on the arcade walls. The columns support the Corinthian entablature composed of a modillioned cornice, dentils and acanthus molding over a plain frieze. The architrave is decorated with an acanthus border. The mansard roof of the quarter circle begins behind the seventh floor balustrade. The dormer window over the pavilion has a segmental arch pediment frame of "crimped" or corrugated copper (Figs. 41 and 42). The other dormers on the pavilion and arcade have triangular pediments (Fig. 43).

The west pavilion wall, parallel to 12th Street, differs slightly from its north and south walls. It has a large central arched opening in its base leading to the arcade, with smaller flat pedimented openings framed with marble on either side. Above these smaller openings are two panels with a decorative bronze grill. Four Ionic half engaged columns define the three bay facade from the third to sixth floors. The fenestration design matches that in the upper arcade walls.

The arcade wall within the quarter circle is treated as a simplified version of the pavilion wall. It is eight bays in width and contains a groin-vaulted arcade of limestone ashlar, approximately 1½ stories high, within the rusticated limestone base. Eight arched openings correspond to the eight groin vaults in the arcade. Each have smooth unrusticated limestone pedestals, with simple limestone moldings defining the impost and archivolt of each opening from the rusticated voussoirs and the console-like keystone which projects from each. Inside the arches, the arcade walls are faced with smooth limestone ashlar, with pilasters between each window bay to receive the groin vaults. The first floor windows have a simple frame with a dog-eared panel

beneath the sill. The two entrance doors to the 12th Street lobby have similar frames. The second floor windows are located just beneath the ceiling of the groin vaults and thus have a segmental lintel with a simple limestone surround. The marble third floor window frames located above the third floor belt course and balustrade are similar to the third floor pavilion windows except that they have flat pediments. The fourth floor windows have a simple marble surround with dog ears on all four corners. The remainder of the arcade wall matches the upper pavilion walls.

The walls within the courtyards have very little architectural decorative detail. The walls within the "L" of the extension and the north wall of the main building all face each other and form an informal type of courtyard (now used as a parking lot) (Fig. 45). Smooth face limestone ashlar extends from the granite watertable to the seventh floors. A simple belt course at the third floor level and a railing of wrought iron, extending across a projecting balcony supported by consoles at the sixth floor level, relieve the facades. Three arched openings leading to the extension arcade are located in the center of the west side of the 10th Street elevation. The arches are similar in design to those on 10th Street, except that they have smooth limestone frames, rather than rusticated ones. The stairs leading to this arcade are of gray granite, to which a new metal hand rail has recently been added. All of the windows have limestone sills. The window frames on these facades have received very little decorative detailing, the first floor windows receiving the most attention with simple stone surrounds with a console decoration below the sill. The third floor windows have slightly recessed panels beneath their sills; a similar motif is repeated below the seventh floor window.

All four courtyards have similar wall treatments (Fig. 46). The basement walls, visible in the areaways of Courts B and D, are of vitrified buff colored brick. The areaway walls are also of the same material. A granite belt course extends around the perimeter of each court at the first floor line, above which the walls are sheathed in smooth face rusticated limestone, extending to the spring line of the first floor Palladian windows (Fig. 50). Smooth face limestone ashlar continues from this point to the third floor line where it is finished with a small projecting balcony with a decorative wrought iron railing supported by consoles (Fig. 51). From this balcony to the seventh floor, the walls are of vitrified buff brick, identical to those used on the basement and areaway walls. Green Vermont marble, located in the spandrels between the third and fourth, fourth and fifth, fifth and sixth floors (Fig. 52), provide a colorful highlight to the courts, their cream-colored veining harmonizing with the brick and limestone walls. A brick belt course between the sixth and seventh floors and a simple limestone coping at the roof level finishes the upper court walls, above which rises the pitched roof, covered in Spanish tile.

The service court walls (Fig. 53) are similar to those in the other courts, except that the limestone base is not rusticated

and the first floor windows are rectangular, not arched. The balcony and railing detail at the third floor level of the garden courts has been omitted here.

On the first floor level of the east wall is a concrete loading platform covered by a marquee suspended from the wall. The marquee is sheathed in copper. A rolling steel door on the east end of the south wall provides access to an interior loading platform. The underground garage is entered from a ramp which starts at the northwest corner and pitches down along the north wall to the garage below. The embankment of the ramp is a granite wall with a steel pipe railing. The paving is macadam over the original buff and red brick surface.

A small buff brick guard's box (approximately 5 feet square) is located directly inside the iron gates.

Roof

There are two types of roof and roofing material on the IRS Building. The pitched roof, covering all of the building except for the circle roof is sheathed in mission tile in shades of gold, browns, purple, gun metal and red. Flashing at the ridge, valleys and gutters is copper. The mansard roof of the circle and slightly pitched roof above this are sheathed in black slate (Fig. 55), with copper ridge cresting detailed in a cabled molding. The mansard roof is punctured by dormer windows which provide light and ventilation to the seventh floor offices. The dormers are sheathed in crimped copper (Figs. 41, 42 and 43).

On the roof of the IRS Building, there are seven penthouses atop the interior elevator shafts. They are all located on the roof slopes facing the interior courts. In the main part of the building, the penthouses are faced with vitrified-buff brick with stone coping. On the extension, the walls are smooth limestone ashlar.

Roofing on all seven penthouses is composition roofing with a gravel finish and copper flashing. The north slope of the roof, between the service and the southwest courts, has been removed to accommodate the cooling towers for the air conditioning system.

Doors

All of the 20 entrance doors on the IRS Building are original. The 16 entrance doors on the street elevations are bronze with center panels of plate glass and decorative hardware and frames. The doors operate on spring hinges and have combination handles and push bars of bronze that are set in the frame with rosette escutcheons (Fig. 56). The bronze spandrels above the doors are decorated with a Doric frieze, with triglyphs and patera motifs in the metopes (Fig. 57). All these doors, except those on the Constitution Avenue facade, have ten light fixed transoms above the spandrels. The main entrance doors on Constitution Avenue

(Fig. 58) are dominated by large arched windows above their transoms, which extend to the top of the second story. The bronze frames for these are detailed with a rinceau motif. Both the doors and the arched windows have sidelights, the lower being covered by iron grilles.

All of the doors off of the driveway and 10th Street arcade have their original iron grilles, except for the south door of the driveway. Large painted iron gates close off the service court (Figs. 59, 60 & 61). Each of the two gates swings on a fluted post topped with a cast iron eagle. The gates are decorated with scroll-like banding across the top and bottom rail. A fixed grille closes off the top of the archway.

The doors into the interior courts are painted metal with four-over-eight lights. They are undecorated. On the loading platform in the service court, the original double doors with the large steel kick plates and glazing are still in place (Fig. 62). The simple four-light transom above the doors is repeated above the marquee. The steel rolling door in the southeast corner of the service court appears to be the original (Fig. 63).

Windows

The majority of the steel windows on the IRS Building are double hung sash windows with overhead pulleys placed side by side in a single frame with a large mullion divider (Fig. 30). All of the window frames are painted. The basic glazing unit is four-over-four lights per individual window. These window types appear on the second, fourth, fifth and seventh floors of all the street elevations. The first and third floors on the same facades use the same window unit but with an additional two light transom above each window sash (Fig. 33). The four-over-four window unit is also used in the splayed corner walls of all the light courts and in the second floor of the arcade walls, although the upper lights in the latter are curved to fit the arched opening formed by the vaulted ceiling. A similar unit, pairs of six-over-six sash was used on the second, fourth, fifth, sixth and seventh floors of the courts. The third floor windows employ the same unit but with a three-over-three light fixed transom above each sash.

There are several additional window types located on the IRS Building that differ from the above unit. On Constitution Avenue there are four two-over-two double hung windows (half of the basic unit) in between the entrance arches and at either end of the arches. These windows light small closets within and originally had decorative bronze grilles, which are no longer in place. Similar sized windows are located on the 10th Street facade at each end of the unpilastered bays, from the first through fifth floors. There are a total of 20. The sixth floor windows, in the form of pivoting five light transoms, were installed to provide ventilation as well as light, to the sixth

floor offices, which are located behind the exterior entablature. The windows are hidden behind the seventh floor balustrade, less than a foot above the seventh floor promenade and correspond with the window bay arrangement of the first through fifth floors. The sixth floor roof, directly above the transoms, originally was sheathed with glass blocks, however, this roof is now sheathed with composition roofing, coated with tar. Two round windows, approximately two feet in diameter, are located on the quarter circle end pavilion (Fig. 40). They have metal frames and are pivoted at the center.

The first floor courtyard windows (Courts B, C and D) are designed in a Palladian window motif with a semi-circular arched window over an eight-over-eight light metal double hung sash window with side lights of two-over-two lights each (Fig. 50). The outer six lights of the arch are fixed, however, the six lights in the inner circle form a hinged transom. The two arched windows nearest the entrance doors in Courts B and D have been filled with green Vermont marble matching the spandrels in the court windows above. The service court windows are similar to those in the other courts, except that there are no Palladian windows. The first floor windows are of four-over-four lights, with two light transoms above, two windows per opening.

Lighting

Three types of fixtures exist on the exterior of the IRS Building. All of the lights in the soffit of the masonry arches at the entrances are original. These fixtures have a bronze circular border of acanthus leaves with white semi-circular glass shades (Fig. 64). Of these, those in the 10th Street arcade and entrances are lacking their original shades. One of the soffit lights on the Constitution Avenue entrance has had the original shade replaced by an incongruous box type fixture.

The original bronze lantern in the driveway entrance has a circular glass shade held in place with four bronze colonettes (Fig. 65).

The simple bronze lantern sconces that flank the entrances around the building are not original to the building (Fig. 64). This same lantern design was used for a pendant fixture which replaced the original round globes in the 12th Street arcade. Of those, two are missing.

Landscaping and Paving

The street elevations of the IRS Building are landscaped with trees, bushes and grass. Cast iron areaway grilles set in granite (Fig. 66) are continuous all around the perimeter of the building, except for the Extension court which has aluminum grilles. The sidewalks are made of large aggregate concrete,

10th Street Lobby

The majority of the original 10th Street lobby design elements are intact, including the decorative plaster ceiling with the fluted border with rosettes, deep plaster entablatures with projecting cornice and Doric frieze (Fig. 84). Beams plastered with paneled soffits divide the ceiling into bays. The gray marble wall sheathing, the bronze directory board, the five paneled elevator doors and the three-toned patterned marble floor also remain (Figs. 85-87). The original lighting fixtures have been replaced with 2 by 2 foot box-type florescent fixtures, located in each ceiling bay. As in the Constitution Avenue lobby, the elevator cabs (Nos. 5-9), signal hardware and call buttons are new, as are the ashtrays below the call buttons. A new visitor's phone has been added on the north lobby wall, and a new poster board on the south wall.

The vestibule for the 10th Street lobby has survived completely intact. The plaster ceiling and cornice match that in the lobby, except that the original light fixtures still hang from each ceiling bay and are of the same type as those originally used in the office corridors. The walls are sheathed in gray marble; bronze radiator grates with a quatrefoil pattern are still located in each end of the vestibule. The marble floor matches that of the lobby.

Northeast Corner Lobby

The 10th Street lobby in the Extension has received remodeling treatment similar to that of the other lobbies. The original dentiled cornice with a plain frieze and guttae over the architrave has remained intact. The original light fixtures have been replaced with 2 by 2 foot fluorescent lights which cover the original ceiling medallions. The pilastered gray marble walls, marble wainscot, baseboards and floors have also remained, as have the bronze five-paneled elevator doors. Again, the elevator cabs, signal hardware and call buttons have been replaced. The entrance doors from 10th Street and on the arcade have automatic openers.

12th Street Lobby

All of the original lighting fixtures in the lobby have been replaced with 2 by 2 foot fluorescent box lights, although the original Doric plaster cornice has remained. The gray marble pilasters, wainscot and patterned marble floors are original.

Small Vestibules

The other six first floor entrances remain in their original condition with double bronze doors in marble frames, vestibules with marble wainscoting and bronze radiator grates. Acoustical tile and florescent lights, however, cover the original vestibule ceilings.

Elevator Lobbies - Upper Floors

All of the elevator lobbies above the first floor have retained their original marble and terrazzo floors, marble wainscoting, pilasters, elevator surrounds and door frames of offices facing the lobby, as well as marble sheathed columns. The dentiled plaster cornices and paneled ceiling beams are also intact. The original light fixtures, however, have been removed. In their place are 2' by 2' florescent box lights, in each ceiling bay, identical to those in the first floor lobbies. In 1979, the elevator doors above the first floor were replaced with new baked enamel finish steel doors, new floor indicators were placed in the elevator transoms and new call buttons with illuminated "UP" and "DOWN" buttons were installed in between the elevators. The elevator door jambs, however, appear to be original.

The elevator cabs, doors and hardware of the 12th Street circle lobby have been retained in their original condition (Fig. 88).

Office Corridors

Most of the office corridors retain their original terrazzo floors with brass dividing strips and marble borders, marble baseboards and plinth blocks, metal door and transom frames, wood doors with prism plate glass panels. On the first floor, the corridor walls have three foot high marble wainscoting. The original plaster ceilings have been obscured by suspended ceilings of acoustical tile. The florescent lighting is recessed in the new ceilings, and none of the original light fixtures remain.

The corridor walls, door frames and doors have all been painted a variety of non-historic colors, and all of the original gold lettering on the office doors have been removed. The original hinges glass transoms over the doorways have been replaced with fixed louvered metal transoms.

The original fire alarm and watchman's stations are still in place, as are some of the fire extinguisher cabinets (Figs. 92-94). Some of the original bronze and glass elevator and telephone and stair signs are still in place, but are no longer illuminated.

The only major alterations to the corridors occur on the third floor where many of the doors in the corridors adjoining the Commissioner's suite have been replaced with modern oiled teak or walnut doors. An entrance to the Commissioner's suite has been created by removing the original corridor walls, and replacing them with frosted glass panels that are recessed from the original wall line.

Special Offices

All of the special offices in the IRS Building, the Tax Court Hearing Rooms, the Commissioner's office and the seventh floor Court Room have undergone remodeling. In both the Court Room and the Commissioner's office, the original wood paneling and other decorative detailing has been completely removed. The new interiors are modern oiled teak or walnut paneling, with wall-to-wall carpeting, dropped ceilings and modern lighting fixtures.

The eight Hearing Rooms (Rooms 2108, 2118, 2132, 2140, 2403, 2408, 2409 and 2512) retain their original wall paneling (Fig. 97). The floors are covered with carpeting. The suspended ceilings cover the acoustical plaster ceilings, ornate cornices, embellished beams and plaster brackets. They also cut below the molded wood pediments above the doors which used to be behind the Judges' bench (Fig. 97). None of the Hearing Room desks or benches remain. The original solid wood doors are still in place, and the graining on the metal door frames is still exposed. The bronze radiator grates with the quatrefoil design are original. Room 2403 has one of the metal partitions originally used throughout the building (Fig. 100). It is not original to this room, but is the only surviving example of this important detail. The grained finish is the original.

Office Space

In all of the offices (Fig. 101), the original mastic flooring has been covered with wall-to-wall carpeting. The original slate baseboards have been painted over with black paint and the original metal partitions have been replaced with drywall or steel and glass partitions. None of the original roll-up wooden shades remain in the building, but approximately 90% of the rooms have painted wooden venetian blinds which apparently replaced all the shades at some time. There are also many windows with metal blinds. The ceilings have all been covered with suspended acoustical tile ceilings with recessed strips of fluorescent lights. The windows, metal sills and radiators are original. The clock location had to be changed when the ceilings were dropped, so none of the original clocks remain. Sash poles for the windows are gone, but many windows still have the hanger on the trim. About 20% of the doors still have the transom operator hardware in place. The original glass transoms have been replaced with louvers. The fans, originally located on both sides of the window openings, were removed in the mid-1960's when the air conditioning was added but the outlets are still visible in many of the rooms. The only private lavatories which remain are in what were the Judge's quarters on the fourth floor, where they were encased in small closets. All the others have been removed.

Toilets

All of the 70 toilets in the IRS Building have been remodeled, during which the majority of the original fabric was removed, including the original marble stalls and sinks, porcelain water closets and lighting fixtures. These were replaced with new metal stall partitions, modern sinks and water closets, new tile wainscoting and floors and new stainless steel accessories. The tile wainscoting and floors were covered over with the new tile work. The ceilings have suspended acoustical tile with recessed florescent lights. The suspended steam radiators, the metal windows and the corridor doors are the only original elements remaining.

Stairways

There are ten fire stairs in the IRS Building, all of which have retained their original polished black slate treads, landings and baseboards, simple iron railing, hung radiators and double hung windows. The double swinging doors leading to the corridors are original, each of hollow metal with two upper panels of wire safety glass, with a fixed metal transom above. The majority of original light fixtures which were located on each landing, have been removed. Only one of those which remain has the original glass shade (Fig. 99).

Elevators

There are presently 23 elevators in the building: 19 passenger and 4 freight.

As of this writing, all of the 19 passenger elevators retain the original Otis Elevator Company hoist motors and generators installed in 1933. Elevator numbers 11, 12, 13 and 14 also retain the original 1933 Otis controllers, selectors, governors and Cleveland door operators. Elevators 11, 12, 13 and 14 are still manually operated, have a capacity of 3000 lbs., 500 FPM speed, and service floors basement through 6 (numbers 11 and 12), and 1 through 6 (numbers 13 and 14). The other 15 have replacement Otis or G.A.L. controllers, selectors and door operators of varying ages (1940-1976) and are now automatically operated. Eleven have a capacity of 2500 lbs., 500 FPM speed and service floors basement through 7. Four have a capacity of 3000 lbs., 500 FPM speed and service floors basement through 7.

Three of the four freight elevators have new G.A.L., Imperial, and Holister/Whitney equipment installed 1977-1979. They have a capacity of 5000 lbs., 250 FPM speed, are automatically operated and service floors basement through 7. The fourth freight elevator has a capacity of 1800 lbs., 50 FPM speed, and services the seventh floor and attic. It is manually operated.

Heating

The building is currently heated by steam radiation. Original fin type cast iron radiators and piping are still in use. The steam which was originally supplied by seven coal fired boilers located within the building is now supplied from the GSA Central Heating Plant.

Air Conditioning/Ventilation

Air conditioning was installed for the entire building during the mid 1960's. It consists of a basic chilled water system. Cooling towers are located at the center section of the roof, pumps and compressor/condensers located in the subbasement area entered from the garage.

The ceilings of all of the corridors and offices were lowered to allow concealed installation of the ductwork. Major air handling units are located in the attic and major vertical ducts are located in mechanical rooms carved out of corner offices at the intersection of the corridors at the center of the building.

The system is supplemented by induction units located on the first, second and sixth floors.

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Robert Alfred Theobald
Robert DePuy Davis

STRUCTURAL SURVEY - IRS BUILDING

A. Visual Survey

A visual examination of all floors (Penthouses through Basements) was made on December 11, 1979. The structure is a steel frame fireproofed with concrete encasement. Where exposed, the encasement shows no sign of deterioration. Partitions generally are clay tile, plastered. There is no visual evidence of differential movement in the floors, ceilings, walls or partitions that could reflect foundation or structure distress. There is evidence of minor floor movement and a crack through the terrazzo finish at the junction of the north extension, which was built five years after the main building. Examination of this separation indicates very little if any present movement.

Examination of attic and basement areas and discussion with maintenance personnel indicated no major water leaks.

B. Basic Structural System

The steel framed building, fireproofed with concrete is founded on approximately 8000 Raymond "step-tapered" concrete filled piles. The piles are end and friction bearing in a layer of sand and gravel approximately 35 feet below the surface. Below this is dense sand and clay to mica schist rock at approximately 65 feet below the surface. The floor slabs generally are a "one-way pan system with tile fillers" which span 15 feet and are supported by 24 B70s which span across the floors into the exterior steel columns. The span of the main floor beams (the 24 B70s) is about 23'. The interior beam is a 16 B45 which spans approximately 14 feet across the corridor. The steel framing typically is then 3 spans, 23 feet, 14 feet, and 23 feet across the width of the office floors.

In most cases the ceiling plaster is applied directly to the underside of the joists and concrete covered steel beams. The roof and penthouse roof are also framed in steel with concrete slabs.

Within the scope of our examination, we could find no evidence of unsound materials.

None of the structural frame or its fireproofing is expressed architecturally. All finishes cover the frame and are generally plaster or marble on the interior and limestone on the exterior.

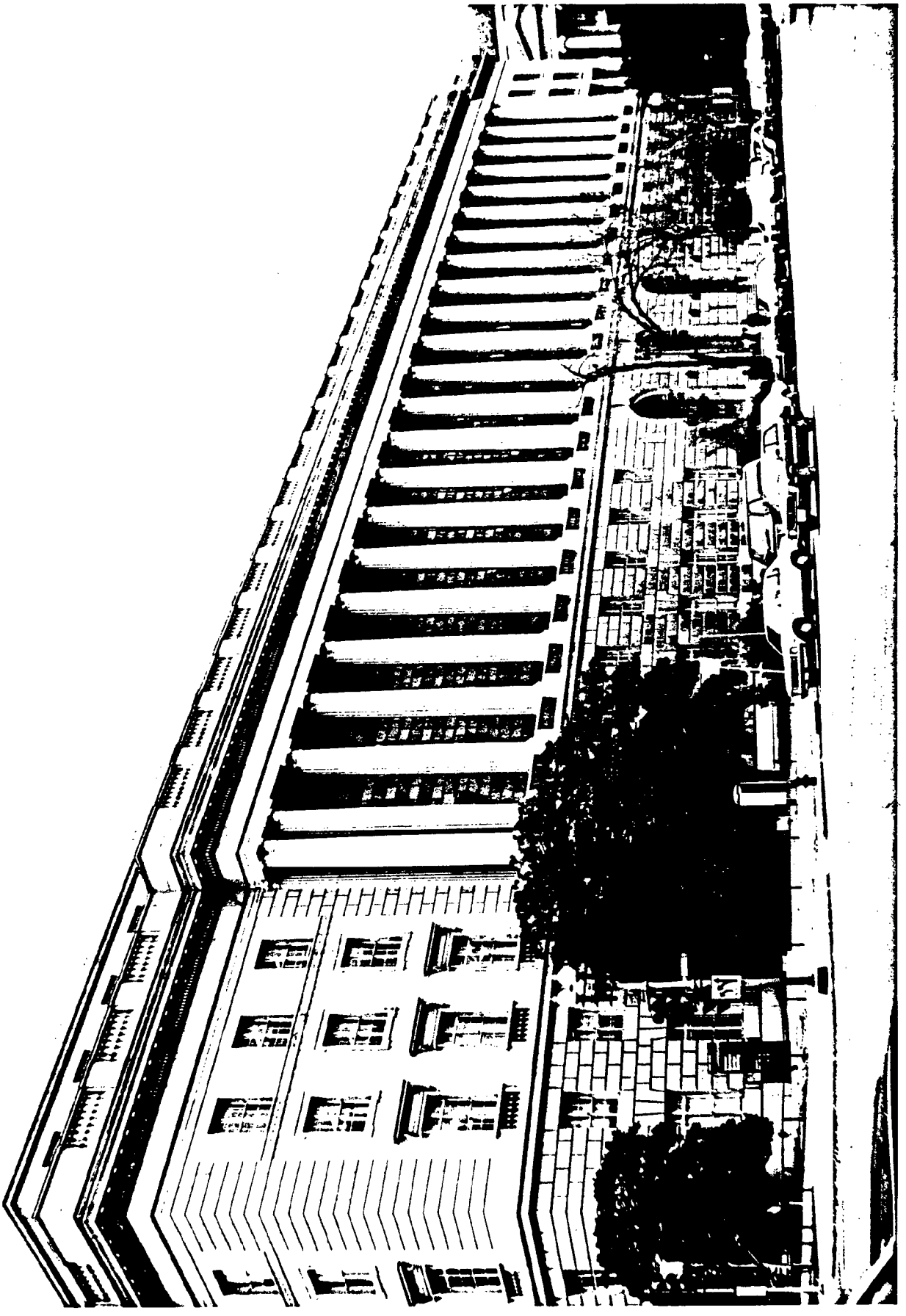


Fig. 27. Constitution Avenue facade of Internal Revenue Service Building from southwest. John Myers (12/79).

Fig. 28.
Detail, main entrances, Constitution Avenue facade.

Fig. 29.
Detail of the cartouche flanking the main entrance arches. This is the only carved imagery used on the exterior of this structure. Because the building was to house only a bureau and not the headquarters of a governmental department, it was decided to make the exterior detailing less elaborate than the other structures in the Triangle.

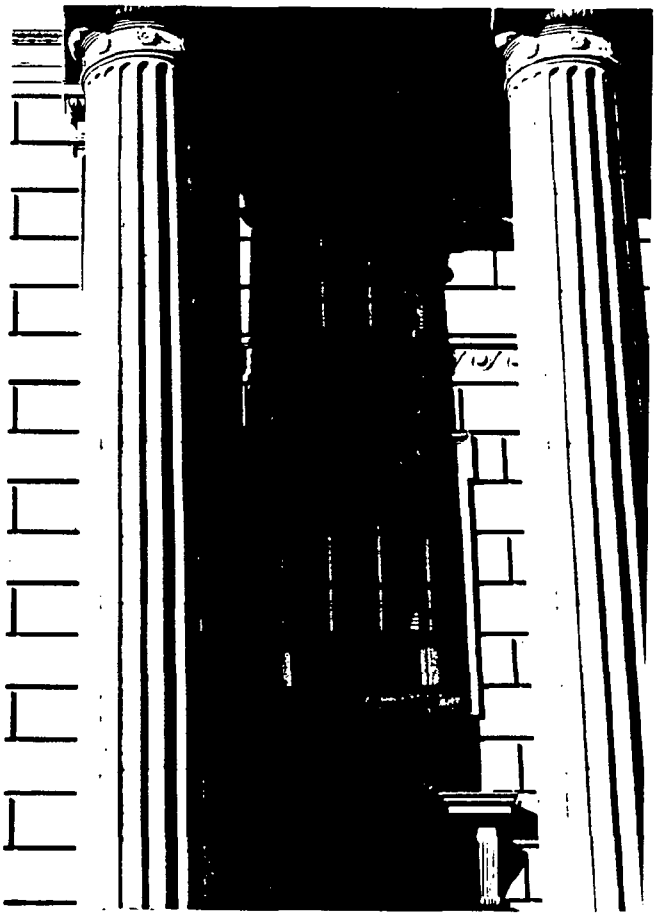


Fig. 30.
Detail of wall surface and columns at fourth and fifth floor levels on Constitution Avenue facade showing window and wall surface treatments and column capitals.

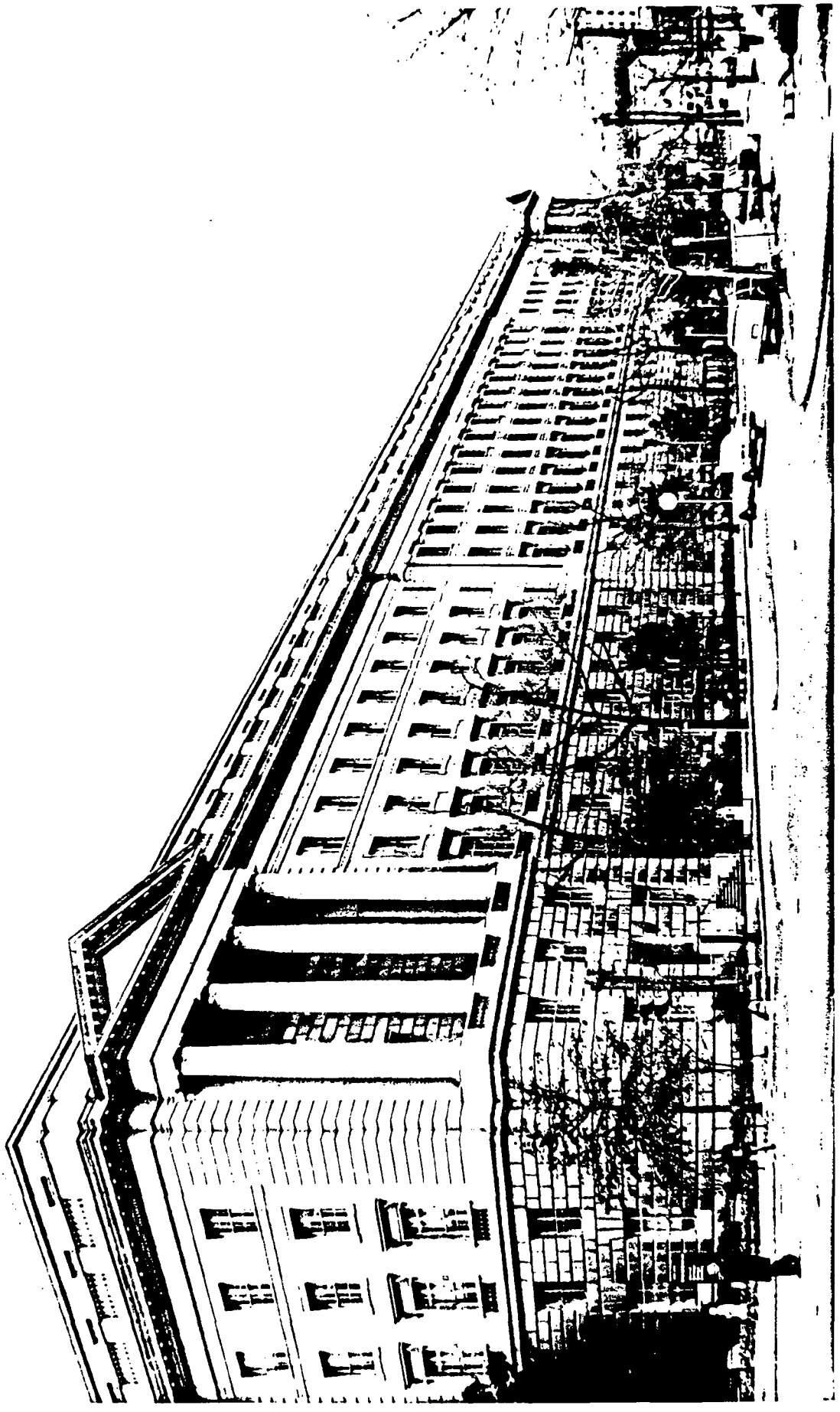


Fig. 31. 10th Street facade of IRS Building from the southeast. John Myers (12/79)

Fig. 32. 10th Street facade: central major entrance on this elevation. Note the original soffit fixtures with bowl shades. The lanterns flanking the door and handrail in center of stairs are later installations.

Fig. 33. 10th Street facade: similar to the Constitution Avenue facade showing detail of third floor windows between pilasters of central section with balustrade motif at sill level. Compare the finely detailed rustication on the wall plane at this level with the wall at lower portion of picture.

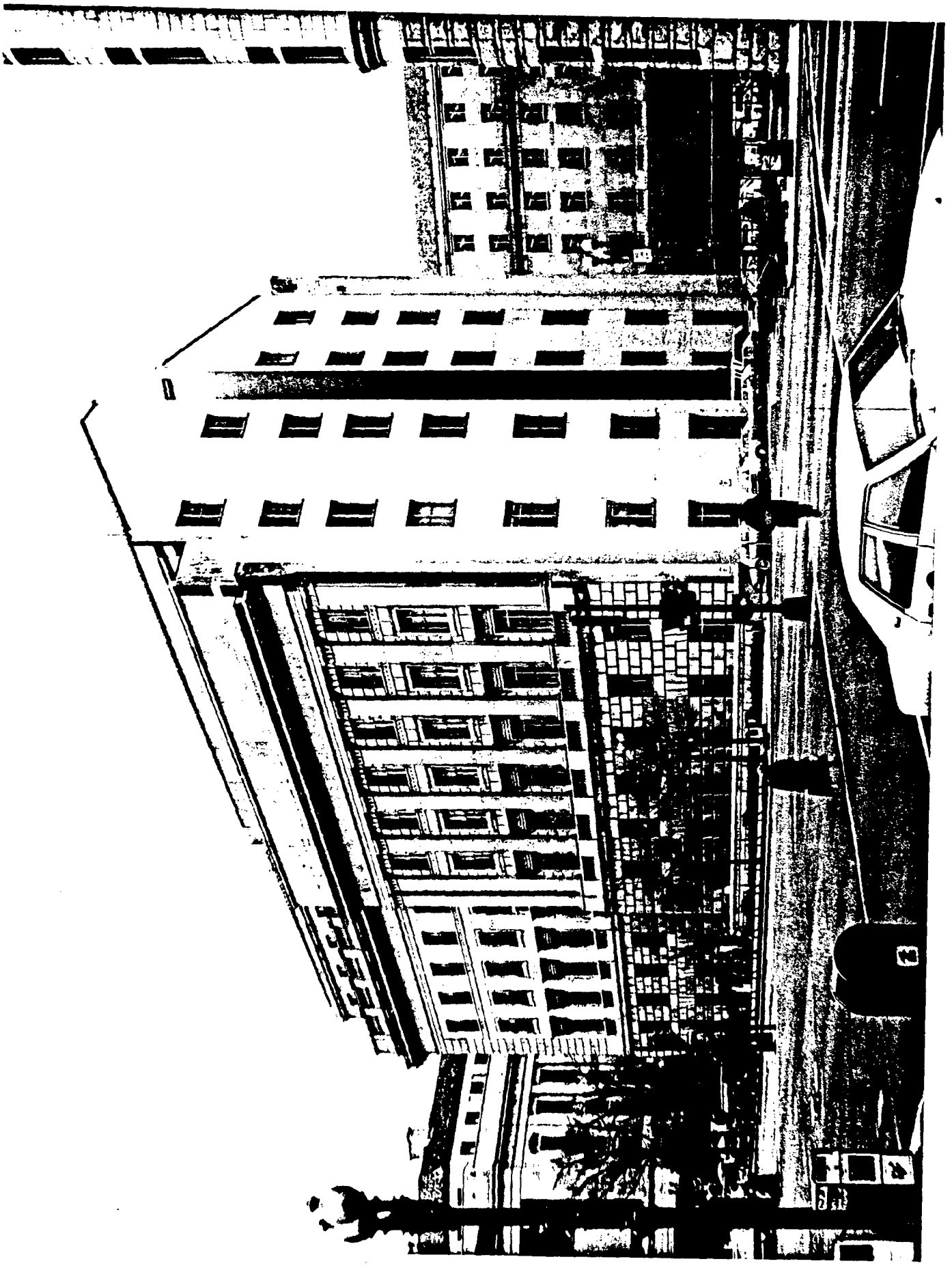


Fig. 34. Pennsylvania Avenue facade of IRS Building from the northwest showing brick end wall in foreground. (John Myers (12/79).

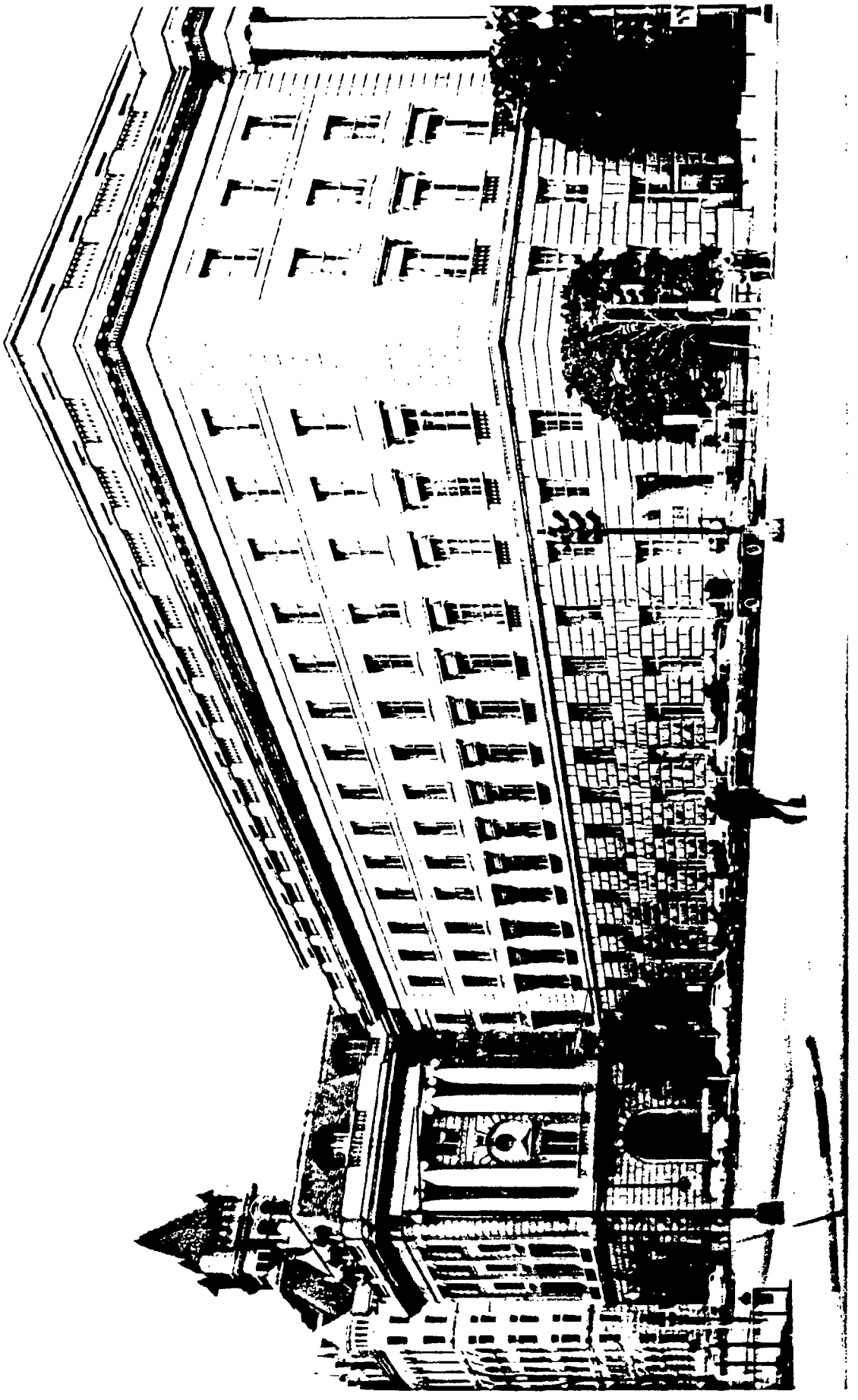


Fig. 35. 12th Street facade of the IRS Building from the southwest. John Myers (12/79).

Fig. 36.
Typical original doorway on the smaller side entrances on 10th and 12th Streets. Side lanterns and railing are later installations.

Fig. 37.
arched driveway entrance to service court on 12th Street facade with third floor windows above and pavilion projection to left.

Fig. 38.
Door entrances to building off the driveway with classical detailing flanked by small windows with iron grilles.

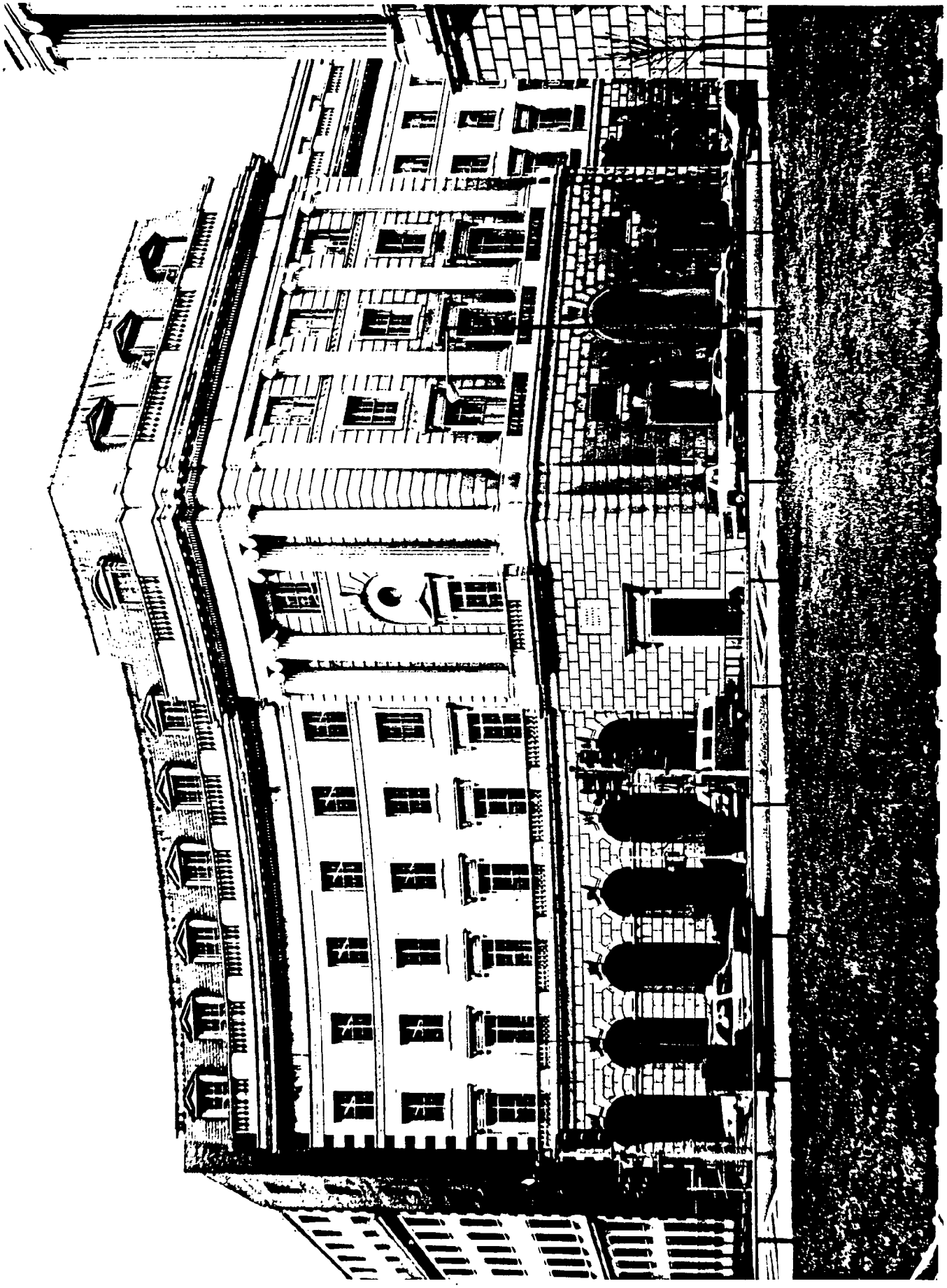


Fig. 39. 12th Street pavilion and circle facades of IRS Building from the northwest. John Myers (12/79).

Fig. 40.
12th Street pavilion, detail of south wall, third to seventh floor showing marble engaged columns and window and wall treatment.

Fig. 41.
Typical dormer window detail on 12th Street pavilion mansard sheathed with crimped copper and having arched pediment.

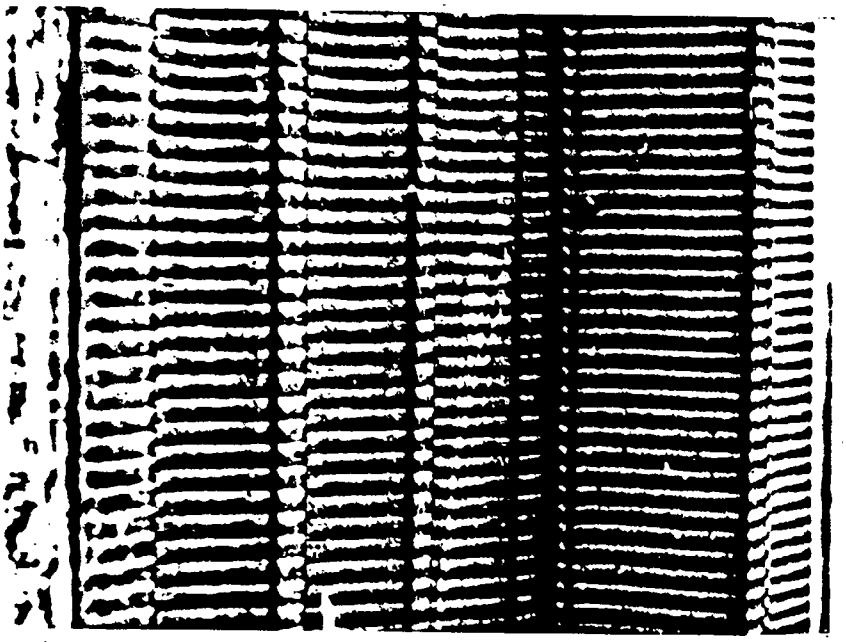


Fig. 42.
Close up detail of "crimped" or finely corrugated copper sheathing on the dormers.

Fig. 43.
Typical dormer window detail on 12th Street mansard, sheathed with crimped copper and having triangular pediment.

Fig. 44.
Brick wall at the northeast end of the Circle.

Fig. 45. Courtyard walls within the Extension of the IRS Building from the southwest. John Myers (12/79).

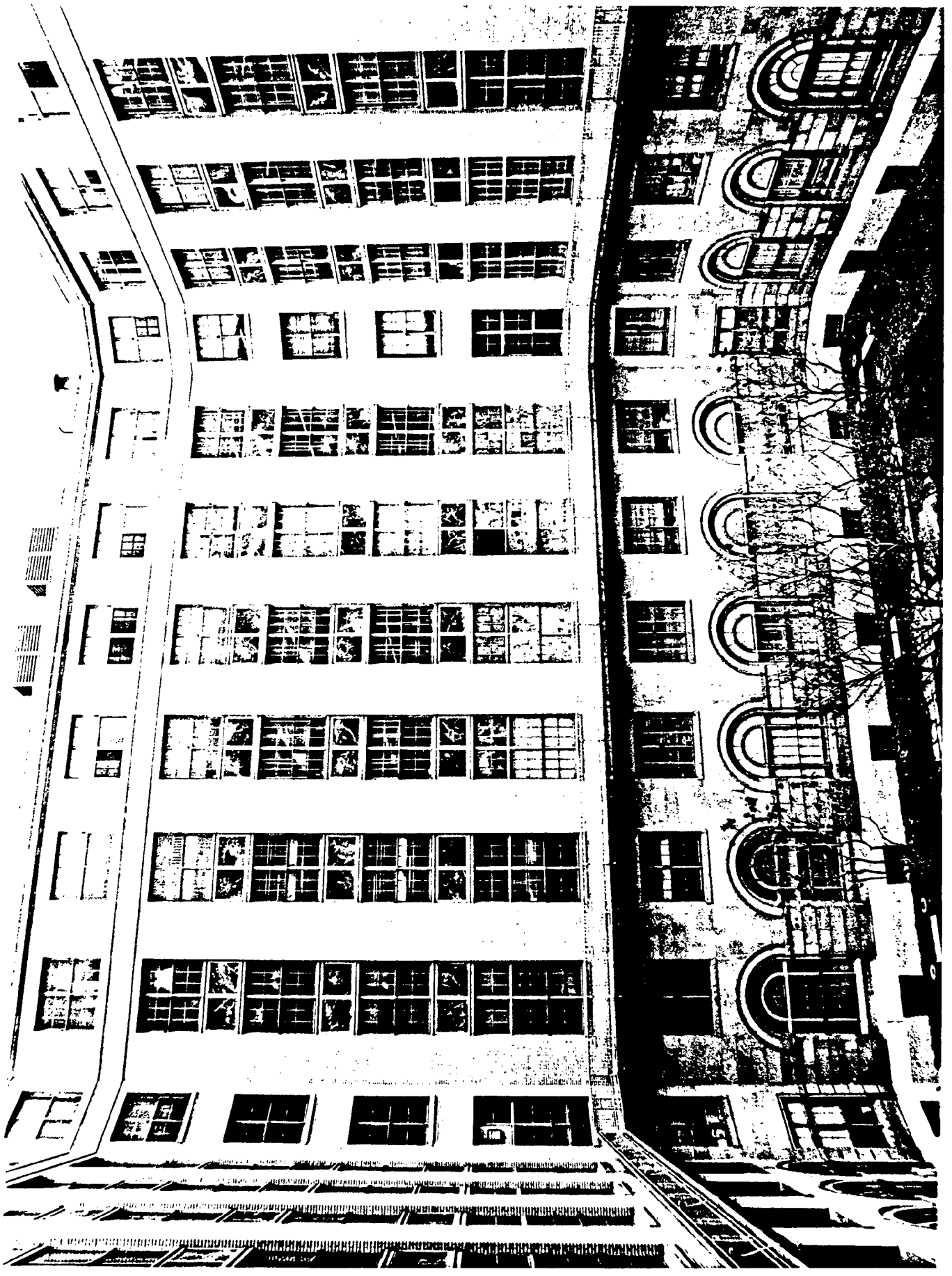


Fig. 46. Typical garden courtyard elevations.

Details of first floor window in courtyards.

Fig. 47 (upper left)
Typical original design.

Fig. 48 (lower left)
Typical window outside of stair with green marble transom.

Fig. 49 (lower right)
Typical window fitted with louvres for air conditioning system.

Fig. 50 (left)
First floor windows in courtyards. From left to right: lobby window, window at stair (landing occurs behind marble transom), and typical office window.

Fig. 51 (right)
Detail of small projecting balcony with wrought iron railing and supporting consoles at the third floor level of the courtyard elevations.

Fig. 52 (left)
Detail of marble spandrel panels in interior courtyards.

Fig. 53. Service court from southwest corner. Garage ramp is to the left and marquee over the loading platform is to the right.

Fig. 54. View of mission tile roof with elevator penthouse in the background.

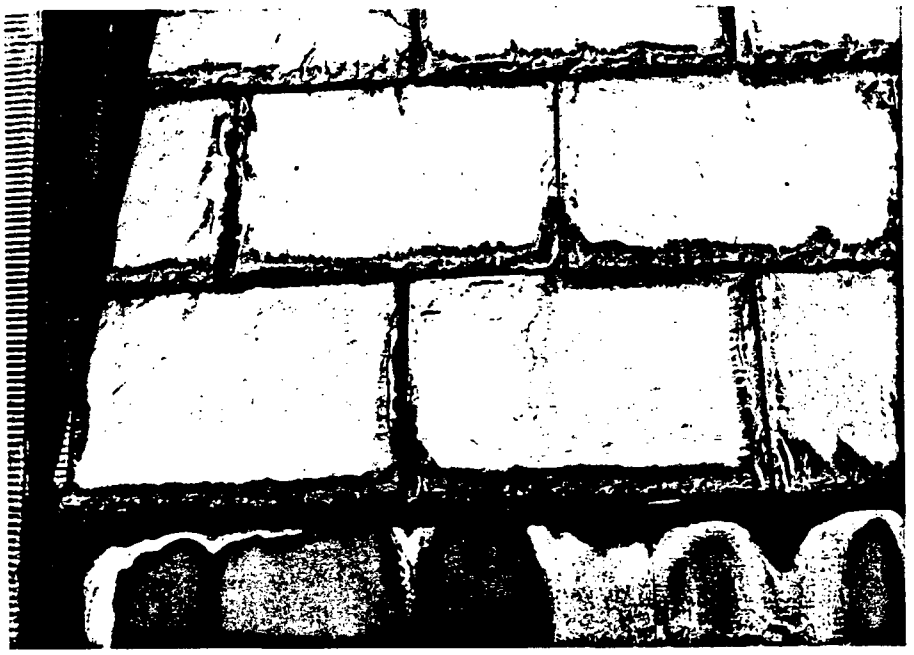


Fig. 55. Detail of slate roofing on mansard.

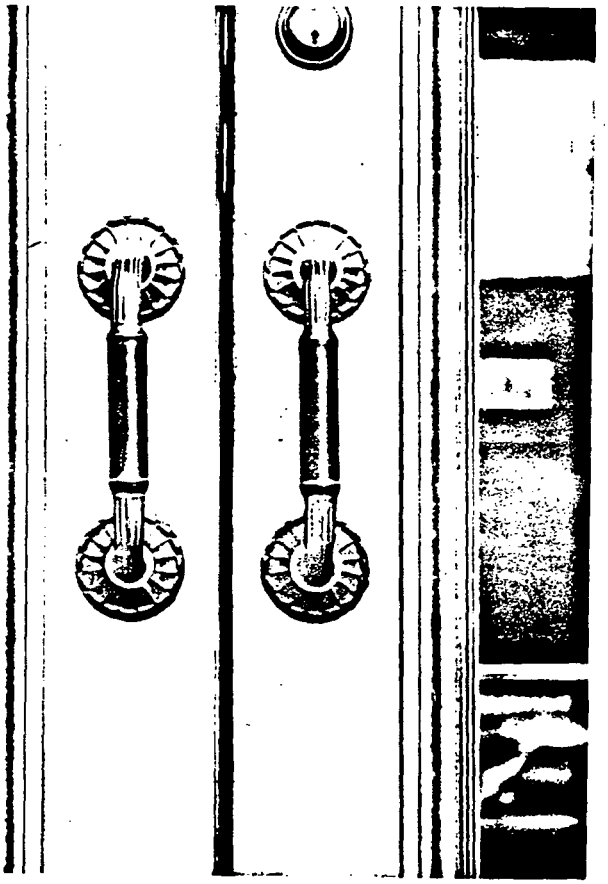


Fig. 56.
Typical detail of bronze handles on exterior doors.

Fig. 57.
Typical detail of bronze spandrels with classical details on exterior doors. Original vestibule lantern is partially visible through glass.

Fig. 58.
Detail of Constitution Avenue entrance doors and windows.

Fig. 59.
12th Street Service Court driveway gates.

Fig. 60
Detail of gates into 12th Street service court showing cast iron eagle on top of fluted gatepost.

Fig. 61
Detail of banding across the gates.

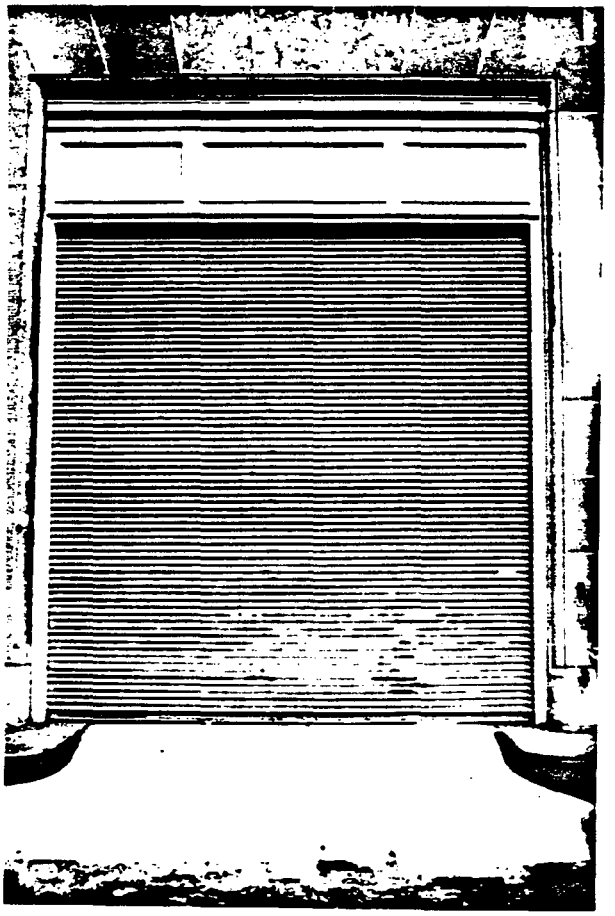


Fig. 62 (top left)
Original service court loading platform deck opening and doors.

Fig. 63 (top right)
Original rolling steel door in southeast corner of the service court.

Fig. 64 (left)
Typical original light fixture in soffit of entrance opening. Lanterns flanking the entrance which are used on all the street elevations, and as suspended fixtures in the 12th Street arcade, are later installations.

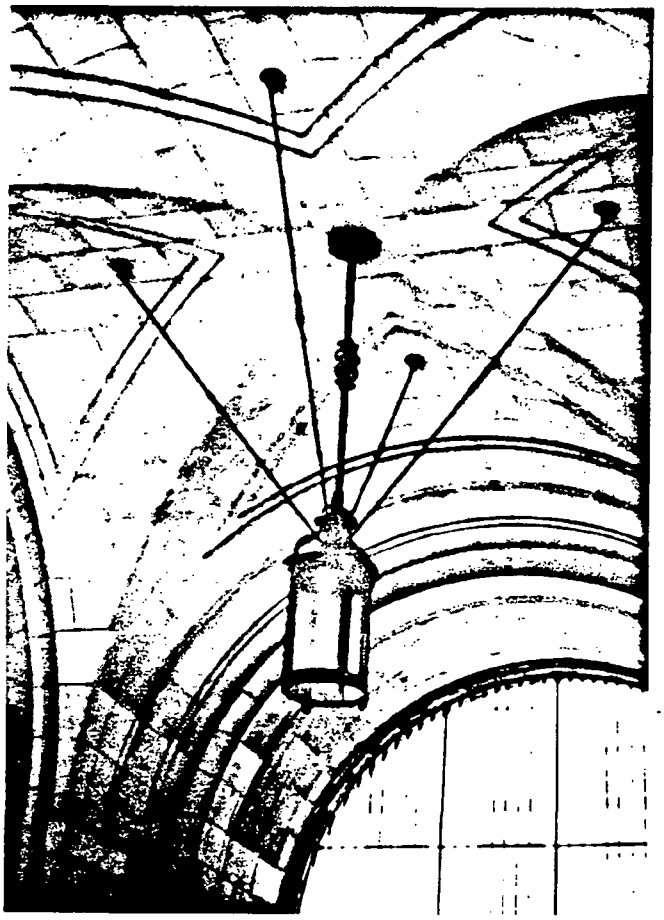


Fig. 65
Original bronze lantern in 12th Street driveway entrance to the service court with original bronze braces.

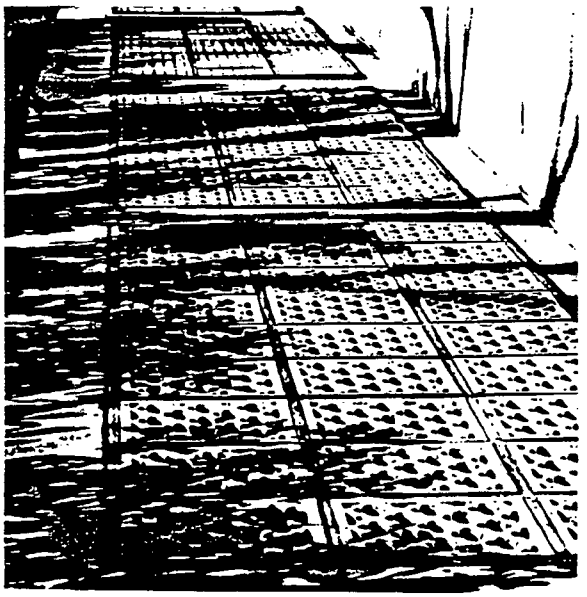
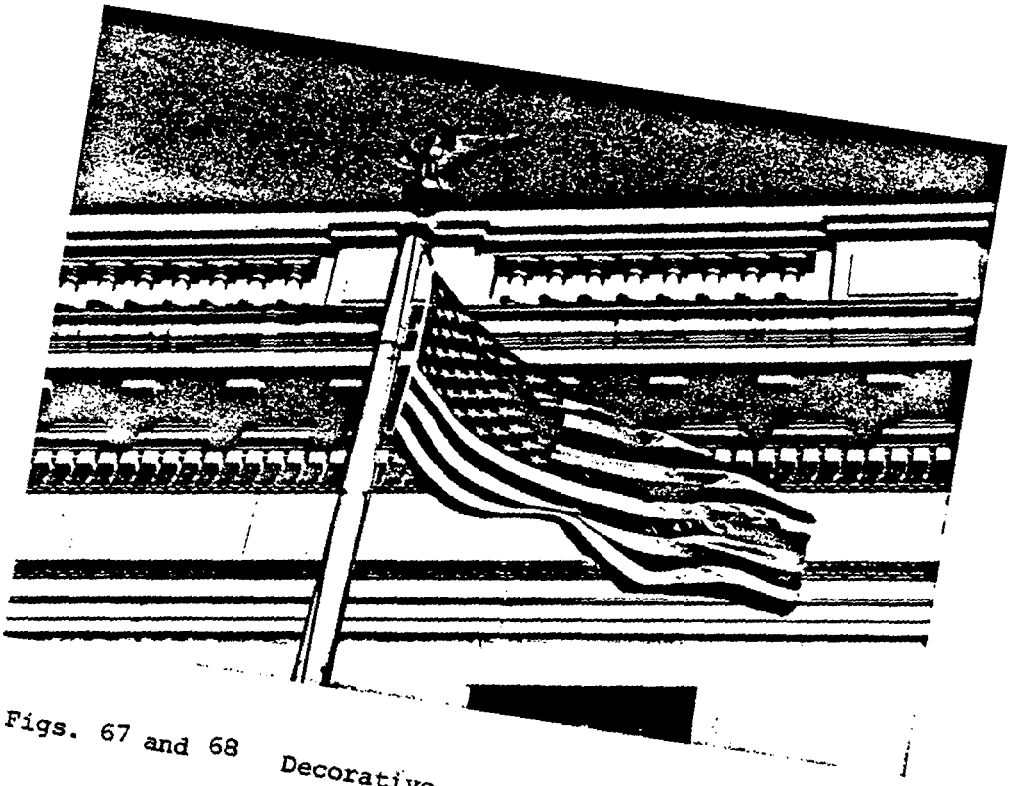


Fig. 66
Detail of original cast iron areaway grates at base of street facades.



Figs. 67 and 68 Decorative copper base and bronze eagle finial on flagpole to the east of the main stair on Constitution Avenue.

Fig. 69
Detail of paving in garden courtyards.

Fig. 70 (left)
View of garden courtyard showing fountain and benches of pink granite, and paving of buff and pink sandstone.

Fig. 71
Entrance ramp to underground garage, with granite block embankment wall topped with steel pipe rail. Loading platform and marquee are visible on the far wall.

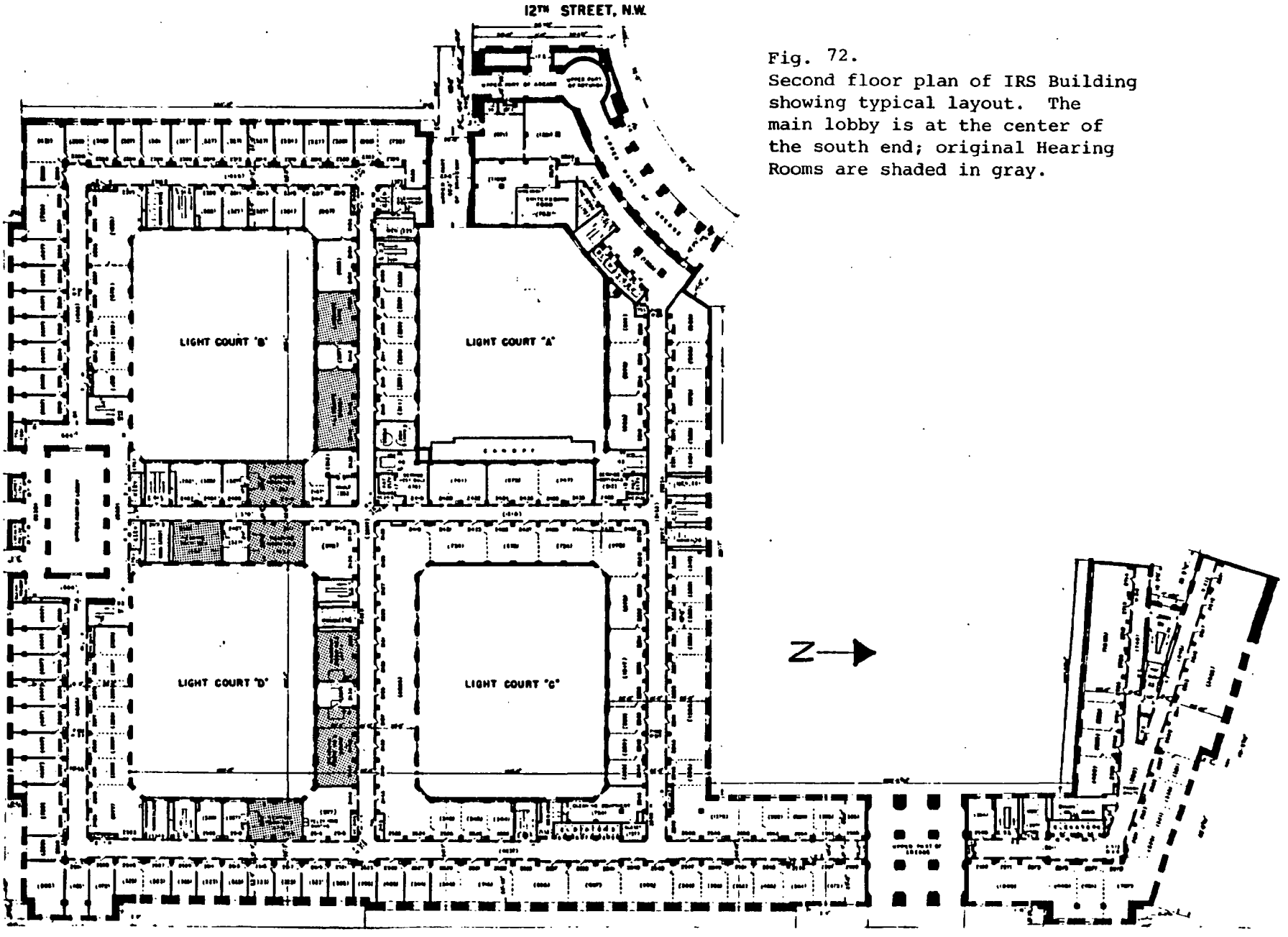


Fig. 72.
Second floor plan of IRS Building showing typical layout. The main lobby is at the center of the south end; original Hearing Rooms are shaded in gray.

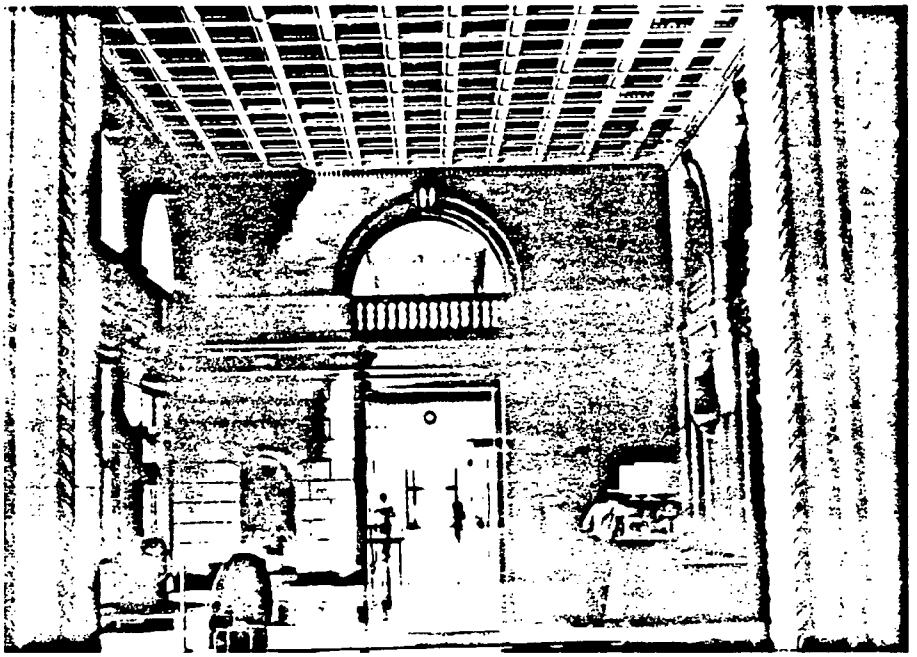


Fig. 73. Constitution Avenue lobby looking west.

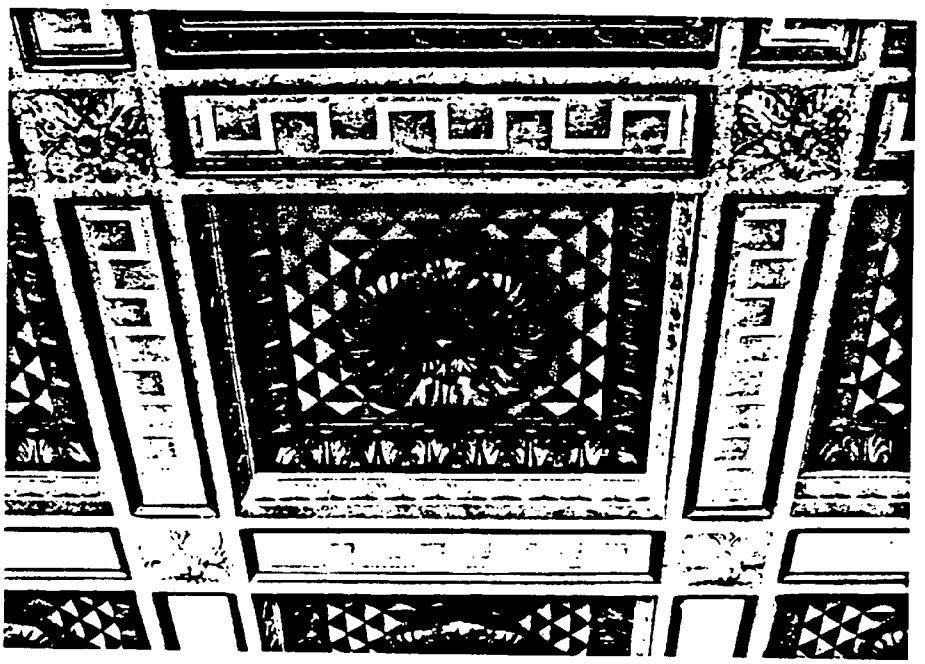


Fig. 74. Detail of coffered ceiling

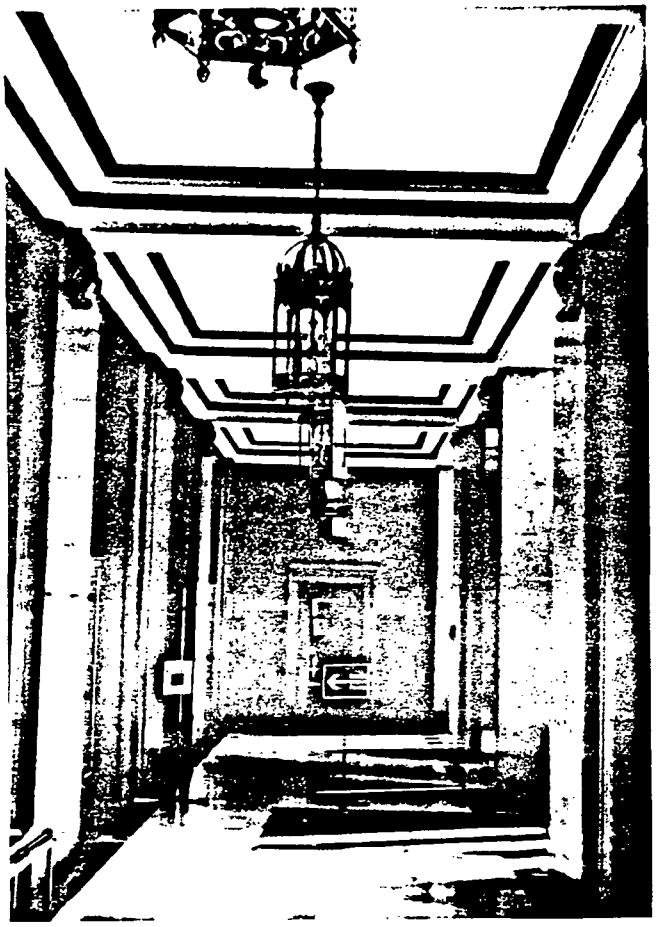


Fig. 75
Original bronze lanterns in first floor Constitution Avenue vestibule.

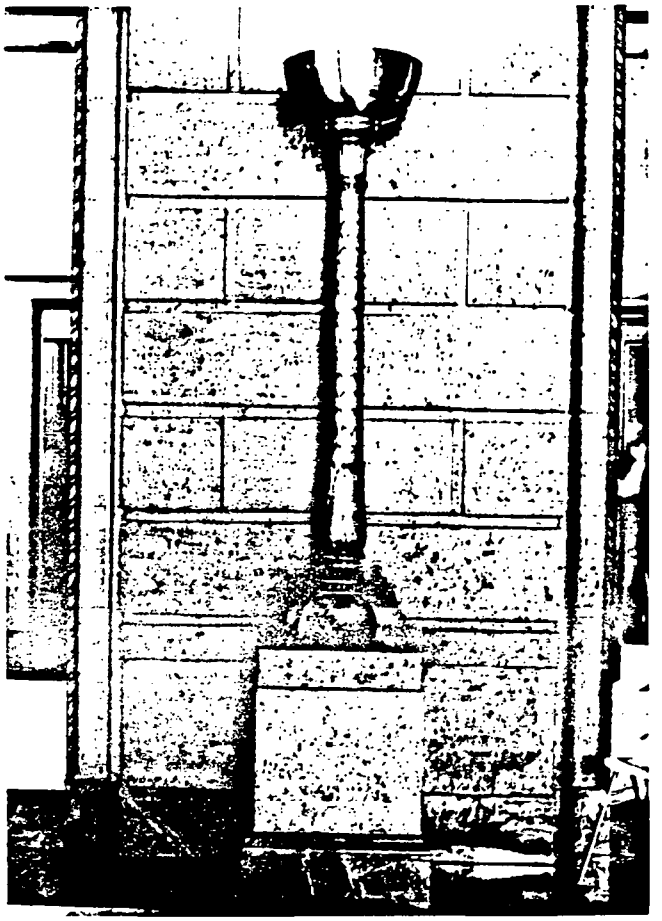


Fig. 76
Eight bronze lamps such as this light the main lobby. The original glass globes have been replaced with bronzed aluminum bowls.

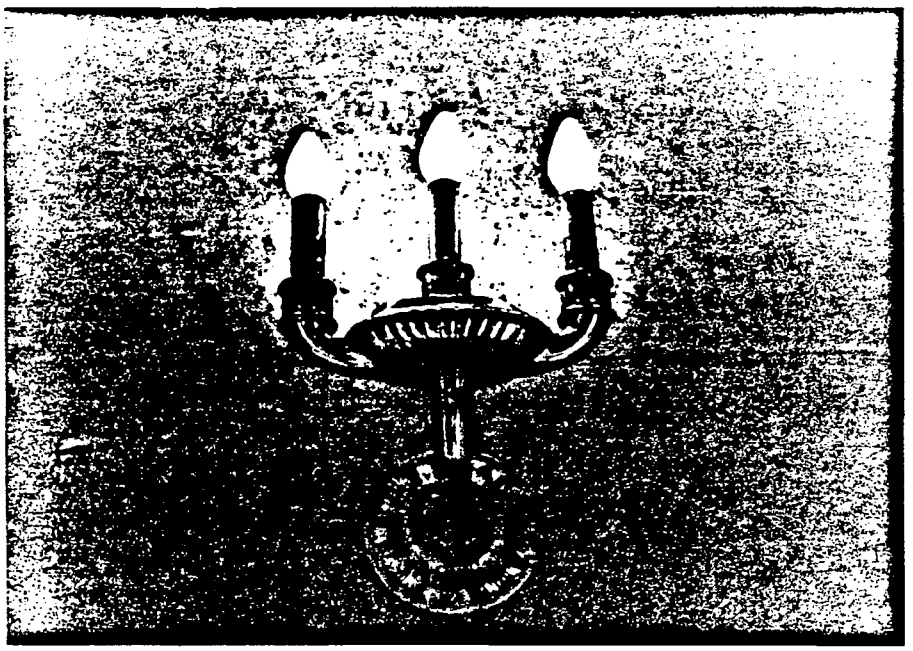


Fig. 77
Original bronze wall sconces in alcoves of Constitution Avenue vestibule.

Fig. 78
Detail of marble staircase to second floor corridor around the Constitution Avenue lobby.

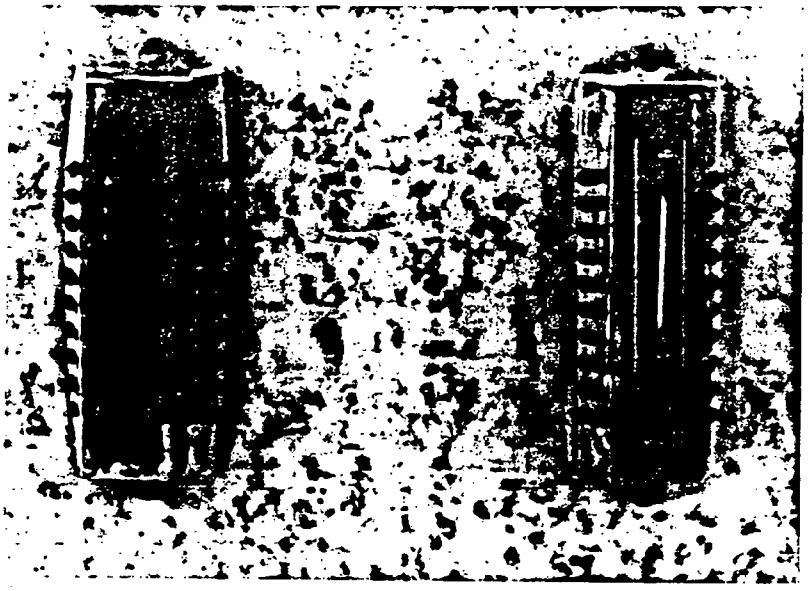


Fig. 79
Original bronze thermostats in Constitution Avenue vestibule.

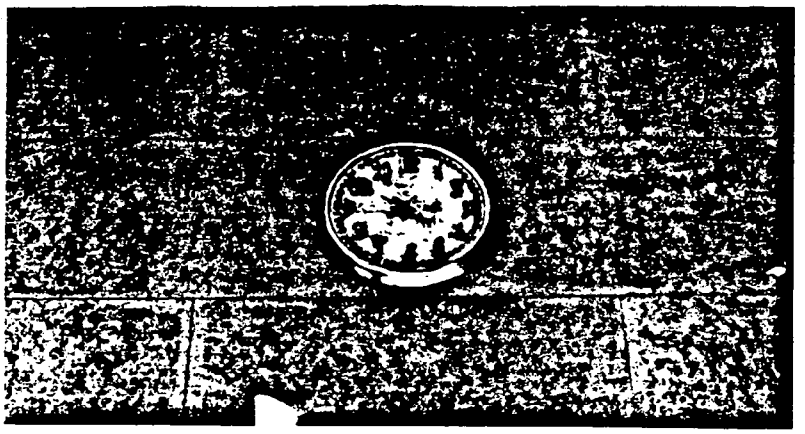
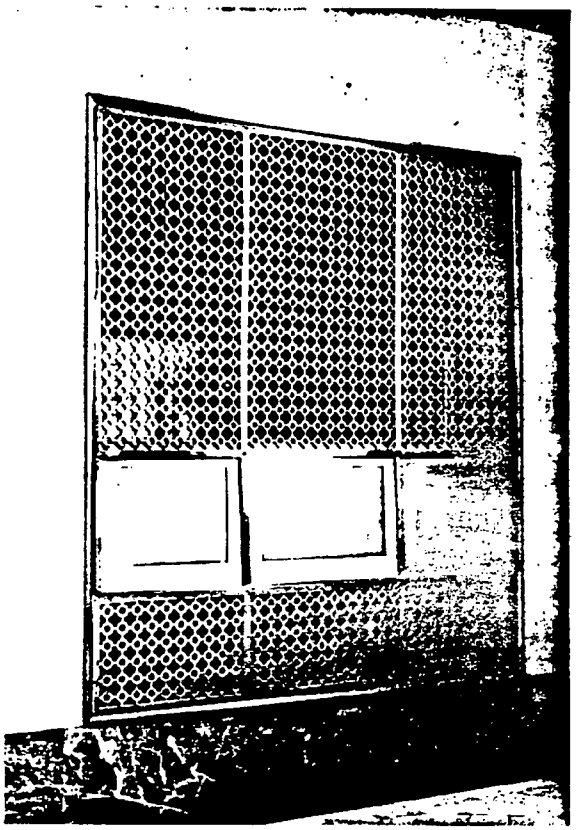
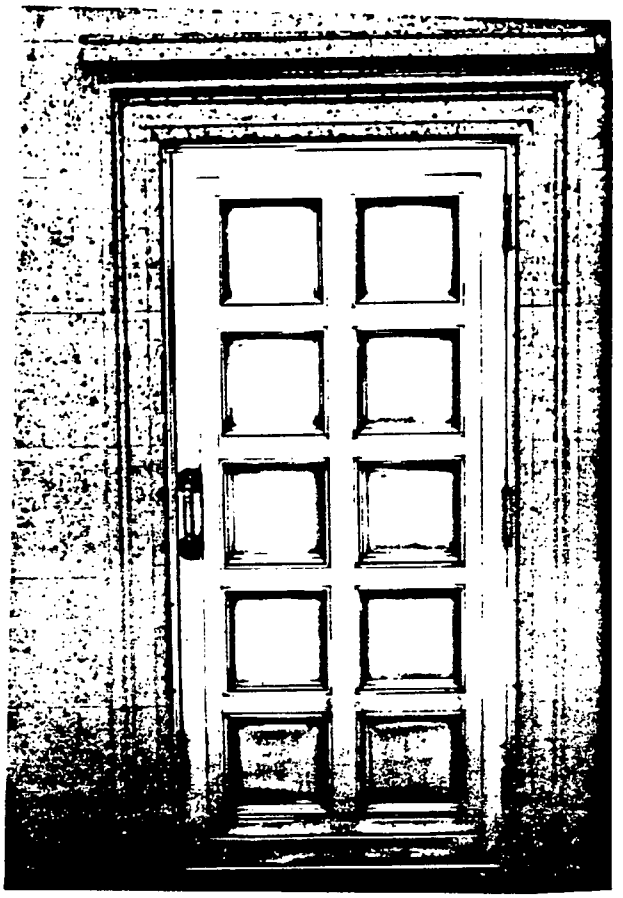


Fig. 80
Bronze clock in Constitution Avenue vestibule.





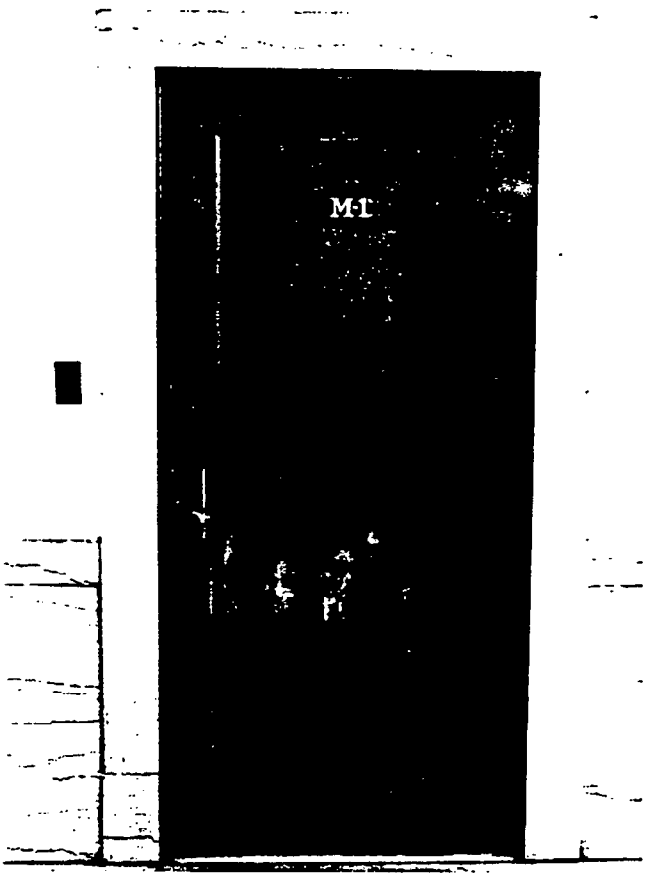


Fig. 81 (top left)
Typical bronze radiator grille, Constitution Avenue lobby.

Fig. 82 (top right)
Bronze door to garden court from corridor surrounding the Constitution Avenue lobby.

Fig. 83 (left)
Original grained metal door to closet with original grained finish.

Fig. 84
Typical ceiling cornice and column details in the 10th Street lobbies and the lobby on 12th Street circle.

Fig. 85. Free standing bronze directory, now located in the 10th Street lobby.

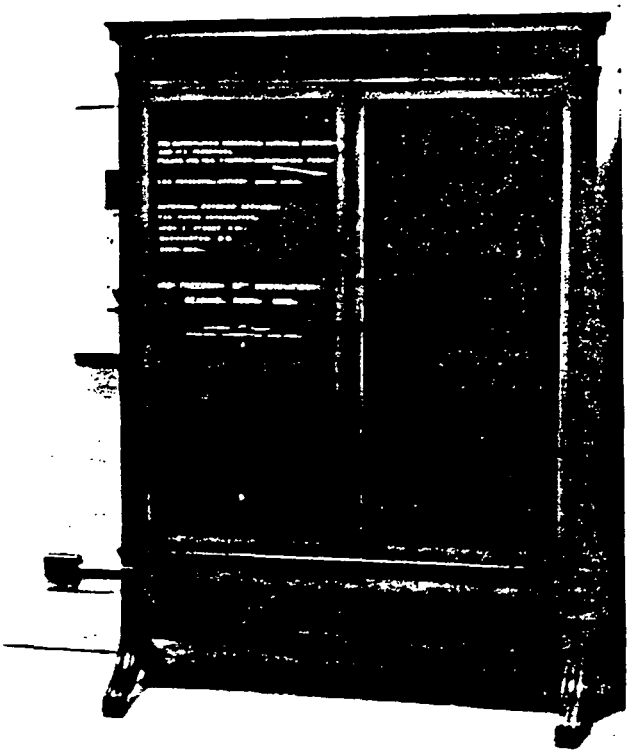


Fig. 86
Original bronze five-paneled elevator doors with new cabs and call buttons.

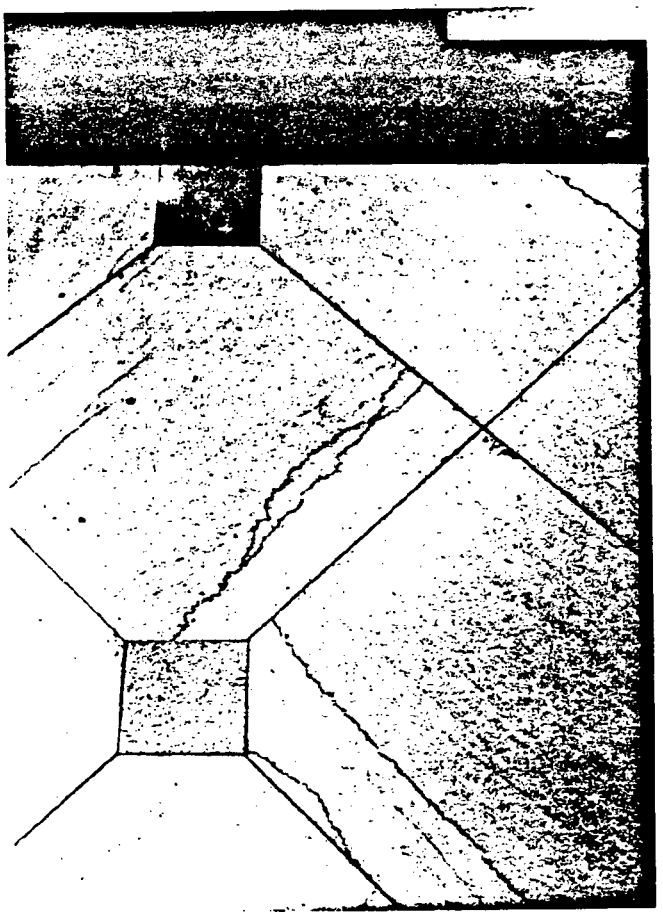


Fig. 87
Marble floor and baseboard, located in 10th Street lobbies and lobby on 12th Street circle.

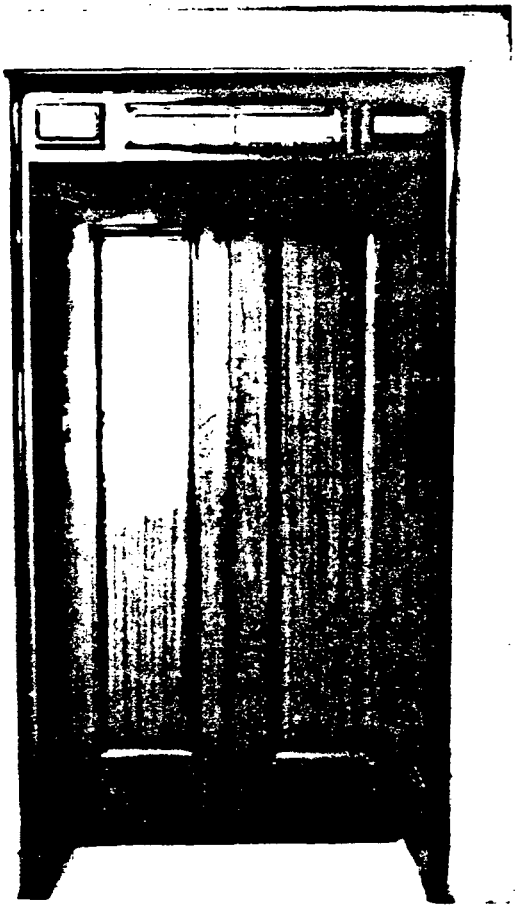


Fig. 88
Elevator lobby on second floor above the 12th Street lobby, northwest corner of the building: original metal doors and jambs grained to look like wood, and original direction indicators. All four elevators in this bank have the original cabs, fittings, and elevator doors with grained finishes.

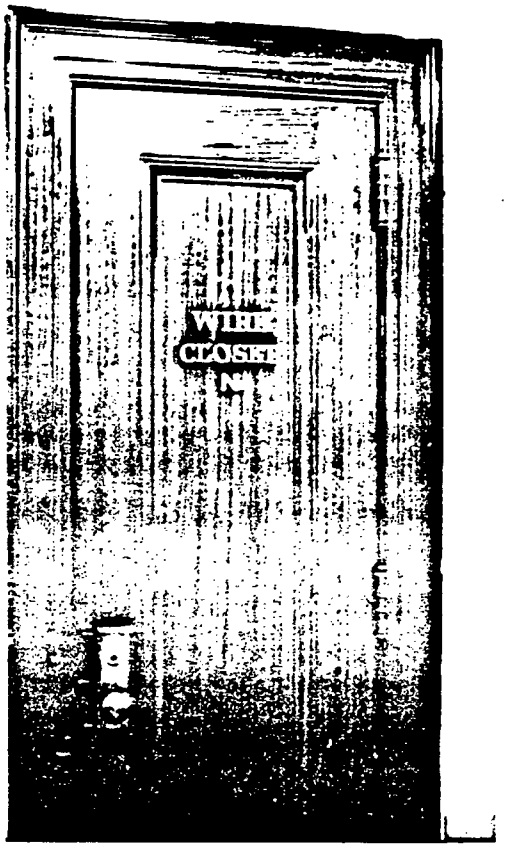
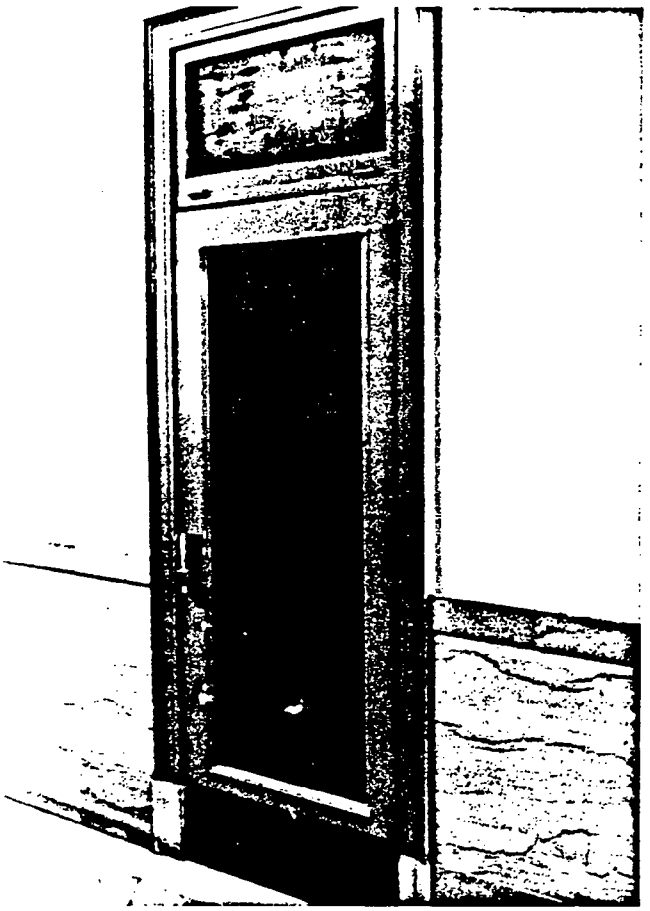
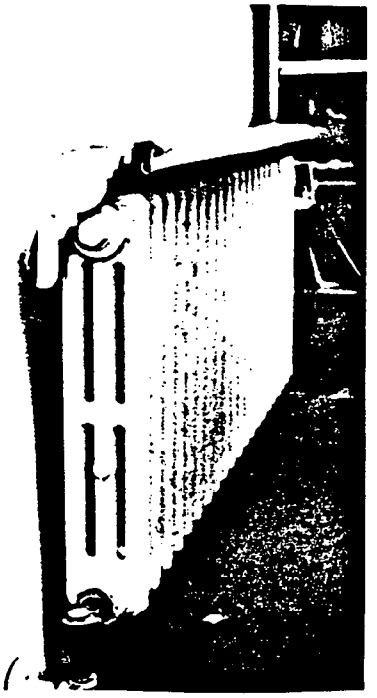


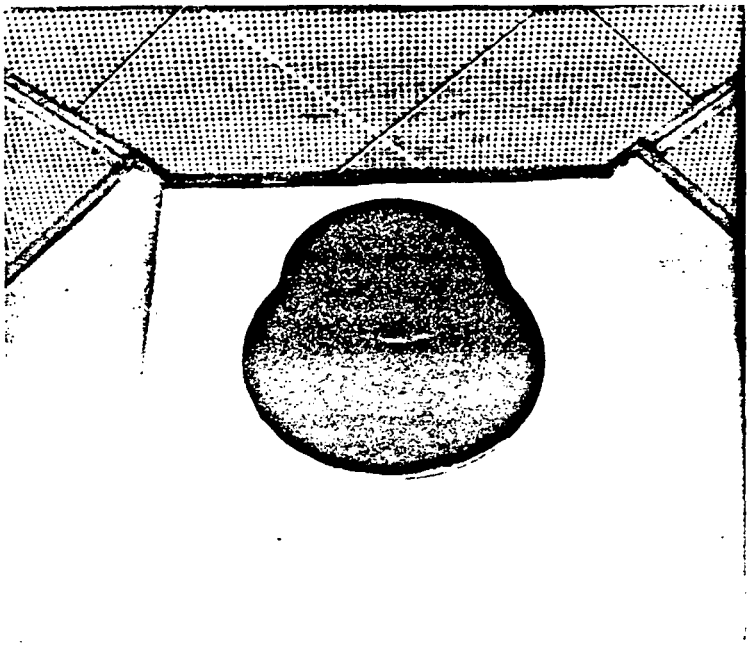
Fig. 89 (upper left)
Original solid panel metal door and metal frame grained to imitate walnut. The graining was typical of all metal doors and frames throughout the building, but most have been painted over.

Fig. 90 (lower left)
Original glass paneled door with glass paneled hinged transom above. This door is to a service closet on the first floor and thus was not altered at the time the air conditioning was installed.

Fig. 91 (lower right)
Typical original suspended radiator with metal hood.







Typical corridor details.

Fig. 92 (left)
Alarm bell.

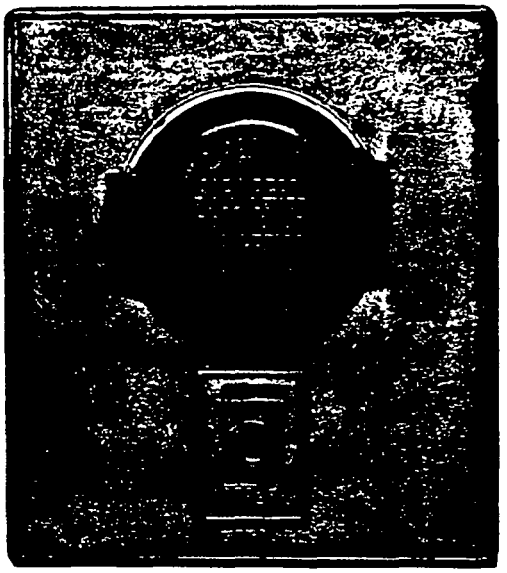


Fig. 93.
Combination fire alarm switch and watchman's station.

Fig. 94.
Fire extinguisher cabinet.

Fig. 95.
Originally illuminated, signs such as this one for a public telephone room were lowered when the acoustical tile ceilings were installed in the corridors.

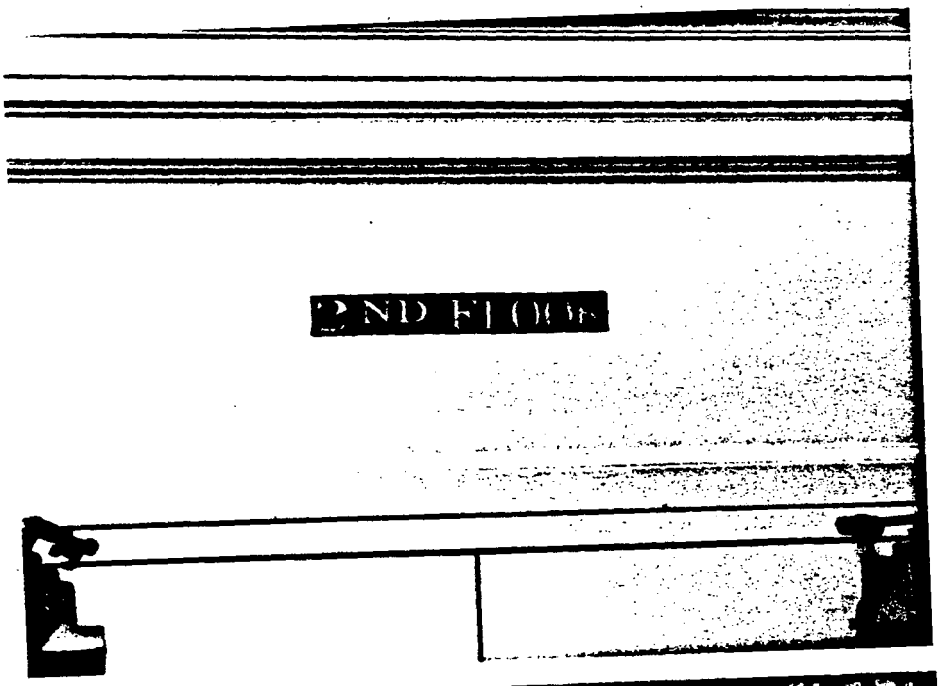


Fig. 96.
The stairway's original gold leaf lettering has been left unpainted at each landing.

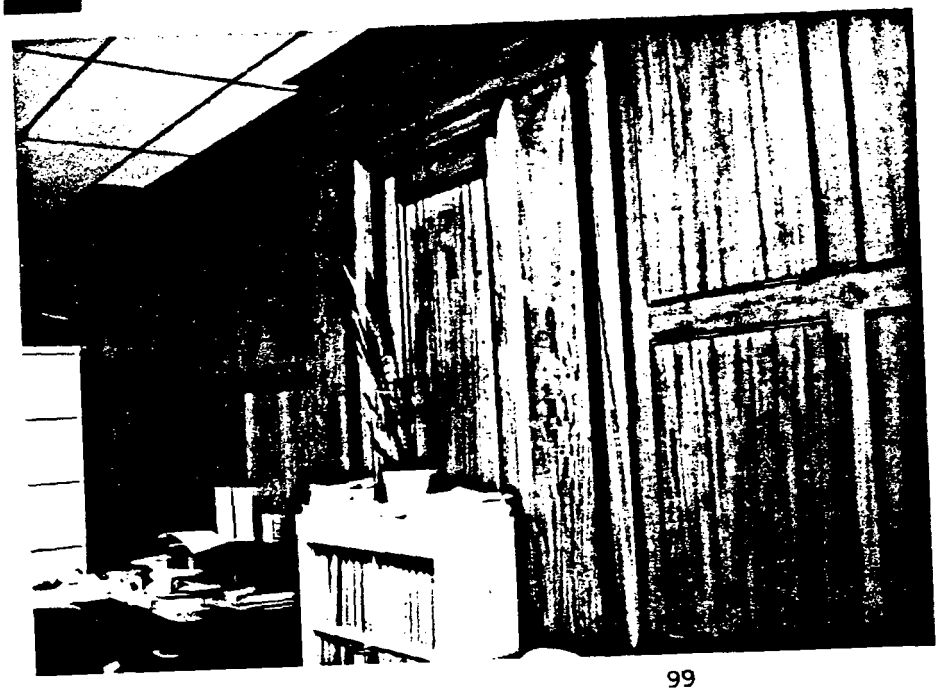


Fig. 97.
Detail of original wood paneling in typical Hearing Room. Suspended ceiling covers the original acoustical plaster ceiling, ornate cornices, embellished beams and plaster bracket.

Fig. 98.
Typical Hearing Room: example of woodwork-door originally behind Judges' Bench in this location.

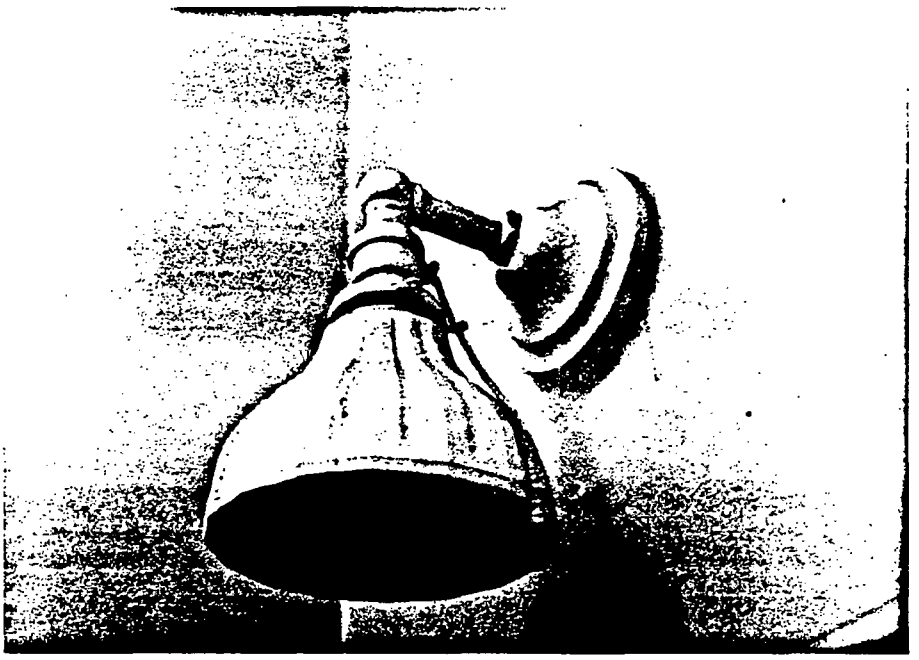


Fig. 99
Original light fixture and glass globe on stairway. Fixture and glass were not originally painted.

Fig. 100
Room 2403 - the only surviving example of the original metal partitions once used throughout the building. The partition extends above the suspended ceiling. The grained finish is original. The doorway at the right has an original door.

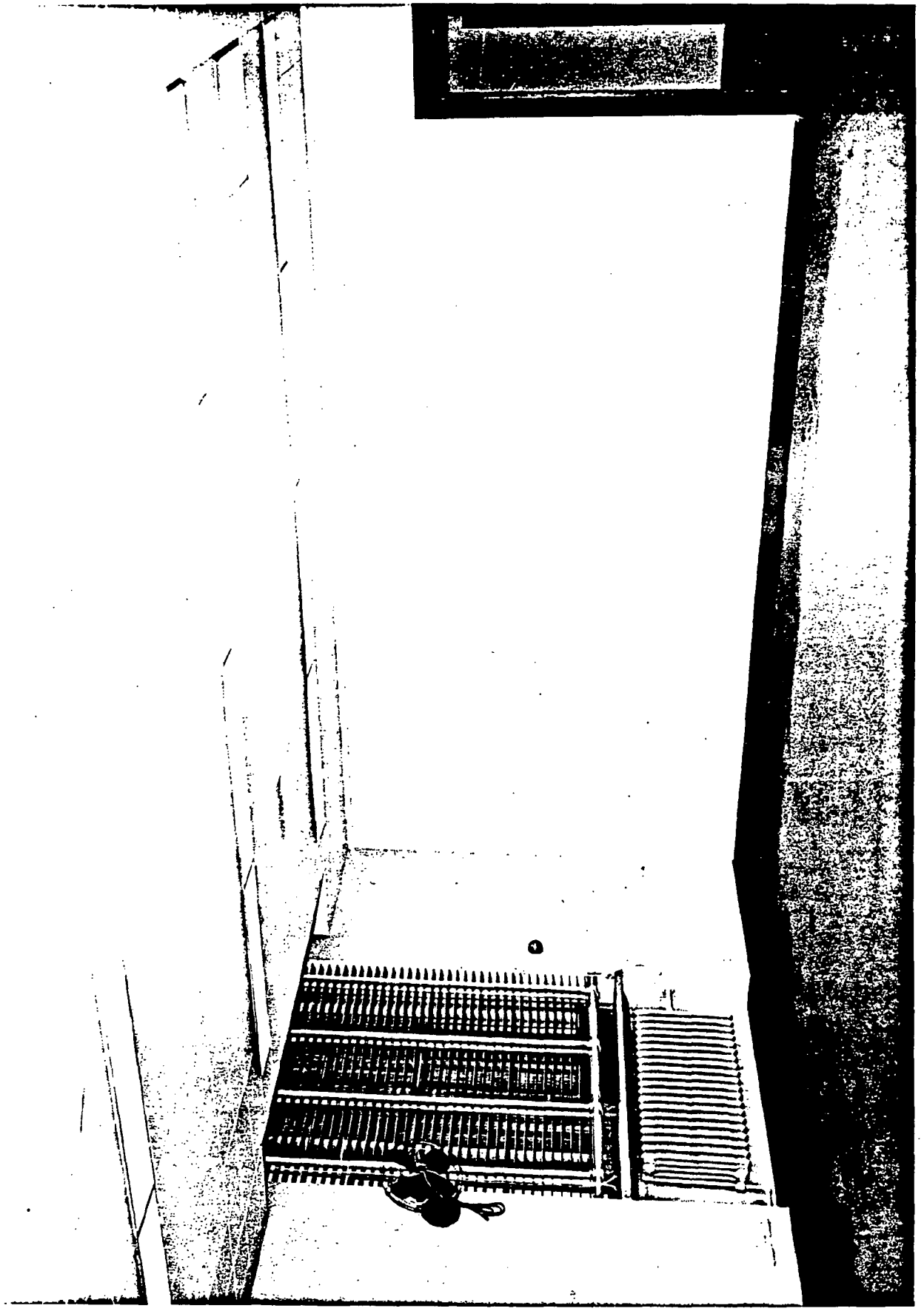


Fig. 101. Typical office interior c. 1964 immediately after new ceiling system was installed. Most window fans have been removed and all the floors have been covered with carpeting.

III
STATEMENT of SIGNIFICANCE

III. STATEMENT OF SIGNIFICANCE

The Internal Revenue Service Building constructed in Washington, D.C., between 1928 and 1936 was the first of the seven super block government office buildings to be completed in the Federal Triangle. This complex was the first Federally-funded urban redevelopment project of this magnitude and, as such, provided a model for American city planning in the 1930's, 40's and 50's. The design was based on Pierre L'Enfant's 1801 plan for Washington as reshaped by the ideals of the City Beautiful Movement expressed in the 1902 McMillan Plan. In grouping these major departmental office buildings in downtown Washington, the architects of the plan had a dual purpose: eradicating urban blight by replacing a delapidated neighborhood of 19th century commercial buildings with monumental structures which would also present a strong visual image of Washington as the Federal City.

Founded in 1792, the IRS had remained a minor branch of the Treasury Department until the enactment of the income tax in 1913. By the 1920's, IRS workers and records had overflowed into temporary buildings on the Mall, and similar conditions in other Federal agencies brought about the passage of the Public Buildings Act in 1926. This program proposed grouping federal office buildings in a triangular site between Pennsylvania Avenue and the Mall to facilitate government business transactions and restore the planned ceremonial character of the Avenue.

Most important, the new buildings were to be designed in a manner which would reflect "the dignity and power of the nation." Massive, monumental scale and classical architectural motifs were considered the key to this image. Materials, decorative details and major facade elements such as watertables and cornices were all to match, according to a "Unified Architectural Plan." The design of the streetscape and the complex as a whole superseded individual building design. The architectural scheme, however, had made a sharp distinction between the visual treatment of buildings occupied by heads of departments to be monumental in character and those of ancillary bureaus such as the IRS, which were to be clearly subordinate. Thus, the facades of the IRS as designed by Louis Simon, then head of the architectural section of the Office of the Supervising Architect, complemented the materials and detailing of the other buildings in the Federal Triangle. The northwest section of the building facing the grand Post Office Department Building across 12th Street formed the perimeter of the "Great Circle," modeled after the Place Vendôme in Paris. Otherwise, the only decorative details are marble colonnades and two sculptured eagles at the Constitution Avenue entrance.

Inside, the IRS Building was a model of practical office space with maximum flexibility and minimum maintenance, a divergence from earlier Federal building designs with their opulant public spaces. The primary entrances, lobbies and courtrooms

received some special finishes in the form of marble flooring, plaster cornices and custom-made light fixtures. However, the majority of the space was strictly utilitarian. Four hundred metal partitions were provided to subdivide large office spaces, and permanent walls were prepared without cornices or other details which might interfere with rearrangement of the partitions. Floors were covered with durable mastic coating, and radiators were hung on walls to permit easy cleaning.

Technological improvements incorporated within the design further aided the office functions. A system of 861 Telechron clocks was installed, the largest of its kind at that time, with bells and buzzers activated through a master clock and synchronized with standard time signals sent daily over the country's telegraph lines. More than 1400 private and public telephones were placed in the offices and corridors, and a pneumatic tube system sped mail through the central portions of each floor. Most of this equipment is still in place, though the central telephone switchboard and the pneumatic system are no longer operating.

When the Federal Triangle Master Plan was conceived, the IRS Building was to take up the entire block between 10th and 12th Street, Pennsylvania Avenue and the Mall. The primary facades were to front each of these thoroughfares, including one half of the Great Circle along 12th Street. The first phase of the building as completed in 1930, occupied the southern half of the site and was shaped in a plan of four contiguous rectangles in a square. The second phase, filling the northeast quarter of the block, was built between 1934 and 1937, largely in response to space needs of the Division of Distilled Spirits created by the end of Prohibition in 1933. Materials and architectural details matched those of the original wing, with many drawings simply traced from the earlier ones.

The western ends of the Extension corridors, like the north side of the original IRS Building were faced with common red brick in anticipation of the completion of the IRS. This was dependent upon the demolition of the late 19th century Post office Building, which, with its tall tower and additive, asymmetrical massing, was an anathema to the unity and purity of the Federal Triangle design. However, lack of funding and office space delayed the immediate completion of the IRS Building. By the 1960's, when proposals were once more made to complete the Federal Triangle, public opnion had undergone a complete change. The concept of large-scale demolition and re-design of blighted urban areas, which was introduced with the Federal Triangle plan, had been put into large scale practice in the U.S. during the 1950's and 60's under the Urban Renewal Program. Many of the devastated urban areas were, however, the most historic, and public demonstrations against the practice grew in size and power through the 1960's.

Ironically, the preservation movement in Washington took as its first issue the proposed demolition of the Old Post Office

Building for completion of the IRS Building. The fate of the two buildings was argued between 1964 and 1972, a critical period in determining the rights of private citizens to control the physical fabric of urban areas. In Washington, the fight was particularly significant, since private interests had repeatedly been forced to take second place behind political power and monumental planning schemes for a national image. The 1966 Historic Preservation Act provided the major legislative boost to support the grassroots, citizen's rights movement and a local group naming itself "Don't Tear It Down" was eventually able to save the old Pennsylvania Avenue landmark.

The stark end walls of the IRS Building facing the old Post Office thus have come to signify the struggle between two major elements in the urban history of 20th century America. The obvious unfinished character of the walls relate the vision of a grand design scheme put forward by Federal mandate in the 1920's as it interfaced with the localized interests and ideals of the preservation movement in the 1960's and 70's.

IV
INVENTORY of SIGNIFICANT ARCHITECTURAL SPACES and DETAILS

IV. INVENTORY OF SIGNIFICANT ARCHITECTURAL SPACES AND DETAILS

Due to the architectural significance and design quality of the spaces and finishes extant in the Internal Revenue Service Building, it is recommended that all historic fabric of special significance described in this inventory be preserved. In rehabilitating the building, it should be kept in mind that all new fabric installation should not in any way harm the original features of the building and that no irreparable changes or alterations should be made.

It is realized that all spaces and details of the building cannot feasibly be restored. Areas of the building have therefore been divided into three categories:

A. Areas to be completely restored. These areas of of special architectural significance and are recommended for complete restoration.

B. Areas which may be rehabilitated while retaining significant details. These spaces may be rehabilitated but the architecturally significant details should be retained and restored.

C. Areas which are suitable for renovation. These areas are not considered an integral part of the historic fabric of the building and are therefore suitable for renovation.

The inventory incorporating the three categories follows.

A. Areas To Be Completely Restored

1. Exterior

All the street elevations and the elevations of the courtyards, service courts and court within the "L" of the Extension are essentially unaltered and should be preserved in accordance with their original design and appearance. Following is a list of important elements which must be retained.

a. Street Elevations

--quatrefoil design iron grilles over the areaways
--granite entrance steps and platforms
--sandstone paving in the arcades
--all exterior masonry walls
--bronze doors and transoms
--steel windows
--iron window and door grilles
--bronze soffit light fixtures in entrances and 10th Street arcade
--bronze lantern in driveway
--flagpole to the east of main entrance
--roofing materials visible from any street level view
--copper sheathed dormer windows

b. Service Court

--red and buff brick paving under the existing macadam surface in Service Court
--granite ramp embankment wall and steel railing
--all exterior masonry walls
--buff brick guardhouse
--steel windows, doors and rolling doors
--iron gates and gate posts
--copper sheathed marquee above loading platform
--visible roofing materials

c. Courtyards

--granite entrance steps and platforms
--sandstone paving
--all exterior masonry walls
--steel windows and doors
--iron balcony railings
--marble fountains, benches and urns
--visible roofing materials

d. Brick Endwalls

--rough pointing and unadorned brick masonry
--steel windows

2. Interior (Keyed by section letters to Figures 93 and 94)

a. Constitution Avenue Lobby

The Constitution Avenue entrance vestibule and lobby was designed as the main reception area and originally was one of the most elaborately decorated spaces in the building. The following elements contribute to the significance of the space:

--three different flooring types in the central two-story atrium, the perimeter lobbies of the first floor and those of the second floor. Atrium flooring is a pattern of alternating circles and diamonds of Pearl Gray Tennessee marble set in squares of McMullen Light Gray marble and frames with strips of alternating Pearl Gray and McMullen Light Gray, trimmed with a border of Cardiff green marble. The side lobbies on the first floor are covered with a pattern of McMullen Light Gray hexagons with Pearl Gray squares between and strips of Cardiff Green between piers. Flooring of the second floor corridors is terrazzo with McMullen Light Gray borders.
--Cardiff green marble baseboards
--walls sheathed in buff Mankato stone
--second floor corridor walls sheathed in marble
--plaster cornice decorated with waterleaf and acroteria ornament
--coffered polychromed ceiling over the central area
--bronze entrance doors and windows
--stair and elevator doors sheathed in bronze with twelve molded panels
--wood grained metal closet doors with gilded numbers on second floor
--wood grained metal door frames to first floor offices of southeast and southwest corner of lobby
--eight brass torchieres mounted on Mankato stone and marble pedestals in the central lobby
--four bronze three-light wall sconces in recessed bays of entrance lobby
--ten bronze lanterns with six candle-type lights suspended in entrance lobby and the corridor above
--two bronze and copper clocks at each end of the first floor outer lobby. One original standard GE clock on west wall
--two original thermostats in outer lobby
--decorative bronze ventilator grilles in outer lobby
--one freestanding bronze directory case
--bronze panel of elevator call buttons in pier opposite elevator bank.

b. 10th Street Lobby

The 10th Street lobbies and lobby on the 12th Street Circle are slightly less elaborate than the Constitution Avenue lobby. The main lobby in the center of the 10th Street side of the building contains:

--marble flooring in the same pattern found in the side lobbies of the Constitution Avenue entrance, with Golden Dot Tennessee

marble borders.
--Golden Dot Tennessee baseboards
--McMullan Light Gray Tennessee marble walls set off with Doric pilasters
--bronze entrance doors, door frames and transoms
--plaster cornice with a frieze of triglyphs and discs. The cornice of the outer vestibule has a plain frieze, with guttae below and a dentil course above.
--plaster ceiling decorated with fluted border and decorated corner blocks
--elevator and toilet doors clad in panelled bronze
--three original bronze pendant fixtures in outer vestibule
--decorative bronze ventilator grilles

c. <u>10th Street Lobby (Extension)</u>

--marble flooring in the same pattern as the main 10th Street lobby
--McMullen Light Gray marble sheathing on the entire east and west walls; McMullen Light Gray marble wainscot with plaster above on the north and south walls
--bronze entrance doors, door frames and transoms
--plaster cornice with frieze decorated by discs and triglyphs on the east and west walls, guttae only on the north and south walls
--decorative bronze ventilator grilles in the entrance vestibule
--bronze directory and bulletin boards mounted on the north and south walls
--four elevators with panelled bronze doors and jambs
--bronze panel of elevator call buttons in wall facing elevator bank

d. <u>12th Street Lobby on the Circle</u>

--marble flooring in the same pattern found in the side lobbies of the Constitution Avenue entrance, with Golden Dot Tennessee marble borders
--Golden Dot Tennessee baseboards
--McMullen Light Gray Tennessee marble walls set off with Doric pilasters
--bronze entrance doors, door frames and transoms
--decorative bronze ventilator grilles
--plaster cornice with a frieze of triglyphs and discs. The cornice of the outer vestibule has a plain frieze, with guttae below and a dentil course above.
--plaster ceiling decorated with fluted border and decorated corner blocks
--elevator and toilet doors clad in panelled bronze
--original wood panelled elevator cabs with original operating equipment and fans
--bronze panel of elevator call buttons in wall facing elevator bank
--original brass elevator push plate and indicator lights
--two original bronze pendant fixtures in outer vestibule

e. Minor Vestibules and Lobbies

--flooring of McMullen Light Gray marble squares set on the diagonal within a border of Golden Dot Tennessee marble
--Golden Dot Tennessee marble baseboard
--McMullen Light Gray Tennessee marble walls
--plaster cornice with dentils
--bronze entrance doors, door frames and transoms
--decorative bronze ventilator grilles
--wall hung bronze directory cases

B. Areas Which May Be Rehabilitated While Retaining Significant Details

1. Hearing Rooms (Rooms 2108, 2118, 2132, 2140, 2403, 2409 and 2512)

Though all of the Hearing Rooms were altered by the installation of air conditioning and lowered tile ceilings, most of the original detailing is still in place.

--marble baseboards and plinth blocks for door frames
--wood paneling
--solid wood doors with metal frames grained to match woodwork
--plaster cornices, embellished beams and decorative plaster brackets
--acoustical plaster ceiling
--molded wood pedimented doorway behind the original location of the judge's bench
--Room 2403-2405 only: wood grained metal partition with doorway

2. Upper Floor Lobbies for Elevator Bank 1-4

--gray terrazzo flooring with marble borders
--marble baseboards
--plaster walls with marble wainscot and molded dentil cornice
--plaster ceiling with bays marked off in denticulated beams
--marble-sheathed pilasters with denticulated capitals subdividing the space with matching pilasters along the walls
--paneled metal elevator door frames and indicator panel

3. Upper Floor Lobbies for Elevator Bank 11-14

--gray terrazzo flooring with marble borders
--marble baseboards
--plaster walls with marble wainscot
--marble-sheathed pilasters
--metal paneled elevator doors, door frames and indicator panels; metal painted to imitate grained wood

4. Upper Floor Lobbies for Elevator Banks 5-9, 15-16 and 18-21

--gray terrazzo flooring with marble borders
--marble baseboards
--plaster walls with marble wainscot
--marble-sheathed pilasters

5. Service Elevators

--six foot metal wainscot with plaster walls above
--metal door surrounds

6. Office Corridors

Despite the permanent addition of dropped ceilings which contain the HVAC system the corridor spaces are generally intact and contain most of the original finishes and fixtures. These include:

--gray terrazzo flooring with marble borders
--marble thresholds and baseboards
--plaster walls
--marble wainscoting on the first floor only
--wood doors with one large panel below and a patterned glass window above
--transoms, brass hardware and molded metal surrounds. Surrounds in the 3000 corridor have had teak wood strips attached to the inside of the jamb. Original grained surface can be found in Room 7534.
--white porcelain drinking fountains
--watchman's boxes, alarms and fire extinguisher cabinets
--bronze signs for elevators, stairs, telephones.

7. Stairwells

--black slate flooring, stair treads and baseboards
--plaster walls and ceiling
--double metal doors with wire glass windows and transom
--iron balusters, railings, risers and stringers
--gold leaf lettering on transom panel

8. Offices

Most offices have been subdivided since originally constructed. Many finishes and fixtures have been "modernized," but the following significant elements remain:

--slate baseboards
--wood doors with solid lower panels, glass windows, transoms, brass hardware, transom operators and door closers
--radiators suspended under the windows
--(some) metal or wood windshield holders on window sill
--wall-mounted sash pole holders on or adjacent to window frames
--(Rooms 2123, 3123, 4123, 5123, and 6123) portions of terminal desk for original pneumatic tube system, entire terminal desk in Room 7123 (Fig. 95).
--(Rooms 1120, 3120, 3120, 4120, 5120, 6120, and 7120) original York Safe and Lock Company vaults, original decorated finish on the exterior and interior of vault door in Room 2120 (Figs. 96 and 97).

C. Areas Suitable For Renovation

These areas contain no significant architectural details.

1. Basement

2. Commissioner's Offices (Third Floor)

The Commissioner's offices and conference room has been completely remodeled and contains no significant original fixtures or finishes.

3. Tax Court Auditorium (Seventh Floor)

The Tax Court and related office spaces have been completely remodeled and contain no significant original fixtures or finishes

4. Cafeteria (Seventh Floor)

The cafeteria and kitchen spaces have been largely remodeled. Only the following original finishes remain:

--red quarry tile flooring and baseboards in areas behind counters of kitchen area
--3" x 3" yellow glazed tile on cafeteria piers

5. Toilets

All public and private toilets have been renovated and contain no original finishes or fixtures.

6. Attic

The original equipment for Elevator Bank 11-14 are in the attic.

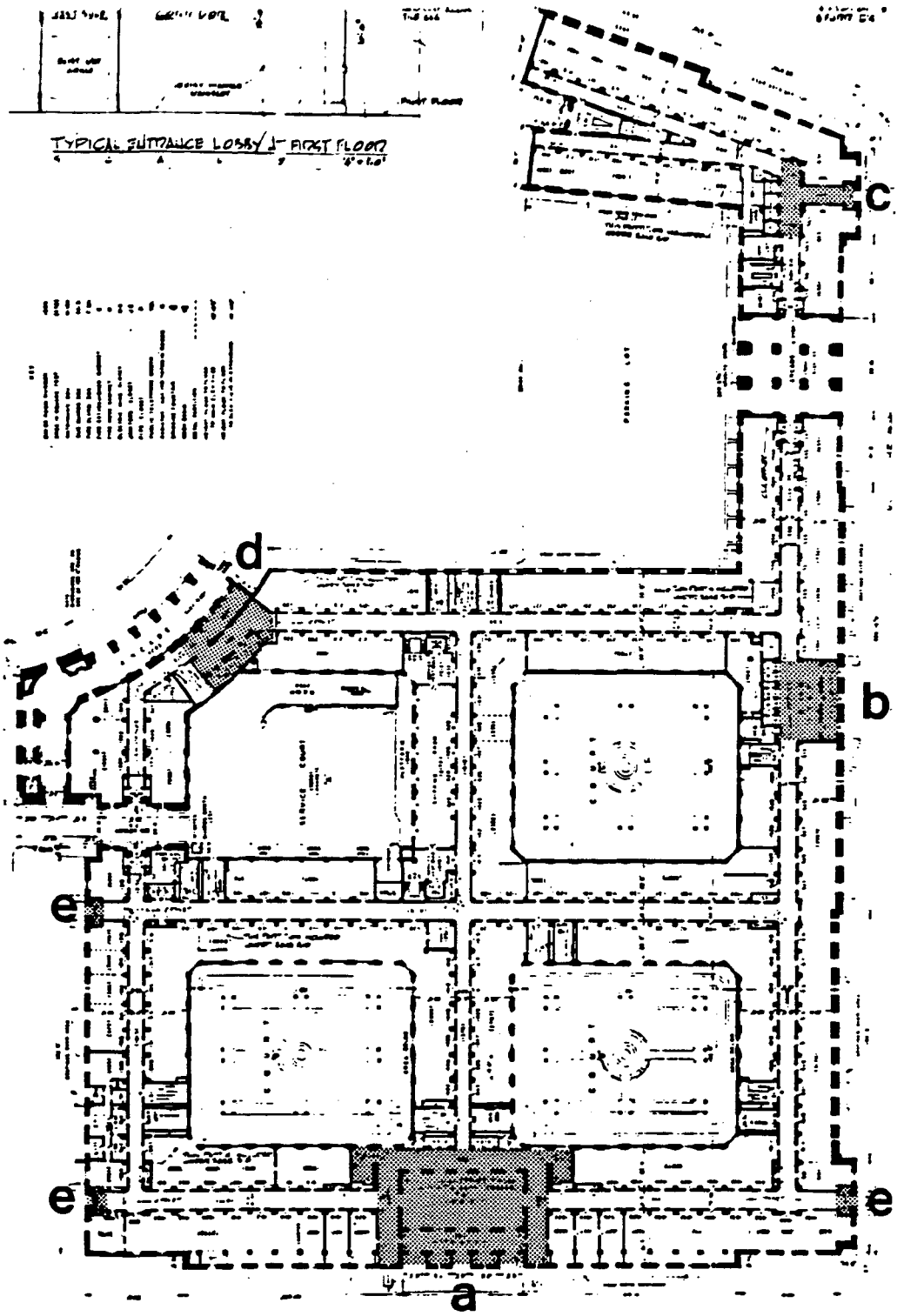


Fig. 102. IRS Building - First Floor

= Interior areas to be restored, letters keyed to subsections in text.

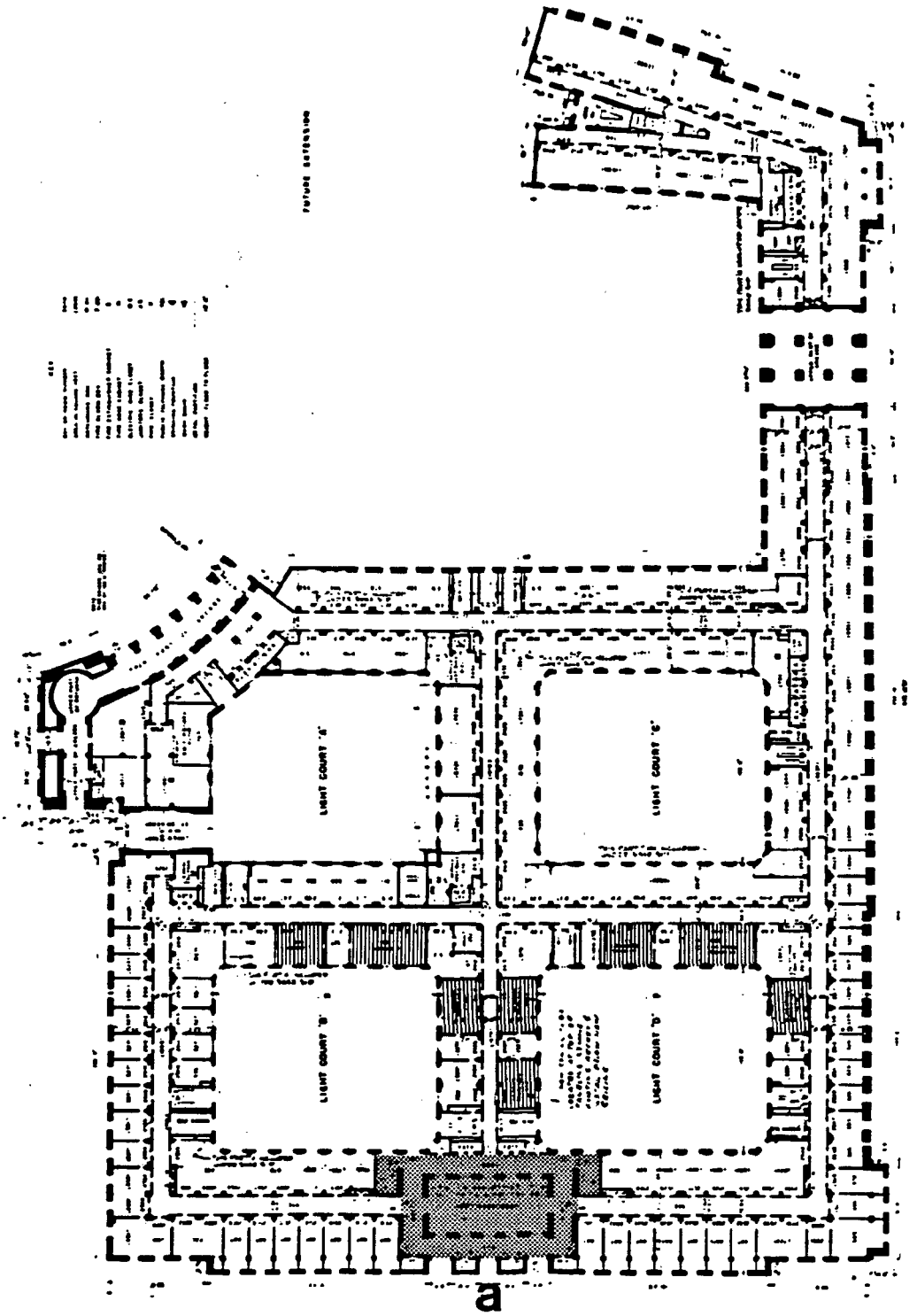
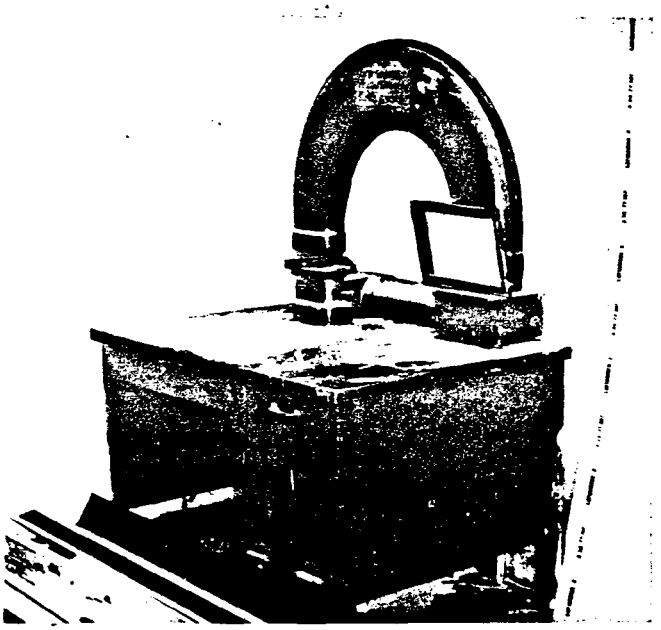


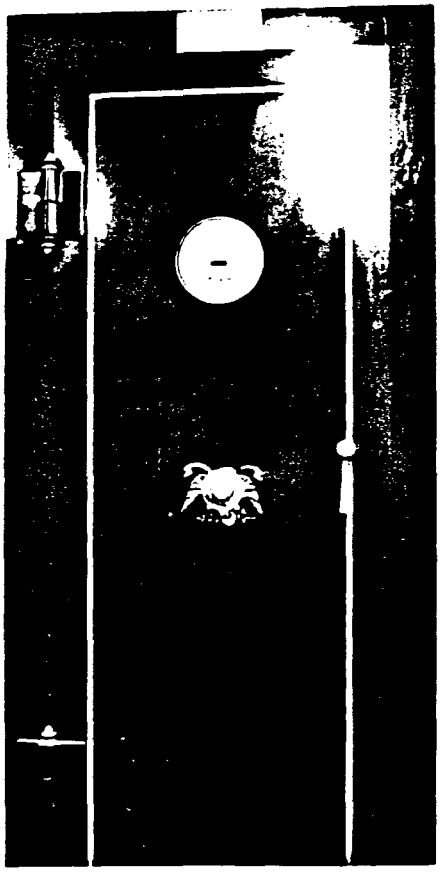
Fig. 103. IRS Building - Second Floor

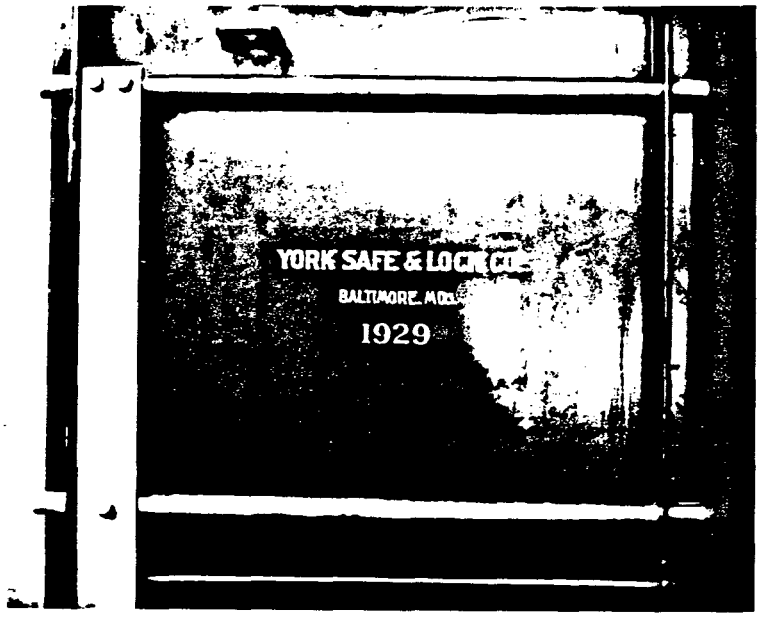
= Interior areas to be restored, letters keyed to subsections in text.

= Original Hearing Rooms

Fig. 104 (right)
Pneumatic tube station in Room 7123 is the only complete desk left in the building.







Figs. 105 and 106. Exterior and interior views of original vault door, Room 2120.

V
CRITERIA for RESTORATION and REUSE

V. CRITERIA FOR RESTORATION AND REUSE

The following are general recommendations for the restoration of the architectural integrity of designated spaces as well as criteria for the design and placement of new accommodations.

A. Exterior

All the exterior elevations of the Internal Revenue Service Building, including the courtyards and the unfinished end walls of the Circle and the Extension, are the most important of the building, relating the significance of the building's original design intent within the context of the Federal Triangle Plan and its eventual development. With the exception of the Service Court, few alterations have been carried out on the building's exterior. However, several actions are needed to preserve and restore the facades in accordance with their original appearance, and they are listed in the following material.

1. South Elevation - Constitution Avenue Facade

a. Masonry

--Seal and repoint the open joints of the granite stairs using the method recommended in Section X, B.

--Repoint deteriorated joints in the projecting moldings of the cornices, beltcourses, basecourse, as well as the columns, fifth floor window heads, balustrade and seventh floor wall surface using the method recommended in Section X, B.

--Remove staining on columns, pilasters, capitals, entablature and balustrades, and overall dirt layer using the field-tested cleaning method recommended in Section VII

--Remove electric birdproofing system, repair holes left in the masonry and install new bird deterrent system as recommended in Section X, B and P (see Fig.107).

--Reattach cracked stone fragment at the base of the column using the method recommended in Section X, B (See Fig.108).

b. Metals

--Remove all corrosion, clean, prime and paint the cast iron areaway grates using the method recommended in Section X, D.

--Replace missing areaway grates with new units fabricated to match the original quatrefoil design using the method recommended in Section X, D (see Fig.109).

--Install new bronze window grilles over the small windows which flank the entrance arches which replicate the original design using the method recommended in Section X, I (see Fig.110).

--Clean the bronze sign letters using the method recommended in Section X, I.

--Replace existing door hardware with replicas of the original bronze handle and push bars remaining on the doors into the Constitution Avenue lobby using the method recommended in Section X, I.

--Repair holes left in the door surfaces from earlier hardware removal. Clean and lacquer or oil the bronze doors, door frames, transom frames and sash, and soffit light fixtures using the method using the method recommended in Section X, I (see Fig.112).

--Reduce paint buildup, caulk and repaint steel windows using the method recommended in Section X, D.

c. Lighting Fixtures

--Restore globes on the soffit light fixtures to match the original 1930 design using the method recommended in Section X, N (see Fig.111).

d. Handicapped Access

--Provision of wheelchair access at this entrance is not recommended. If determined necessary ramps over the granite stairs should be of a non-ferrous material compatible with the appearance of the facade, and anchored in a manner which will not cause permanent alteration or damage to the masonry, either in the installation or use of the ramp.

Consideration, however, should be given to the installation of automatic door openers to assist the non wheelchair bound physically handicap.

e. Windows

--The existing sash are in good condition and must be retained as part of the exterior restoration. Action will be necessary, however, to reduce air infiltration, heat gain and loss.

--Exterior storm windows would detract from the original appearance of the structure and should not be considered. Interior storm windows should be designed to match the principal stile and rail elements of the window sash, and detailed to prevent condensation between the windows.

--Solar films installed on the interior of the window glass should not be of the very dark or shiny reflective types, which would significantly alter the exterior appearance of the structure.

f. Promenade

--Secure all loose flashing and replace the existing vinyl tile decking with clay quarry tiles using the method recommended in Section X, G.

2. East Elevation - 10th Street Facade

a. Masonry

--Seal and repoint the open joints of the granite stairs using the method recommended in Section X, B.

--Repoint deteriorated joints in the projecting moldings of the pediments, cornices, beltcourses, basecourse, as well as the fifth floor window heads, columns, balustrades, pediment roof surfaces and seventh floor wall surface using the method recommended in Section X, B.

--Remove staining on columns, pilasters, capitals, entablature, balustrades, pediment roof surfaces, seventh floor wall surface and overall dirt layer using the field-tested cleaning method recommended in Section VII.

--Remove the electric birdproofing system and repair the stonework using the method recommended in Section IX, B.

b. Metals

--Remove all corrosion, clean, prime and paint cast iron areaway grates using the method recommended in Section IX, D.

--Replace missing areaway grates with new units to match the original quatrefoil design using the method recommended in Section IX, D (see Fig.109).

--Clean the bronze sign letters using the method

recommended in Section IX, I.

--Replace existing door hardware with replicas of original bronze handle and push bars to match those on the inner doors using the method recommended in Section IX, I.

--Repair holes in the door surfaces left by the removal of earlier hardware. Clean and lacquer or oil bronze doors, door frames, transom frames and sash, and soffit light fixtures using the method recommended in Section X, I (see Fig.112).

--Reduce paint buildup, caulk and repaint steel windows using the method recommended in Section X, D.

c. Lighting Fixtures

--Restore globes on the soffit light fixtures to match the original design using the method recommended in Section X, N (see Fig.111).

d. Handicapped Access

--Ramps over the granite stairs should be of a non-ferrous material compatible with the appearance of the facade, and anchored in a manner which will not cause permanent damage to the masonry stairs or walls, either in the installation or use of the ramp.

e. Windows

--The existing sash are original, in good condition, and must be retained as part of the exterior restoration.

--Exterior storm windows would detract from the original appearance of the structure and should not be considered. Interior storm windows should be designed to match the principal stile and rail elements of the window sash, and detailed to prevent condensation.

--Solar films applied to the interior of the window glazing should not be the dark or highly reflective types which would alter the exterior appearance of the structure.

f. Portico Balconies

--Secure all loose flashing and replace the existing vinyl tile decking with clay quarry tiles using the method recommended in Section X, G.

3. North Elevation - Pennsylvania Avenue Facade

a. Masonry

--Repoint deteriorated joints in the projecting moldings of the cornices, beltcourses, basecourse, as well as the fifth floor window heads, balustrade, parapet wall and seventh floor wall surfaces using the methods recommended in Section X, B.

--Remove staining on pilasters, capitals, entablature and balustrade, and overall dirt layer using field-tested cleaning method recommended in Section VII.

--Remove the electric bird proofing system and repair the stonework using the method recommended in Section X, B.

b. Metals

--Remove all corrosion, clean, prime and paint cast iron areaway grates using the method recommended in Section X, D.

--Replace missing areaway grates with new units to match the original quatrefoil design using the method recommended in Section X. D (see Fig.109).

--Reduce paint buildup, caulk and repaint steel windows using the method recommended in Section X, D.

c. Windows

--The existing sash are original, in good condition and must be retained.

--Exterior storm windows would detract from the original appearance of the structure and should not be considered. Interior storm windows should be designed to match the principal stile and rail elements of the window sash, and detailed to prevent condensation between the windows.

--Solar films applied to the interior of the window glazing should not be the dark or shiny reflective types which would alter the exterior appearance of the structure.

4. West Elevation - 12th Street Facade (North Side of Driveway)

a. Masonry

--Seal and point the open joints of the granite stair using the method recommended in Section X, B.

--Repoint deteriorated joints in the projecting moldings of the cornices, beltcourses, basecourse, as well as the fifth floor window heads, engaged columns, balustrades and first floor level wall surface using the method recommended in Section X, B.

--Remove staining on entablature and balustrade, and overall dirt layer using field-tested cleaning method recommended in Section VII.

--Remove the electric birdproofing system and repair stonework using the method recommended in Section X, B.

b. Metals

--Remove all corrosion, clean, prime and paint cast iron areaway grates using the method recommended in Section X, D.

--Replace missing areaway grates with new units to match the original quatrefoil design using the method recommended in Section X, D (see Fig.109).

--Clean the bronze sign letters using the method recommended in Section X, I.

--Replace existing door hardware with replicas of original bronze handle and push bars to match those on the inner doors using the method recommended in Section X, I.

--Repair holes in the door surfaces left by the removal of earlier hardware. Clean and lacquer or oil bronze doors, door frames, transom frames and sash, and soffit light fixtures using the method recommended in Section X, I (see Fig.112).

--Reduce paint buildup, caulk and repaint steel windows using the method recommended in Section X, D.

c. Windows

--The existing sash are original, in good condition and must be retained.

--Exterior storm windows would detract from the original appearance of the structure and should not be considered. Interior storm windows should be designed to match the principal stile and rail elements of the

window sash and detailed to prevent condensation between the windows.

--Solar films applied to the interior of the window glazing should not be the dark or shiny reflective types which would alter the exterior appearance of the structure.

5. Pavilion, South Elevation and 12th Street Facade

a. Masonry

--Repoint deteriorated joints in the projecting moldings of the cornices, beltcourses, basecourse, as well as the fifth floor window heads, engaged columns, balustrade and first floor level wall surface using the method recommended in Section X, B.

--Erect bollards and chains or other protective barrier to prevent further damage to the first floor wall adjacent to the street curb.

--Remove staining on entablature, balustrade and overall dirt layer using the field-tested cleaning method recommended in Section VII.

--Remove the electrified birdproofing system and repair the stonework using the method recommended in Section X, B.

b. Metals

--Reduce paint buildup, caulk and repaint steel windows using the method recommended in Section X, D.

c. Third Floor Balcony

--Secure all loose flashing and replace the existing vinyl tile decking with clay quarry tiles using the method recommended in Section X, G.

6. Northwest Elevation - The Circle Facade and Arcade

a. Masonry

--Repoint deteriorated joints in the projecting moldings of the cornices, beltcourses, basecourse, as well as the first floor piers and wall surfaces using the method recommended in Section X, B.

--Remove staining on entablature, balustrades and arcade wall surfaces, and overall dirt layer using a field-tested cleaning method recommended in Section VII.

--Remove the electric birdproofing system and repair the stonework using the method recommended in Section X, B.

b. Metals

--Replace existing door hardware with replicas of original bronze handle and push bars to match those on the inner doors using the method recommended in Section X, I.

--Repair holes in the door surface left by the removal of earlier hardware. Clean and lacquer or oil bronze doors, door frames, transom frames and sash, and soffit light fixtures using the method recommended in Section X, I (see Fig.112).

--Clean the bronze sign letters using the method recommended in Section X, I.

--Reduce paint buildup, caulk, and repaint steel windows using the method recommended in Section X, D.

c. Lighting Fixtures

--Replace existing pendant lanterns with globe fixtures to match the original 1934 design using the method recommended in Section X, N (see Fig.118).

d. Windows

--The existing sash are original, in good condition and must be retained as part of the restoration.

--Exterior storm windows would detract from the original appearance of the structure and should not be considered. Interior storm windows should be designed to match the principal stile and rail elements of the window sash, and detailed to prevent condensation between the windows.

--Solar films applied to the interior of the window glazing should not be the dark or shiny reflective types which would alter the exterior appearance of the structure.

e. Third Floor Balconies

--Secure all loose flashing and replace the existing vinyl tile decking with clay quarry tiles using the method recommended in Section X, G.

7. North and South Elevation, Driveway

a. Masonry

--Seal and repoint the open joints of the granite stairs and sidewalk using the method recommended in Section X, B.

--Remove overall dirt layer using the field-tested cleaning method recommended in Section VII.

b. Metals

--Install missing grilles at windows and doors to match the existing original grilles using the method recommended in Section X, D (see Fig.114).

--Remove all corrsion, clean, prime and paint iron window and transom grilles using the method recommended in Section X, D.

--Reduce paint buildup, caulk and repaint steel windows and doors using the method recommended in Section X, D.

--Clean bronze lantern, pendant rod, ceiling plate and bracing rods using the method recommended in Section X, I.

8. Northeast Elevation of the Circle

This wall is evidence of both the intent of the original Federal Triangle plan and the eventual developments which will prevent its being completed. In this, it is an historically significant element of the building and the neighboring area neighborhood should not be permanently altered. Any additions should be in accordance with the Secretary of the Interior's "Standards for Rehabilitation," No. 8: "Wherever possible, new additions or alterations to structures shall be done in such a manner that if they were to be removed in the future, the essential form and integrity of the original structure would be unimpaired;" and No. 7: "Contemporary design for additions to existing structures or landscaping shall not be discouraged if such design is compatible with the size, scale, color, material and character of the neighborhood, structures or its environment."

a. Masonry

--Repoint deteriorated joints in the brick wall using the method recommended in Section X, A.

--Clean overall dirt layer on the brick wall and stone sills using the field-tested method recommended in Section VII.

b. Metals

--Reduce paint buildup, caulk and repaint steel windows using the method recommended in Section X, D.

9. West Elevation, the Extension (For significance, see No. 8 on previous page)

a. Masonry

--Repoint deteriorated joints in the brick wall using the method recommended in Section X, A.

--Clean and repaint brick wall using the method recommended in Section X, A.

b. Metals

--Reduce paint buildup, caulk and repaint steel windows using the method recommended in Section X, D.

10. North Court Elevation - Extension Courtyard

a. Masonry

--Seal and repoint the open joints of the granite stairs using the method recommended in Section X, B.

--Remove caulking material in vertical joints of granite basecourse and repoint using the method recommended in Section X, B.

--Repoint deteriorated joints in the wall surfaces, and in the projecting moldings of the cornices, beltcourses and sixth floor balcony using the method recommended in Section X, B.

--Remove staining on balconies and overall dirt layer on all the wall surfaces using field-tested cleaning method recommended in Section VII.

b. Metals

--Remove all corrosion, clean, prime and paint wrought iron railings at courtyard entrances and balconies using the method recommended in Section X, D.

--Reduce paint build-up, caulk and repaint steel windows and doors using the method recommended in Section X, D.

--Restore grates over areaways to match the original quatrefoil design using the method recommended in Section X, D.

c. Landscaping

--Restore landscaping to courtyard based on 1938 plan (Fig.115).

11. North and South Elevation - 10th Street Arcade

a. Masonry

--Seal and point the open joints of the granite stairs and flagstone paving using the method recommended in Section X, B.

--Point deteriorated joints in the wall surfaces using the method recommended in Section X, B.

--Remove overall dirt layer on the ceiling, walls and paving (out one foot from the walls and balustrade) using the field-tested cleaning method recommended in Section VII.

b. Metals

--Remove all corrosion, clean, prime and paint cast iron door and window grilles using the method recommended in Section X, D.

--Replace existing door hardware with replicas of original bronze handle and push bars to match those on the inner doors using the method recommended in Section X, I.

--Repair holes in the door surfaces left by the removal of earlier hardware. Clean and lacquer or oil bronze doors, door frames, transom frames and sash, and soffit light fixtures using the method recommended in Section X, I.

--Reduce paint buildup, caulk and repaint steel doors and windows using the method recommended in Section X, D.

c. Lighting Fixtures

--Restore globes on the soffit light fixtures to match the original design as recommended in Section X, N. (see Fig. 111).

d. Handicapped Access

--Ramps over the granite stair should be of a non-ferrous material compatible with the appearance of the facade, and anchored in a manner which will not cause permanent alteration or damage to the masonry steps or walls, either in the installation or use of the ramp.

12. Service Court Elevations, Court A

a. Masonry

--Remove caulking material in vertical joints of granite basecourse and repoint using the method recommended in Section X, B.

--Repoint deteriorated joints at the center of the first and second floor window sills, and in the projecting moldings of the beltcourses and cornices using the method recommended in Section X, B.

--Remove staining on upper beltcourses, and on southwest wall surface and overall dirt layer on limestone and granite surfaces using field-tested cleaning methods recommended in Section VII.

--Remove the electric birdproofing systemand repair the stonework using the method recommended in Section X, B.

--Discontinue the use of rock salts or other chemicals to soften snow and ice on pavement in the winter.

--Replace pavement materials with brick to match original design using the method recommended in Section X, A (see Fig.116).

b. Metals

--Remove all corrosion, clean, prime and paint iron gates, gate posts, eagles and arched grille, steel railings, doors and rolling doors using the method recommended in Section X, D.

--Reduce paint buildup, caulk and repair steel windows and doors using the method recommended in Section X, D.

--Remove all corrosion, clean, repair, prime and repaint cast iron spandrel frames using the method recommended in Section X, D.

--Cover acoustical tile used on the interior to mask out upper portion of first floor windows with a darker, less conspicuous material.

--Repair and clean sheet copper sheathing on the loading dock marquee using the method recommended in Section X, C.

c. Lighting

--Install new lantern on pedestal at head of the driveway ramp which replicates the original design using the method recommended in Section X, N. (see Fig.117).

--Lighting fixtures on the loading dock marquee shoud be compatible with the types of fixtures used in the soffits of the entrances around the building both in size and circular design. Fluorescent fixtures would not be appropriate. Fixtures should be installed with minimal disturbance to the copper sheathing on the marquee, and patching should match the historic design and materials.

13. Courtyard Elevations, Courts B, C and D

a. Masonry

--Seal and repoint the open joints of the granite stairs using the method recommended in Section X, B.

--Remove caulking material in vertical joints of granite basecourse and repoint using the method recommended in Section X, B.

--Repoint deteriorated joints at the center of the first and second floor window sills and in the projecting moldings of the cornices, beltcourses and the balconies using the method recommended in Section X, B.

--Remove staining on balconies and overall dirt layer on limestone and granite surfaces and garden furnishings, using field-tested cleaning method recommended in Section VII.

--Remove the electric birdproofing system and repair the stonework using the method recommended in Section X, B.

--Remove plant growth from paving surfaces, regrade

courtyards to restore level surfaces and promote drainage away from the building, reset paving stones and granite furnishings.

b. Metals

--Remove all corrosion, clean, prime and paint wrought iron railings at courtyard entrances and balconies using the method recommended in Section X, D.

--Reduce paint buildup, caulk and repaint steel windows and doors using the method recommended in Section X, D.

--Remove all corrosion, clean, repair, prime and repaint cast iron spandrel frames using the method recommended in Section X, D.

--Cover acoustical tile used on the interior to mask out upper portion of first floor windows with a darker, less conspicuous material.

14. Roofing/Drainage

--Repair or replace missing, broken and loose slate shingles and clay tile using the methods recommended in Section X, E and F.

--Repair or replace deteriorated built-up roofing along seventh floor promenade.

--Repair copper ridge flashing on the mansard using the method recommended in Section X, H (see Fig.113).

--Remove the mastic sheeting from the main cornice gutters.

--Clean all gutter strainers and baskets at the vertical drains at least twice per year. Replace damaged or missing strainers/baskets.

--Clean out vertical leaders and replace damaged sections using the method recommended in Section X, O.

B. Interior

1. Areas to be Completed Restored

The following interior spaces were important public spaces in the building's original design and should be considered for restoration. Complete restoration would include the actions listed on the following pages.

a. Main Lobby - Constitution Avenue

(1) Finishes

--Clean and lacquer or oil bronze doors, door frames, transoms and grilles using the method recommended in Section X, I (see Fig.112).

--Clean, caulk and paint steel windows using the method recommended in Section X, D.

--Repair damaged marble flooring with new tiles to match the existing using the method recommended in Section X, K.

--Repair damaged plaster above northeast window matching plaster cornice detail and profile using the method recommended in Section X, J.

--Remove curtain rod from the south end walls of the first floor lobby corridors and aluminum directory board from outer lobby east wall. Patch the stone carefully to match the color and texture as closely as possible using the method recommended in Section X, K.

--Remove wood strip picture rail from the second floor corridor walls and patch plaster using the method recommended in Section X, J.

--Clean the stone walls using the field-tested method recommended in Section X, K.

--Clean and polish the terrazzo and marble flooring, the marble baseboards, wall surfaces and door surrounds using the method recommended in Section X, K.

--Replicate the 1930 finishes on walls and ceilings using the method recommended in Section X, M. Do not paint the coffered ceiling or any metal doors which have been painted in imitation of wood graining.

(2) Electrical

--Replace existing box-type lighting fixtures at the first and second floor lobby corridors and second floor stairhalls with 19 replicas of the original fixtures "Type H" using the method recommended in Section X, N (see Fig. 119).

--Replace existing box-type lighting fixtures at the first floor stairhalls with two replicas of the original fixtures "Type E" using the method recommended in Section X, N (see Fig. 121).

--Replace the existing bronzed aluminum shades on the eight lamp torchieres with replicas of the original

opal glass shades using the method recommended in Section X, N (see Fig. 122).

--Replace floor indicator above elevator doors with replicas of the original 1930 indicators to match the existing indicators in the 12th Street Circle elevator bank (Fig. 129).

--Install emergency lighting in the stairways, vestibules and corridors in such a manner as to avoid damage to decorative plaster cornices, stone walls or bronze window and door trim, i.e., in unadorned areas of the plaster walls and ceilings.

--Install new fixtures employing existing conduit where possible. If plasterwork or decorative cornices must be disturbed during the work, repair to match the existing. Do not damage the stonework.

--Clean, reuse if possible and retain thermostats, and bronzed clocks in vestibule and one original 1930 standard G.E. clock on west wall of lobby using the method recommended in Section X, I.

(3) <u>HVAC and Plumbing</u>

--Install new radiators, ducts or air diffuers in a manner as to minimize their impact on the overall appearance of the vestibule, lobby and corridor spaces and on signficant fabric such as marble floors, stone walls and decorative plaster cornices and ceilings. Feed vestibule, lobby and corridor areas through existing grilles located throughout these areas. Install no ductwork in the first or second floor vestibule, lobby or corridors themselves.

(4) <u>Fire Safety</u>

--Do not enclose the monumental stairs which flank the rear corridor of the main lobby or the archways of the second floor corridors around the lobby.

--Any new fire barriers should be installed beyond the perimeters of the main lobby and corridor spaces, in the office hallways. Do not anchor any of the equipment or doorways in the stonework.

(5) <u>Handicapped Access</u>

--Provision of wheelchair/handicap access is not recommended at this point of entry. The individual bronze doors measure only 2'-5-1/2" in width and are all left-handed doors. To obtain sufficient clearance for wheelchair access, a pair of both exterior and

interior vestibule doors would have to be rehung changing the swing on one door of each set. Also, the second floor elevator landing is three steps below the adjoining office hallways.

b. 10th Street Lobby

(1) Doors

--Remove existing door hardware and replace with replicas of original bronze handle and push bars to match those on the outer doors using the method recommended in Section X, I.

(2) Finishes

--Clean and lacquer or oil bronze doors, door frames, transoms and wall grilles as needed using the method recommended in Section X, I (see Fig.112).

--Clean and polish the marble flooring, baseboards, door surrounds using the method recommended in Section X, K.

--Remove the aluminum directory board from the south wall and the wall telephone from the north wall and repair holes in the marble using the method recommended in Section X, K.

--Replicate 1930 finishes on the walls and ceilings as determined by paint analysis (see Section IX).

--Clean the statuary bronze finish on the original freestanding directory case using the method recommended in Section X, I.

(3) Electrical

--Clean the medium statuary bronze finish on the three original pendant lanterns in vestibule using the method recommended in Section X, I.

--Replace box type fixtures in lobbies with six replicas of 1930 fixtures "Type I" centered in each bay using the method recommended in Section X, N (see Fig. 120).

--Replace floor indicators above elevator doors with replicas of the original 1930 indicators to match the existing indicators in the 12th Street Circle elevator bank (Fig. 129).

--Install emergency lighting in the stairways, vestibules and corridors in such a manner as to avoid damage to decorative plaster cornices, marble walls or bronze

window and door trim, i.e., in unadorned areas of the plaster walls and ceilings.

--Install new fixtures employing existing conduit where possible. If plasterwork or decorative cornices must be disturbed during the work, repair to match the existing. Do not damage the marble.

(4) HVAC and Plumbing

--Install new radiators, ducts or air diffusers in a manner as to minimize their impact on the overall appearance of the vestibule, or lobby spaces and on signficant fabric such as marble floors and walls and decorative plaster cornices and ceilings. Feed vestibule, lobby and corridor areas through existing grilles located on the north and south walls, and the lobby spaces from adjoining offices and hallways. Install no ductwork in the first or second floor.

(5) Fire Safety

--Any new fire barriers should be installed beyond the lobby areas as indicated by the marble faced piers and the marble flooring border. Do not anchor any of the equipment or doorways in the stonework.

(6) Handicapped Access

--Existing doors are significant and must be refitted for power use with minimal damage to fabric, and the exterior and interior appearance of the entrances. The openers may have to be specially designed to accommodate the weight of the doors.

--Repair any disturbed floor, wall or baseboard fabric to match the original fabric using the method recommended in Section X, K.

c. 10th Street Lobby (Extension)

(1) Doors

--Remove modern interior door and partition, and install new bronze doors in the entrance vestibule which replicate the original design.

--Remove existing door hardware on the outer doors and replace with replicas of the original bronze handles and push bars to match those used throughout the building using the method recommended in Section X, I.

(2) Finishes

--Clean and polish the marble flooring, baseboards, door surrounds and wall using the method recommended in Section X, K.

--Remove the wall telephone from the north wal and repair holes in the marble using the method recommended in Section X, K.

--Clean and lacquer or oil bronze doors, door frames and transoms and wall grilles using the method recommended in Section X, I (see Fig. 112).

--Replicate 1937 finishes on the walls and ceilings as determined by paint analysis (Section IX).

--Clean the statuary bronze finish on the wall mounted directory and bulletin boards using the method recommended in Section X, I.

(3) Electrical

--Replace ceiling fixture in the vestibule with replica of the original fixture using the method recommended in Section X, N (see Fig. 124).

--Replace box type ceiling fixtures in the lobby with replicas of the original fixtures using the method recommended in Section X, N (see Fig. 119).

--Replace floor indicators above elevator doors with replicas of the original 1935 indicators to match the s existing in the 12th Street Circle elevator bank (Fig. 129).

--Install emergency lighting in the vestibule and lobby in such a manner as to avoid damage to decorative plaster cornices, marble walls or bronzework, i.e., in unadorned areas of the plaster walls and ceilings.

--Install new fixtures employing existing conduit where possible. If plasterwork or decorative cornices must be disturbed during the work, repair to match the existing. Do not damage the marble.

(4) HVAC and Plumbing

--Install new radiators, ducts or air diffusers in a manner as to minimize their impact on the overall appearance of the vestibules or lobby spaces and on significant fabric such as the marble floors and walls and decorative plaster cornices and ceilings. Feed vestibule through existing grilles located along the

side walls, and the lobby spaces from adjoining closets, offices and hallways. Install no ductwork in the vestibule or lobby themselves.

(5) Fire Safety

--Any new fire barriers should be installed beyond the marble walled portions of the first floor lobby area, from south of the elevator bank to the junction of the western hallways. Do not anchor any of the equipment or doorways in the marble flooring or marble walls.

(6) Handicapped Access

--If the present system is altered or removed, repair any disturbed floor, wall or baseboard fabric to match the original floor.

d. 12th Street Lobby on the Circle

(1) Doors

--Replace the existing door hardware with replicas of original bronze handle and push bars to match those on the exterior doors using the method recommended in Section X, I.

(2) Finishes

--Repair holes in the door surfaces from earlier hardware. Clean and lacquer or oil bronze doors, door frames, transom frames and sash using the method recommended in Section X, I (see Fig. 112).

--Clean and polish the marble flooring, baseboards, door surrounds and walls using the method recommended in Section X, K.

--Replicate the 1930 finishes on the walls and ceilings as determined by paint analysis in Section IX.

--Clean the statuary bronze finish on the original freestanding directory case using the method recommended in Section X, I.

--Remove the aluminum directory board and telephones and repair holes in the marble using the method recommended in Section X, K.

(3) Electrical

--Clean the medium statuary bronze finish on three original pendant lanterns in vestibule using the method recommended in Section X, I.

--Replace box type fixtures in lobby with three replicas of 1930 fixtures "Type I" centered in each bay using the method recommended in Section X, N (Fig. 120).

--Install emergency lighting in the vestibule and lobby in such a manner as to avoid damage to decorative plaster cornices, marble walls or bronzework, i.e., in unadorned areas of the plaster walls and ceilings.

--Install new fixtures employing existing conduit where possible. If plasterwork or decorative cornices must be disturbed during the work, repair to match the existing. Do not damage the marble.

--The existing manually-operated elevator cabs are in their original condition. Retrofit for automatic operation without alteration to the cab interiors, including all hardware and the exterior elevator doors. Reuse the floor selection panels or install new panels of the same material, finish, and detailing.

(4) <u>HVAC and Plumbing</u>

--Install new radiators, ducts or air diffusers in a manner as to minimize their impact on the overall appearance of the vestibule or lobby spaces, and on signficant fabric such as the marble floors and walls, and decorative plaster cornices and ceilings. Feed vestibule through existing grilles located along the interior of the exterior walls, and the lobby spaces from adjoining closets, offices and hallways. Install no ductwork in the vestibule or lobby themselves.

(5) <u>Fire Safety</u>

--Any new fire barriers should be installed beyond the lobby area as indicated by the marble flooring pattern. Do not anchor any of the equipment or doorways in the stonework.

(6) <u>Handicapped Access</u>

--Existing doors are significant and must be refitted for power use with minimal damage to fabric, and the exterior and interior appearance of the entrances. The openers may have to be specially designed to accommodate the weight of the doors.

--Repair any disturbed floor, wall or baseboard fabric to match the original fabric.

e. Minor Vestibules and Lobbies

(1) Doors

--Remove existing door hardware and replace with replicas of the original bronze handle and push bars to match those on the main lobby doors using the method recommended in Section X, I.

(2) Finishes

--Clean and lacquer or oil bronze doors, door frames and transoms and wall grilles as needed using the method recommended in Section X, I (see Fig. 112).

--Remove paint buildup, clean, caulk and repair steel doors using the method recommended in Section X, D.

--Clean and polish the marble flooring, baseboards, door surrounds and walls using the method recommended in Section X, K.

--Remove modern telephones and other items which have been mounted on marble surface. Repair holes in the marble using the method recommended in Section X, K.

--Remove aluminum directory boards and clean and reuse the original wall hung bronze directory cases using the method recommended in Section X, I.

--Remove acoustical tile which has been applied directly to the plaster ceilings.

--Replicate the 1930 finishes on the walls and ceilings as determined by paint analysis in Section IX.

(3) Electrical

--Replace box type ceiling fixtures in the small vestibules on 10th and 12th Streets with replicas of the original 1930 fixtures "Type J" using the method recommended in Section X, N (see Fig. 124).

--On elevator bank just south of the driveway, replace existing floor indicators with replicas of the original 1930 indicators (see Fig. 129).

--Install emergency lighting in the spaces in such a manner as to avoid damage to decorative plaster, marble walls or bronze work, i.e., unadorned areas of the plaster walls and ceilings.

--Install new fixtures employing existing conduit where

possible. If plasterwork or decorative cornices must be disturbed during the work, repair to match the existing. Do not damage the marble.

(4) HVAC and Plumbing

--Install new radiators, ducts or air diffusers in a manner as to minimize their impact on the overall appearance of the vestibule, and on significant fabric such as the marble foors and walls and decorative plaster cornices and ceilings, presently above the modern acoustical tile dropped ceilings. If possible, remove the modern material and restore the original ceilings and cornices and feed vestibules through existing grilles located on the side walls. Do not add any duct work below the existing ceiling line or in the restored vestibule spaces themselves.

(5) Handicapped Access

--Existing doors are significant and must be refitted for power use with minimal damage to fabric, and the exterior and interior appearance of the entrances. The openers may have to be specially designed to accommodate the weight of the doors.

--Repair any disturbed floor, wall or baseboard fabric to match the original fabric.

2. Areas Which May Be Rehabilitated While Retaining Significant Details

These spaces are of secondary architectural and historic importance. All but the fire stairs have been permanently altered from their original appearance by the addition of dropped ceilings which conceal the building's air conditioning system. Future renovation of these areas must preserve the historic fabric which remains and should take into account the following actions which would, in part, restore the historic character of these spaces.

a. Hearing Rooms

The Hearing Rooms are presently used as office spaces and have had dropped ceilings installed, which are generally considered permanent alterations by the GSA. However, much of the original decorative fabric of these rooms including the ornamental plasterwork and the carved wood paneling is still in place and must be preserved. If any or all of the rooms are to be considered for general meeting space, they must be restored.

(1) Doors

--Do not damage door knobs, escutcheons or door stiles during the installation of new door tumblers.

(2) Finishes

--Clean finish on wood doors and woodwork using the method recommended in Section X, M.

--Repair damaged marble floor border and plinth blocks below door architraves to match the existing using the method recommended in Section X, K.

--Clean and polish the marble plinth blocks and baseboards using the method recommended in Section X,K.

--Repair damaged plaster cornice, acoustical plaster ceiling and plaster brackets to match the existing using the method recommended in Section X, J. (see Fig. 127).

--Replicate 1930 finishes on walls, ceilings and windows as determined by paint analysis in Section IX.

--Clean door hardware using the method recommended in Section X, I.

--Repair or replace the marble plinth blocks on the bottoms of the marble architrave using the method recommended in Section X, K.

(3) Electrical

--Remove the existing dropped ceiling and fixtures and replace with replicas of the original 1930 fixtures "Type F" using the method recommended in Section X, N (see Fig. 125).

--Install any new fixtures or emergency lighting employing existing conduit where possible. Avoid damage to decorative plaster cornice or acoustical plaster ceiling, i.e., penetrate through unadorned areas of the plaster walls. If decorative or acoustical plasterwork must be disturbed during the work, repair to match the exsiting. Do not damage the woodwork.

--Desk lamps could be provided which replicate the original design "Type K" used on the Judge's Bench and the clerk's desks using the method recommended in Section X, N (see Fig. 126).

(4) HVAC and Plumbing

--Install new radiators, ducts or air diffusers in a

manner as to minimize their impact on the overall appearance of the Hearing Room spaces, and on significant fabric such as marble and cork floors, marble baseboards, wood paneling, and decorative cornices and ceilings. Feed Hearing Room spaces through existing grilles beneath window sills. Install all ductwork in the adjoining corridor and office spaces. Do not install any duct work in the Hearing Rooms themselves.

(5) Furnishings

--Hearing Room 2403: the metal partitioning in this room is the only surviving example of the room dividers used throughout the building when it was originally completed. The painted grain finish is original. If the room is restored as a single space, this item should be carefully removed and used in another office space, without being altered or painted. If it cannot be used immediately, it should be put in the building manager's care for safe storage.

b. Elevator Lobbies (Upper Floors)

(1) Elevator Doors

--Replace modern flush panel doors, door frames and indicators with replicas of the original paneled metal doors, frames and indicators (Fig. 130), which are still in place in several areas, specifically on the upper floors of the 12th Street Circle elevator bank. Some of the original frames and indicators are still in place, but have been painted over. Finish to match the original painted wood graining on the 12th Street Circle elevator bank.

(2) Finishes

--Clean and polish the terrazzo and marble flooring, the marble baseboards, wall surfaces, piers and door surrounds using the method recommended in Section X, K.

--Replicate the original finishes on the walls and ceilings as determined by paint analysis in Section IX.

(3) Electrical

--Replace box type lighting fixtures with replicas of the original fixtures "Type G" centered in each of the ceiling bays using the method recommended in Section X, N (see Fig. 123).

--Repair or install replica illuminated bronze signs in

the hallways immediately adjacent to the elevator lobbies to match the original (see Fig. 131).

--Install emergency lighting or other new fixtures employing existing conduit where possible. Avoid damage to decorative plaster cornices. If plasterwork must be disturbed, repair to match existing. Do not damage the marble.

(4) HVAC and Plumbing

--As possible, remove and relocate all ductwork, piping, and conduit now in place above the suspended ceiling.

--Install new radiators, ducts or air diffusers in a manner as to minimize their impact on the overall appearance of the lobbies, and on significant fabric such as the marble and terrazzo flooring, the marble wall surfaces, piers and the decorative plaster cornices (even those presently hidden behind dropped ceilings). Feed the lobby spaces through existing duct work spaces. Install no new ductwork in the existing lobby spaces.

(5) Fire Safety

--Any new fire barriers should be installed beyond the lobby areas as indicated by the marble faced piers and the marble flooring border. Do not anchor any of the equipment or doorways in the stonework.

c. Corridors

(1) Doors

--Do not damage door knobs, escutcheons or door stiles during the installation of new door tumblers.

--Replace existing modern doors on third floor corridors with doors to match the original design (Fig. 128).

(2) Finishes

--Clean and polish the marble and terrazzo flooring, baseboards and door architrave plinth blocks using the method recommended in Section X, K.

--Replicate the original finishes on the walls as determined by paint analysis in Section IX.

--Remove paint and refinish wood office doors using the method recommended in Section X, M.

--Repaint metal door trim and stair doors using color determined by paint analysis in Section IX.

--Repair or replace marble plinth blocks on the bottoms of the door architraves with marble to match the color and profile of the original using the method recommended in Section X, K.

--Remove aluminum wall mounted room signs and renumber doors with lettering on glass using the method recommended in Section X, L. New signs should replicate the original bronze framed corridor name cards (see Fig. 132). Do not mount on metal door trim or marble surfaces.

--Replace modern protruding signs with replicas of the original illuminating signs. Do not mount on metal door trim or marble surfaces.

(3) Electrical

--Do not mount new emergency lighting, watchman's station fire alarm boxes or bells on marble surfaces, metal door trim or doors.

--Reuse existing original security systems whenever possible. Do not remove.

--Install new fixtures employing existing conduit where possible. Do not damage the marble or terrazzo.

(4) HVAC and Plumbing

--Install new ducts, air diffusers or other equipment in a manner as to minimize their impact on the overall appearance of the halls and on any significant fabric such as the marble and terrazzo flooring, marble baseboards and wall surfaces and original doors. Due to the dropped ceilings in all the hallways, it should not be necessary to introduce new ductwork into the hallway spaces themselves.

(5) Fire Safety

--Any new fire barriers should be installed without damage to the terrazzo and marble flooring or marble wall surfaces.

(6) Furnishings

--Retain and reuse existing original fire extinguisher

cabinets. New cabinets should be recessed in the unadorned plaster walls, not surface mounted. Do not mount on any stonework.

d. Stairwells

(1) Finishes

--Clean and polish the black slate flooring and baseboards using the method recommended in Section X, K.

--Replicate the original finishes on walls and ceilings as determined by paint analysis in Section IX.

(2) Electrical

--Restore or replace existing lighting fixtures with replicas of the original sconces using the method recommended in Section X, N.

--Install emergency lighting or new fixtures utilizing existing conduit where possible. If plasterwork must be disturbed during the work, repair to match the existing. Do not damage the door frames or stonework.

(3) HVAC and Plumbing

--Reuse existing radiators.

(4) Fire Safety

--The metal doors with wire glass are original and should be retained.

e. Offices

(1) Doors

--Do not damage door knobs, escutcheons, transom operators with the installation of new door closing or locking equipment.

(2) Finishes

--Remove paint and refinish doors and door frames using the method recommended in Section X, M.

--Repair or replace marble plinth blocks on the bottoms of the door architraves using the method recommended in Section X, K.

--Remove paint buildup, caulk and repaint window sash using the method recommended in Section X, D.

--Repair damaged plaster using method recommended in Section X, J.

(3) Electrical

--Install emergency lighting in such a manner as to avoid damage to door or window trim.

(4) HVAC

--Repair and reuse existing original radiators and radiator knobs.

(5) Furnishings

--The vaults in Rooms 1120 through 7120 are original and are not to be removed. Those that have not been painted over on either the exterior or interior door surface are to be left unpainted with the original Treasury seal decal and manufacturer's label.

--The pneumatic tube deck in Room 7123 is to be preserved in place as is, not to be painted or to have any of the operation signs removed.

3. Areas Suitable for Renovation

All of these areas are currently in good condition and no work is required at this time for restoration. Any future renovation of the areas should not impair the architectural integrity of adjoining significant spaces and should be designed in such a manner as to blend with existing significant areas.

a. Basement
b. Commissioner's Office (Third Floor)
c. Tax Court Auditorium (Seventh Floor)
d. Cafeteria
e. Toilets
f. Attic

Fig. 107.
The potential for problems has been created by the numerous anchoring bolts for electric pulse bird deterrent system no longer in use. The drill holes on the horizontal surfaces can collect water which may freeze and crack the stone.

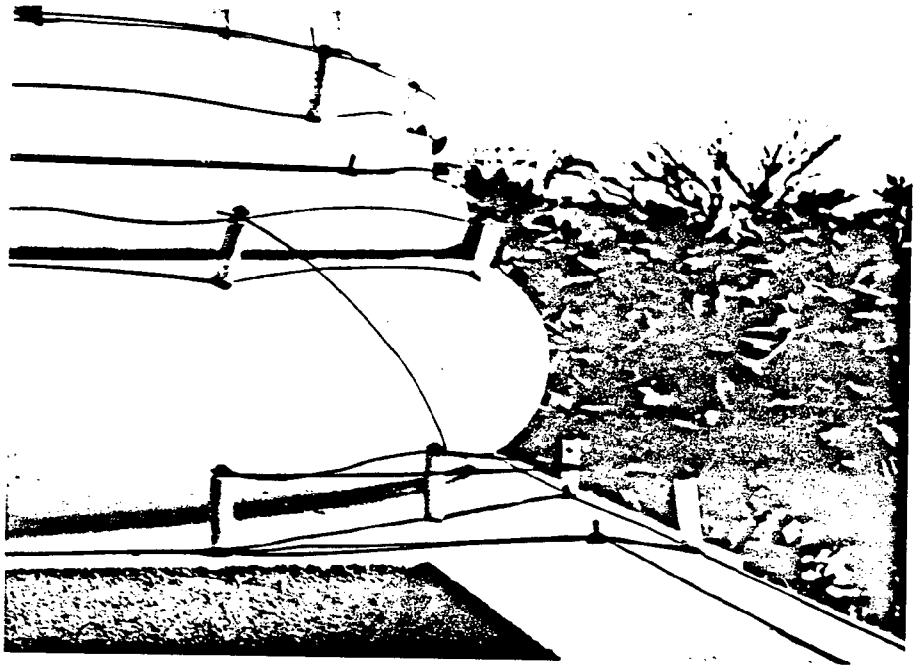
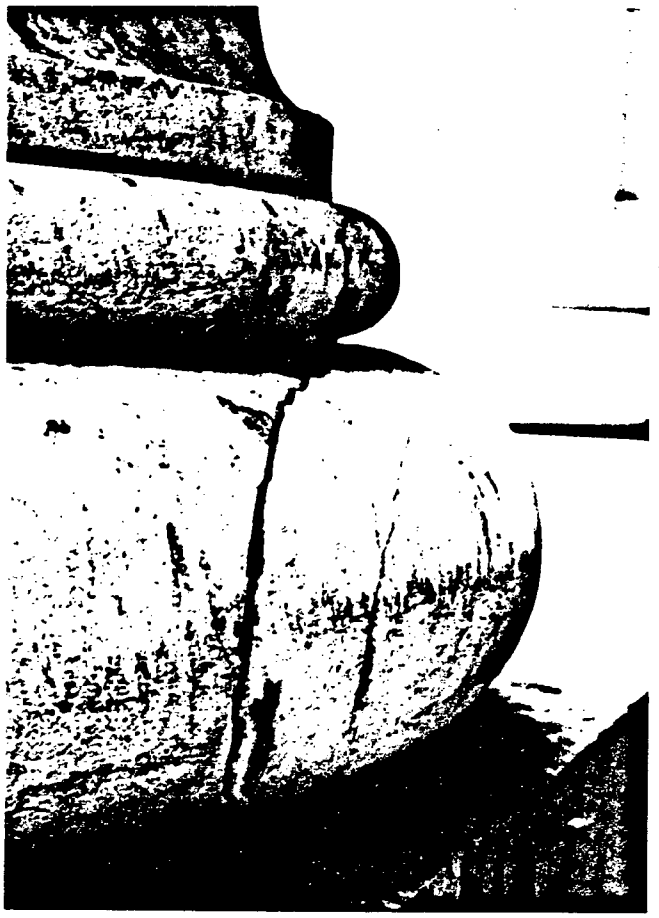


Fig. 108.
Crack in colonnade base, third from east end of colonnade, Constitution Avenue facade.



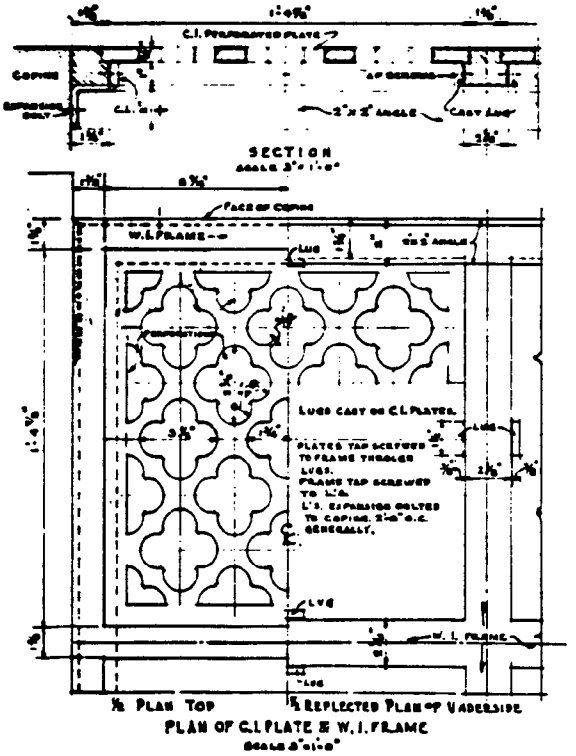


Fig. 109.
Detail of original cast iron areaway grilles.

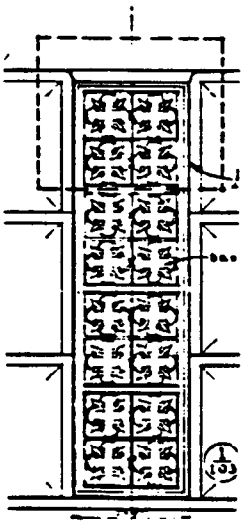


Fig. 110.
Detail of bronze window grilles at the main entrance.

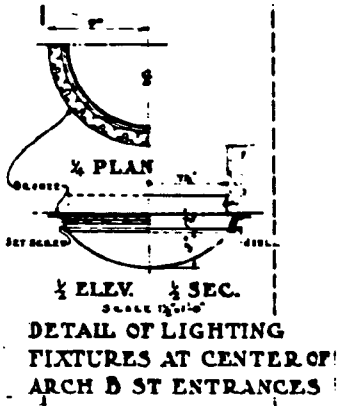
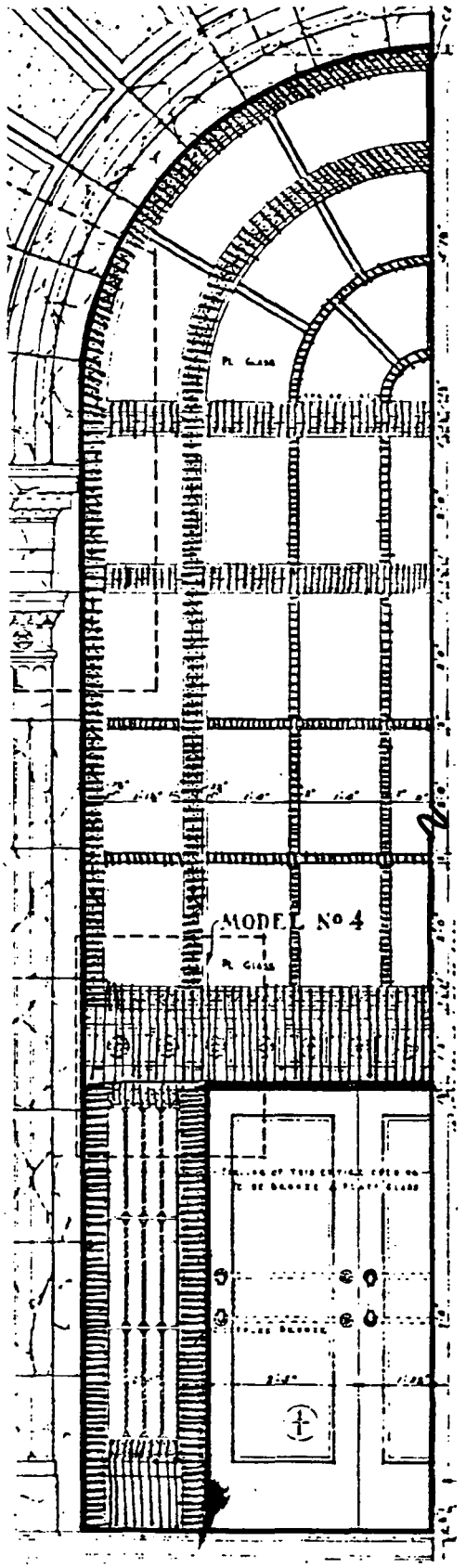


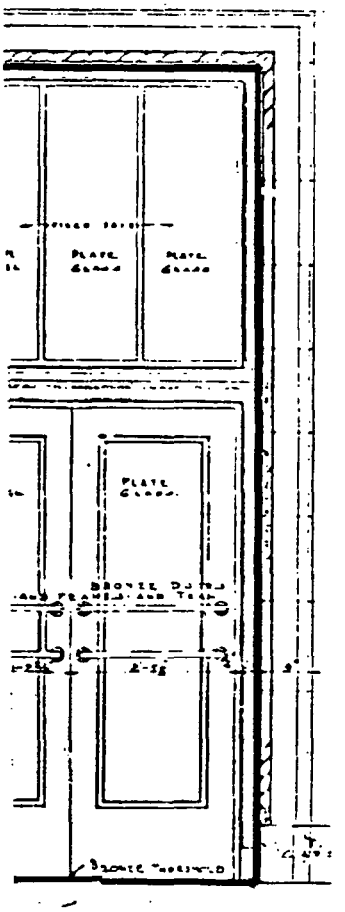
Fig. 111.
Original exterior entrance soffit light fixture.



EXTERIOR

Exterior--
Statuary bronze (shaded):
Clean surface soil and oil.

Polished bronze interior transom and typical polished bronze doors: clean to bright finish and lacquer.



INTERIOR

Fig. 112. Typical statuary and polished bronze treatment at doorways.

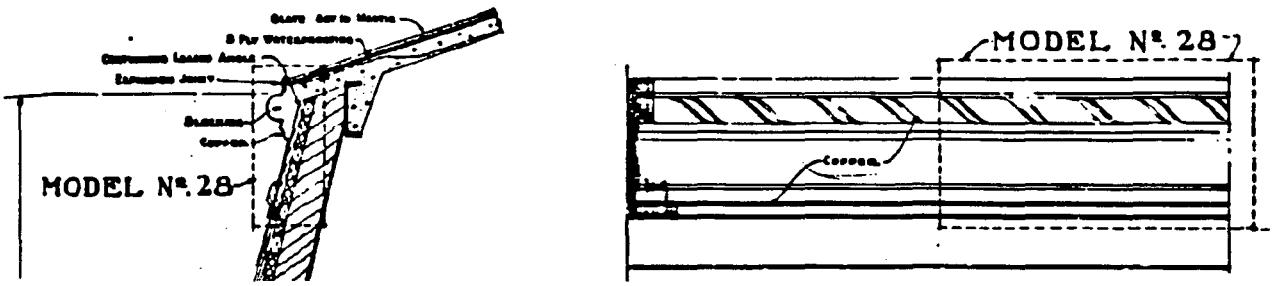


Fig. 113. Details of copper ridge flashing on slate mansard roof.

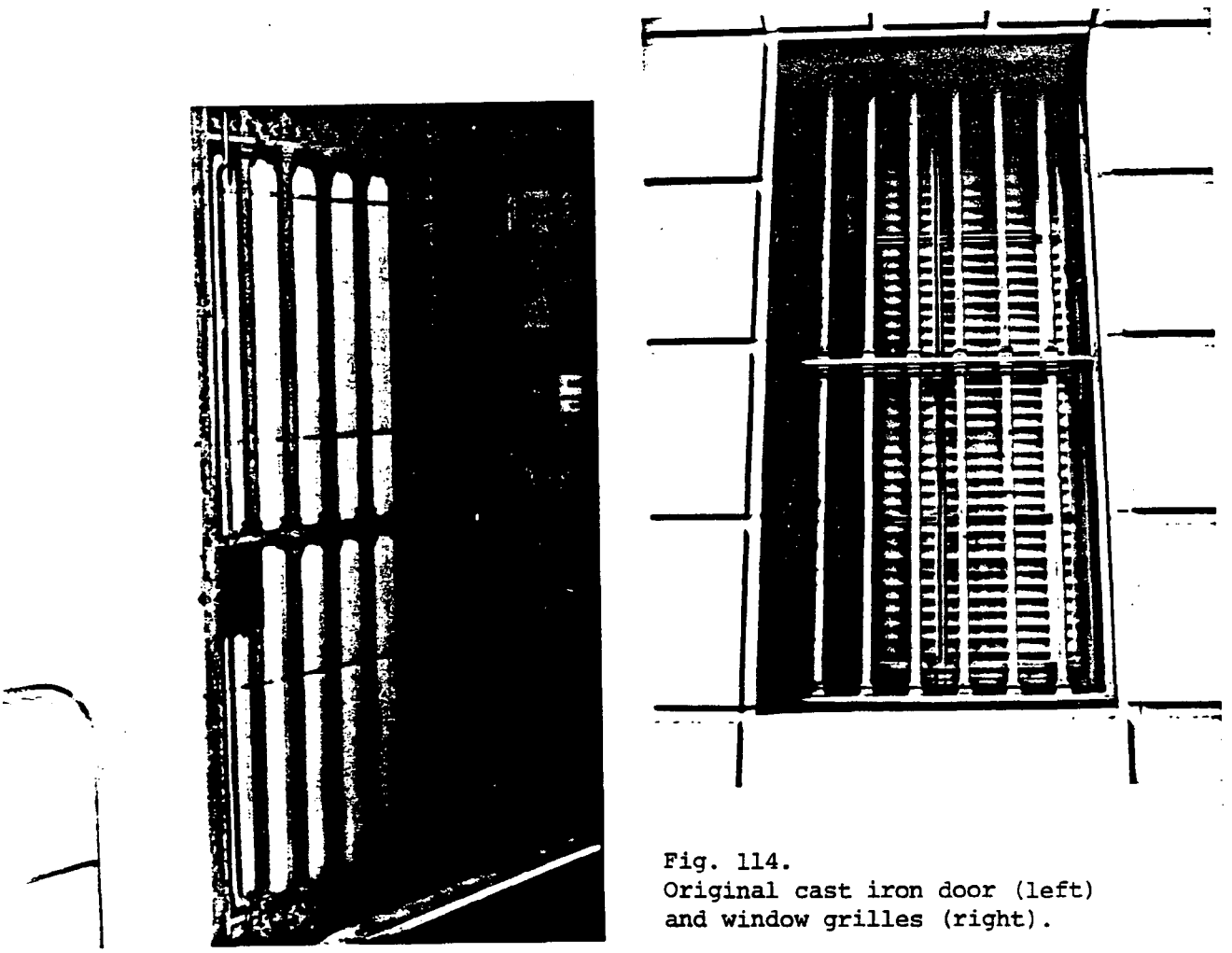


Fig. 114.
Original cast iron door (left)
and window grilles (right).

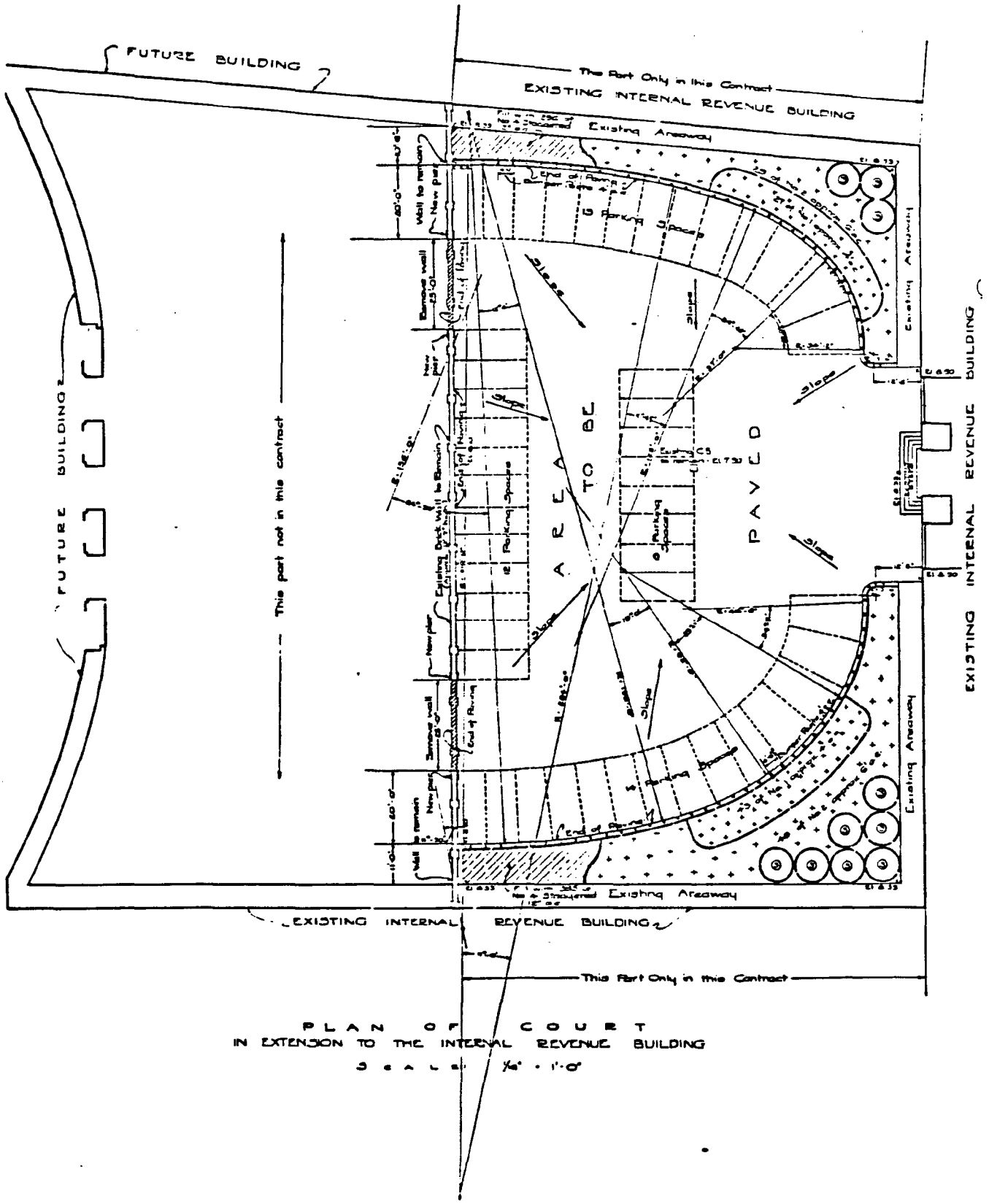


Fig. 115. 1938 landscape plan for the Extension courtyard.

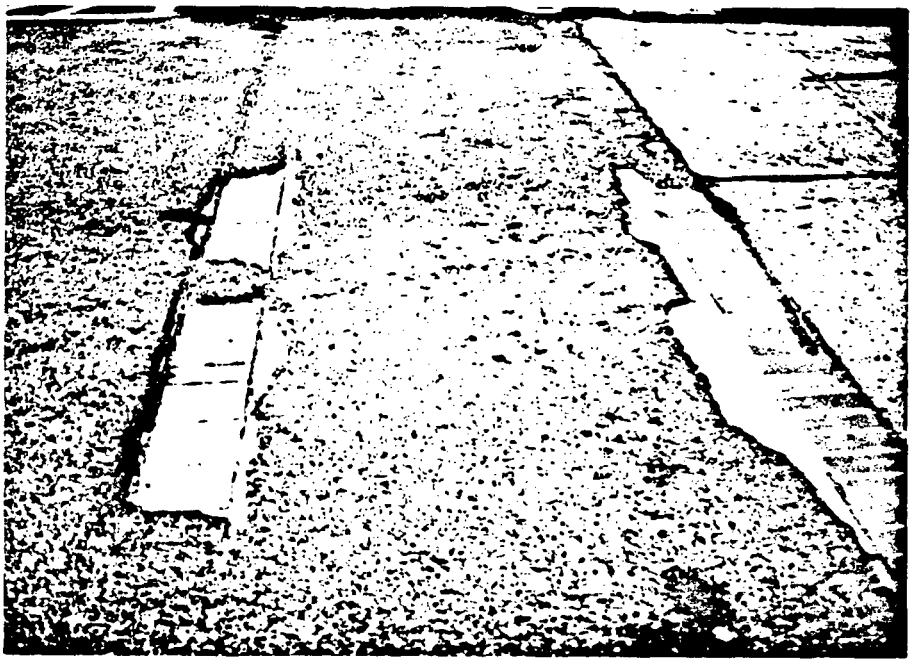


Fig. 116
Original Service Court paving of red and buff brick visible through worn patches of present macadam surface. Driveway arcade paving of granite blocks is visible at right.

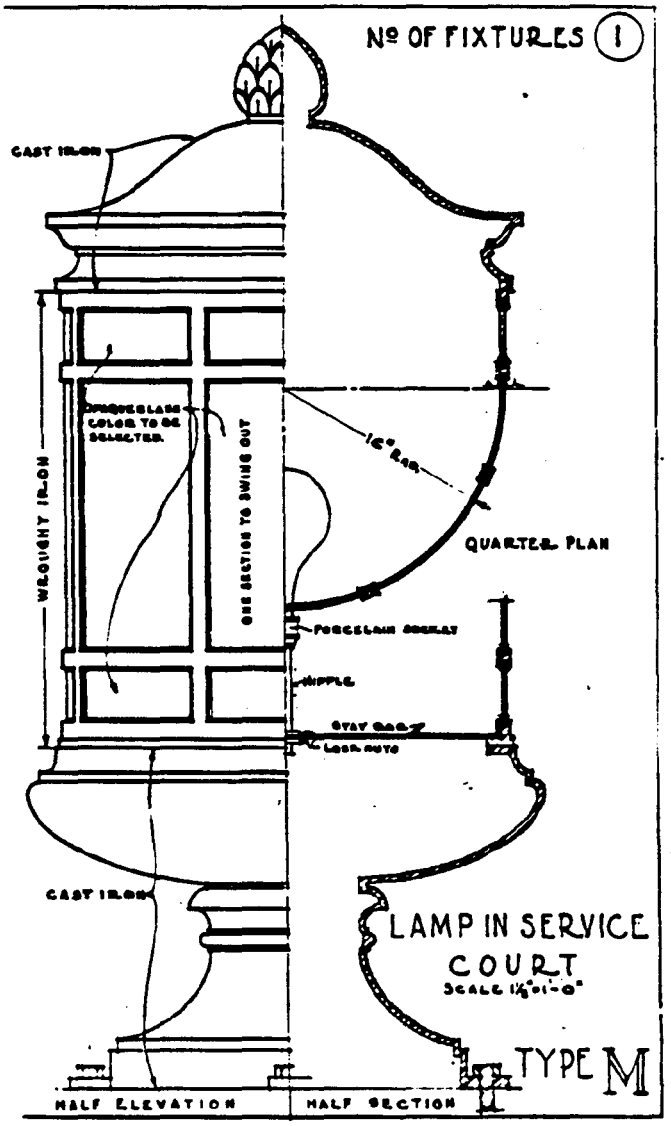
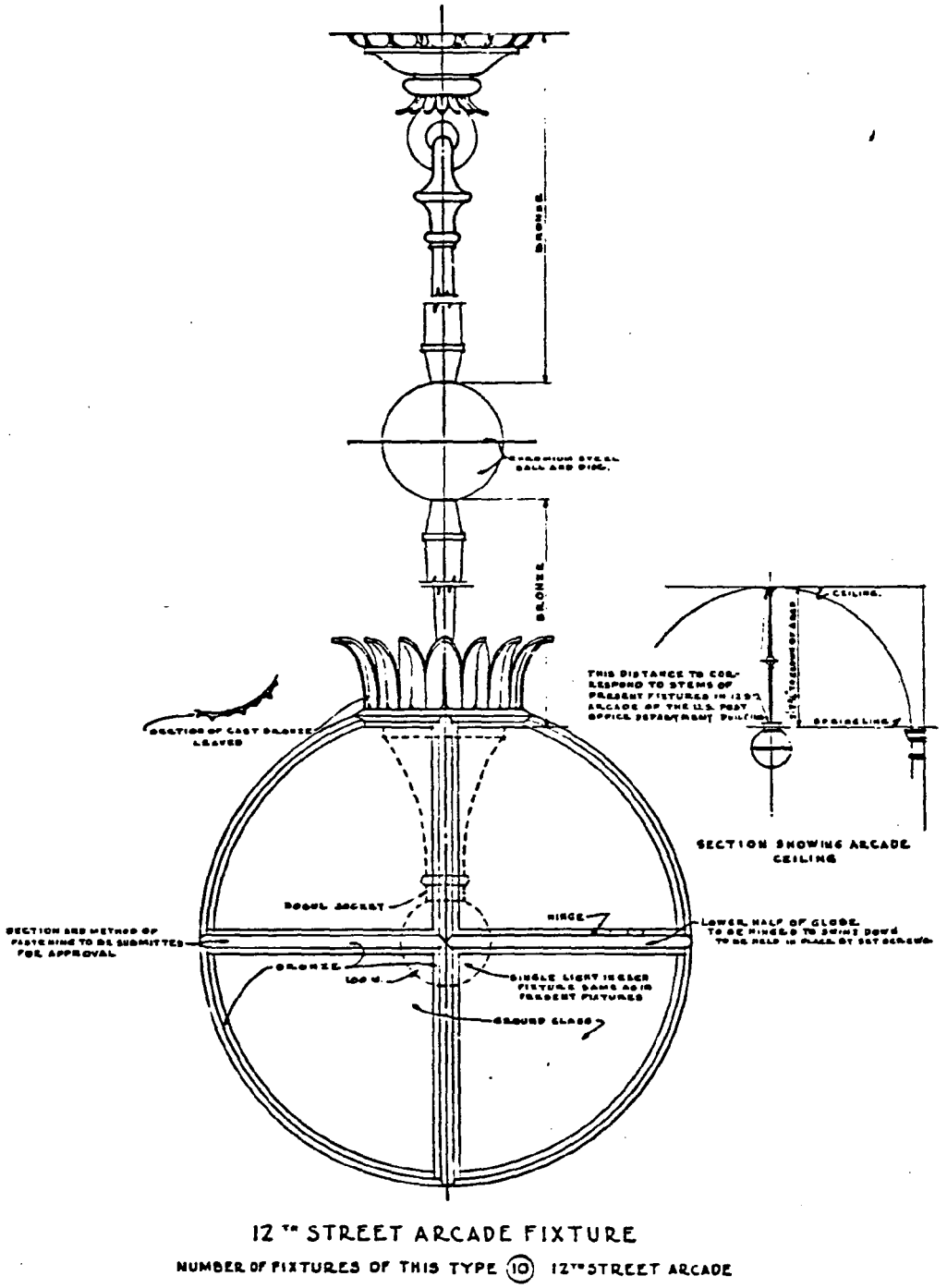


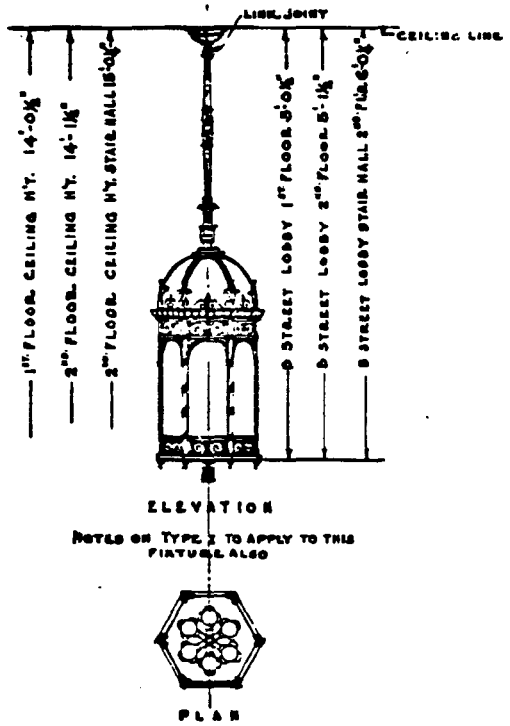
Fig. 117
Original design for iron lantern in Service Court.



12TH STREET ARCADE FIXTURE

NUMBER OF FIXTURES OF THIS TYPE (10) 12TH STREET ARCADE

Fig. 118. Original light fixture in 12th Street arcade.

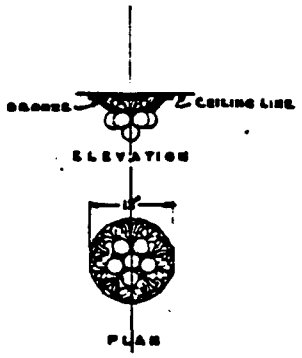


B STREET LOBBY 1ST & 2ND FLOOR
STAIR HALL B STREET LOBBY 2ND FLR.

Nº OF FIXTURES (34) TYPE H

Fig. 119 (above)
Original ceiling lantern design for B Street lobbies and stairhalls.

Fig. 121 (below)
Original ceiling fixtures for first floor stair landing in the Constitution Avenue lobby.



STAIR HALL B ST. LOBBY FIRST FLR.

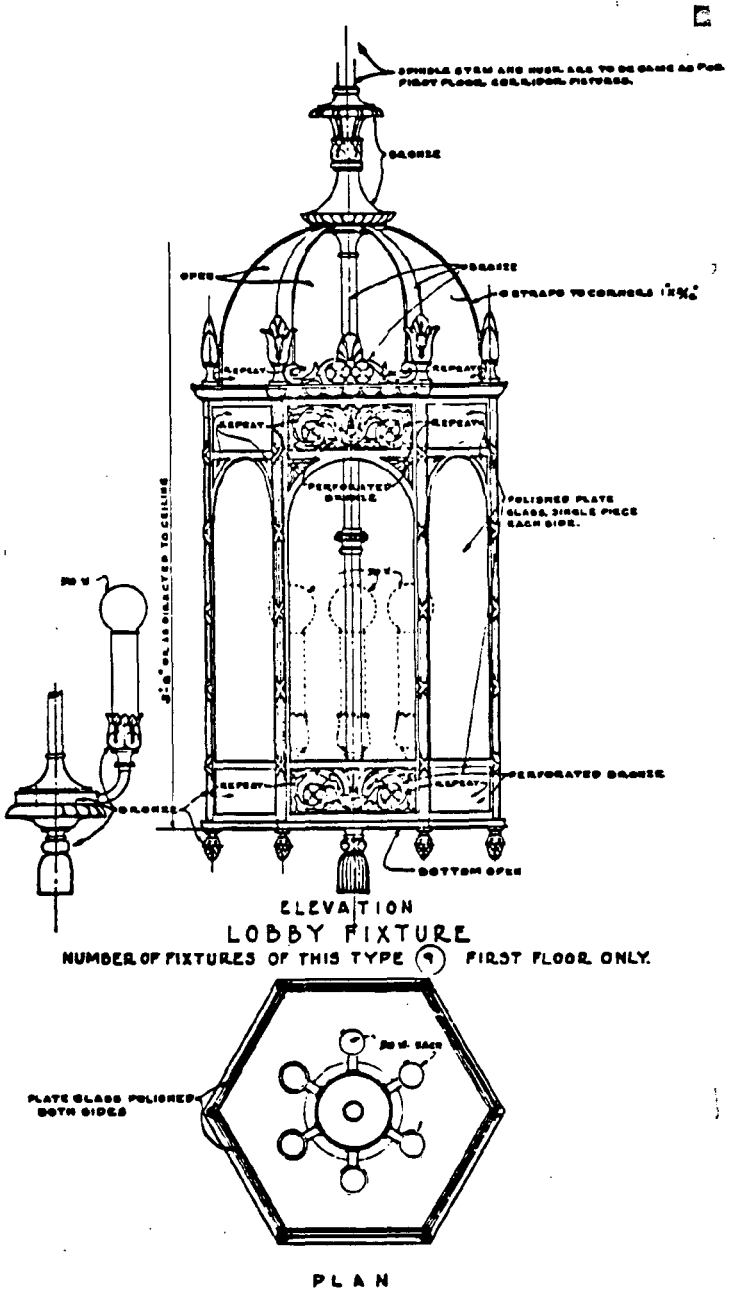
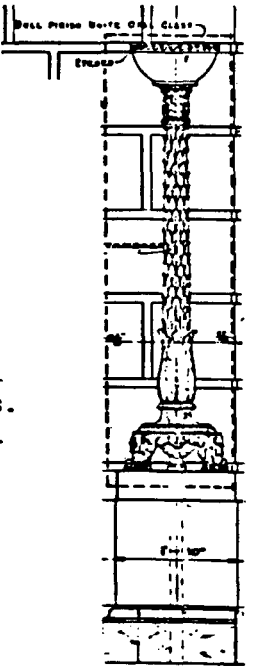


Fig. 120 (above)
Original ceiling lantern (Type I) design for 10th Street Lobby and Circle Lobby.

Fig. 122 (right)
Rendering showing original shades on large torchieres. The torchieres have a dull finish, white opal glass and an etched border.



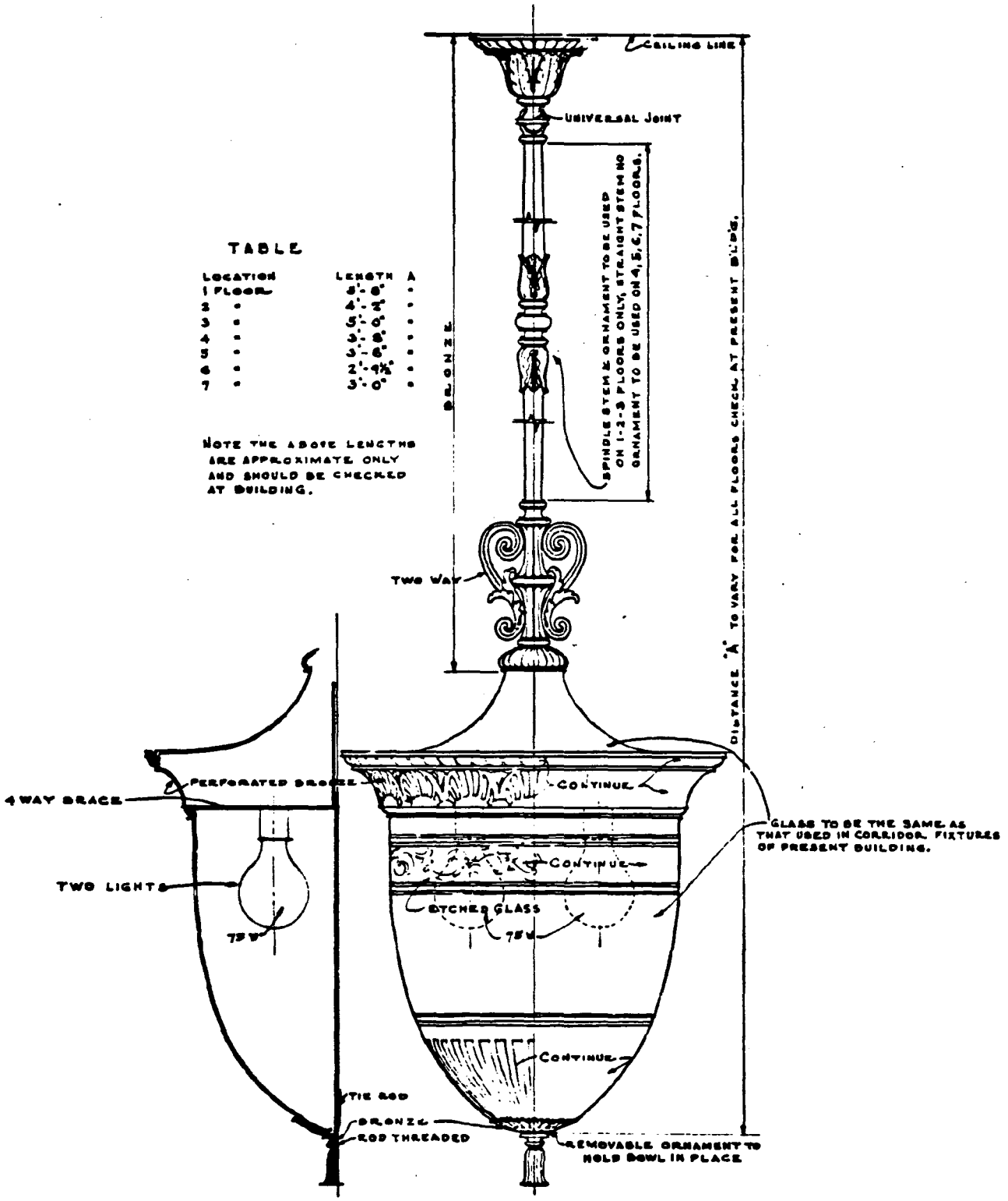
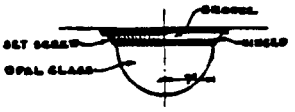


Fig. 123. Original corridor light fixture. The number of fixtures in the building after completion of the Extension totaled 659.



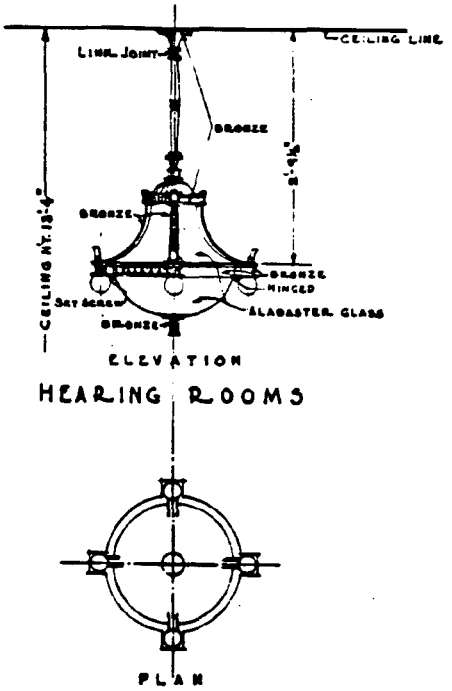
MINOR VESTIBULES 10TH & 12TH STREETS

Nº OF FIXTURES (3) TYPE J

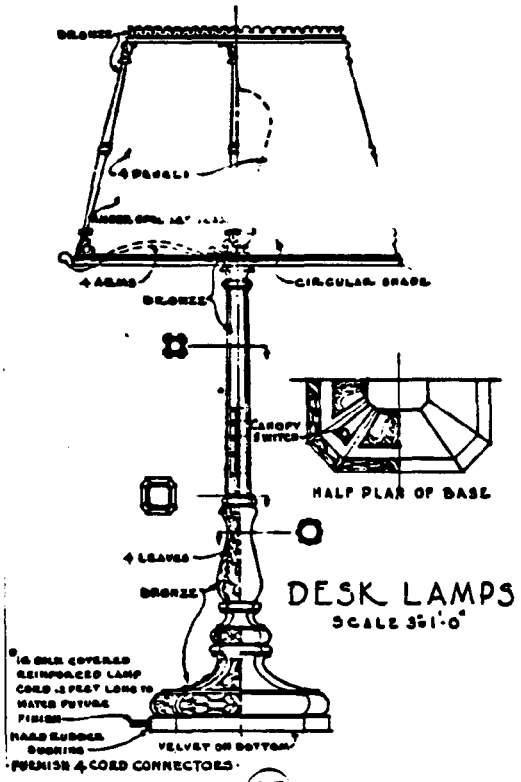
Fig. 124 (above)
Original fixture for minor vestibules on 10th and 12th Streets.

Fig. 125 (right)
Original ceiling fixtures in Hearing Rooms.

Fig. 126 (below)
Original desk lamps used in the Hearing Rooms.



Nº OF FIXTURES (36) TYPE F



Nº OF FIXTURES (28) TYPE K

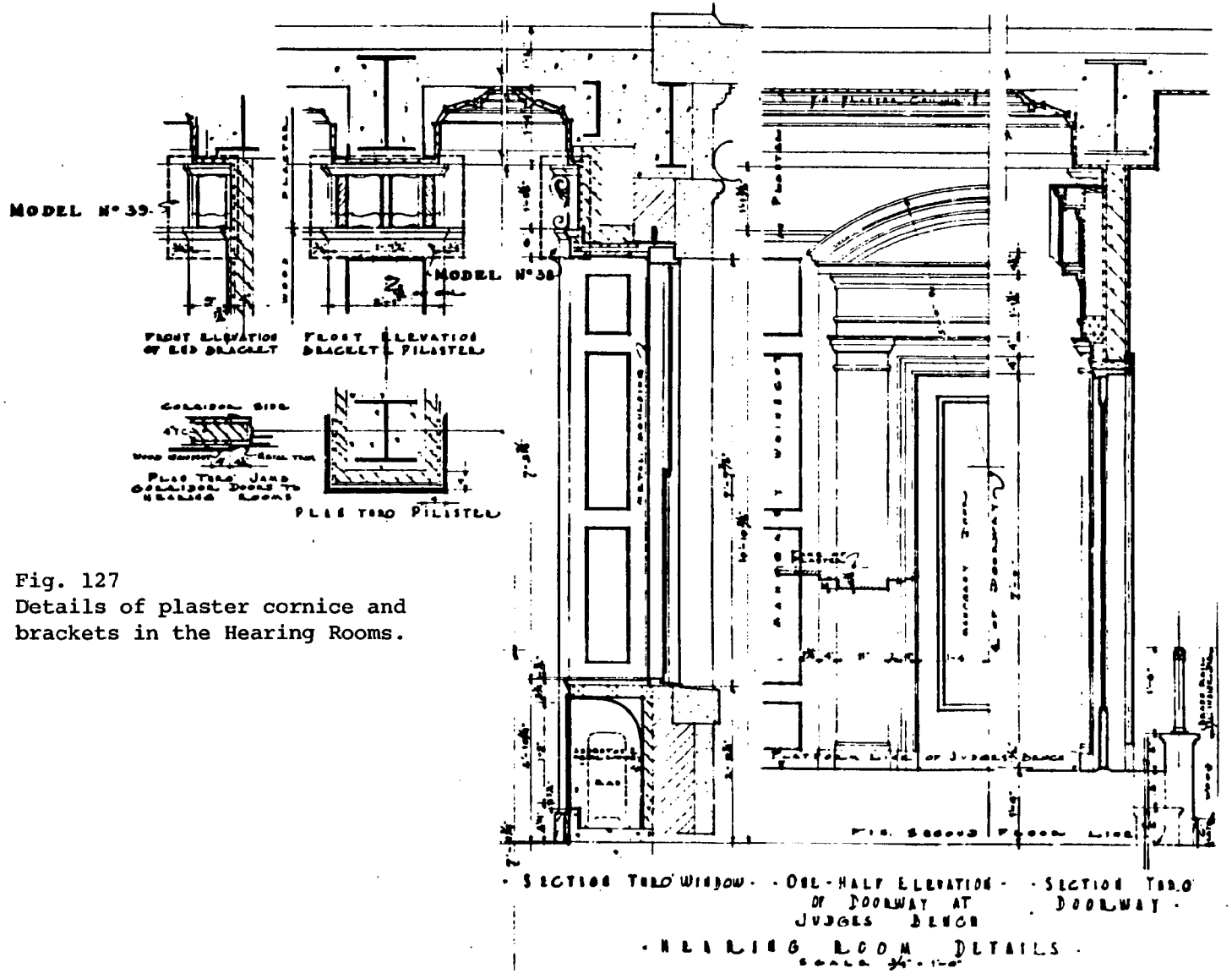


Fig. 127
Details of plaster cornice and brackets in the Hearing Rooms.

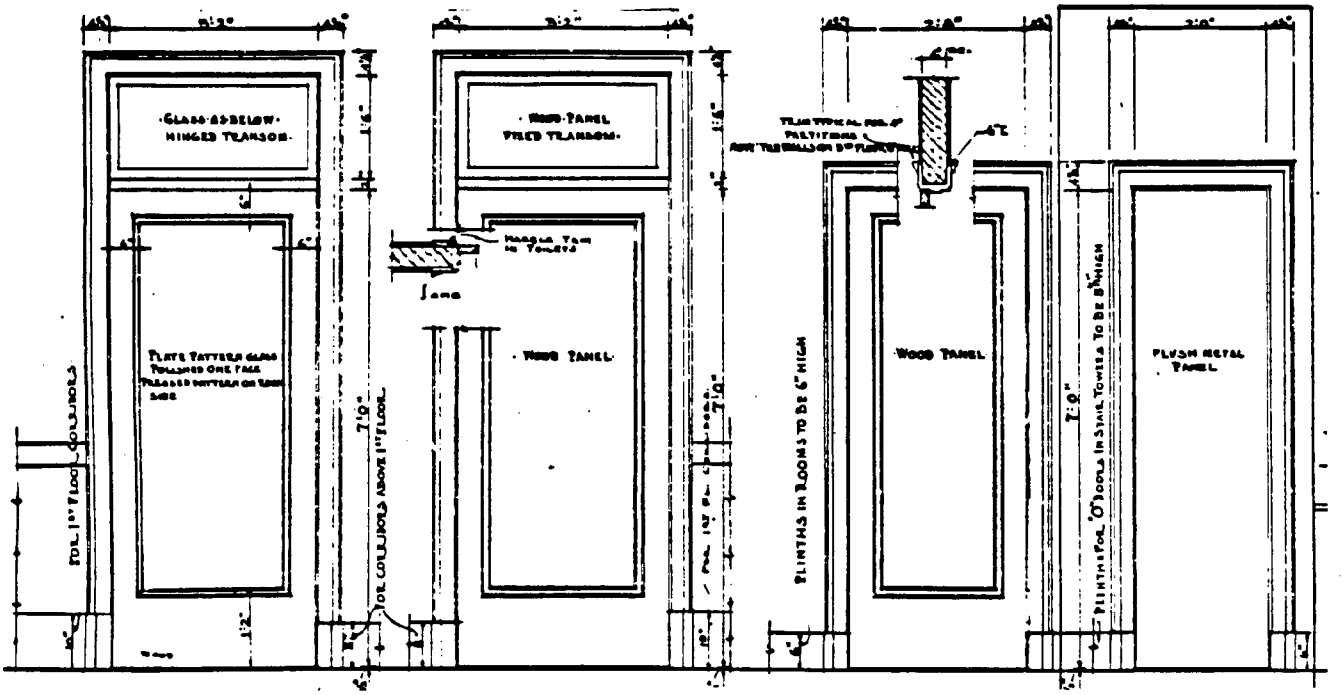


Fig. 128. Details of original office doors.

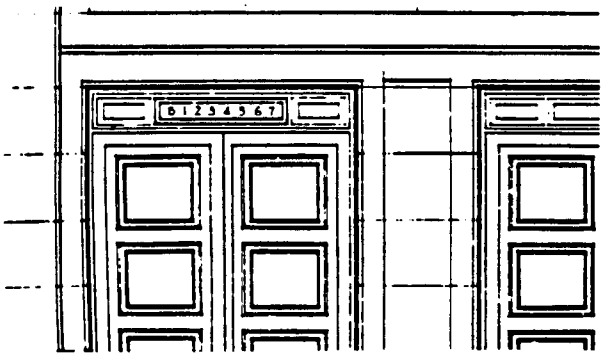


Fig. 129
Detail of elevator doors at first floor showing indicator.

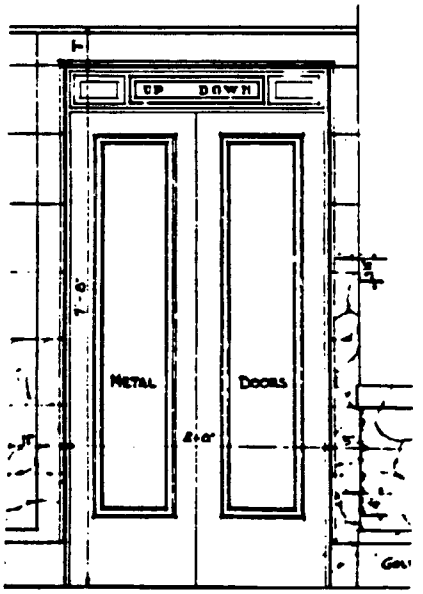


Fig. 130
Drawing of original elevator doors on upper floors.

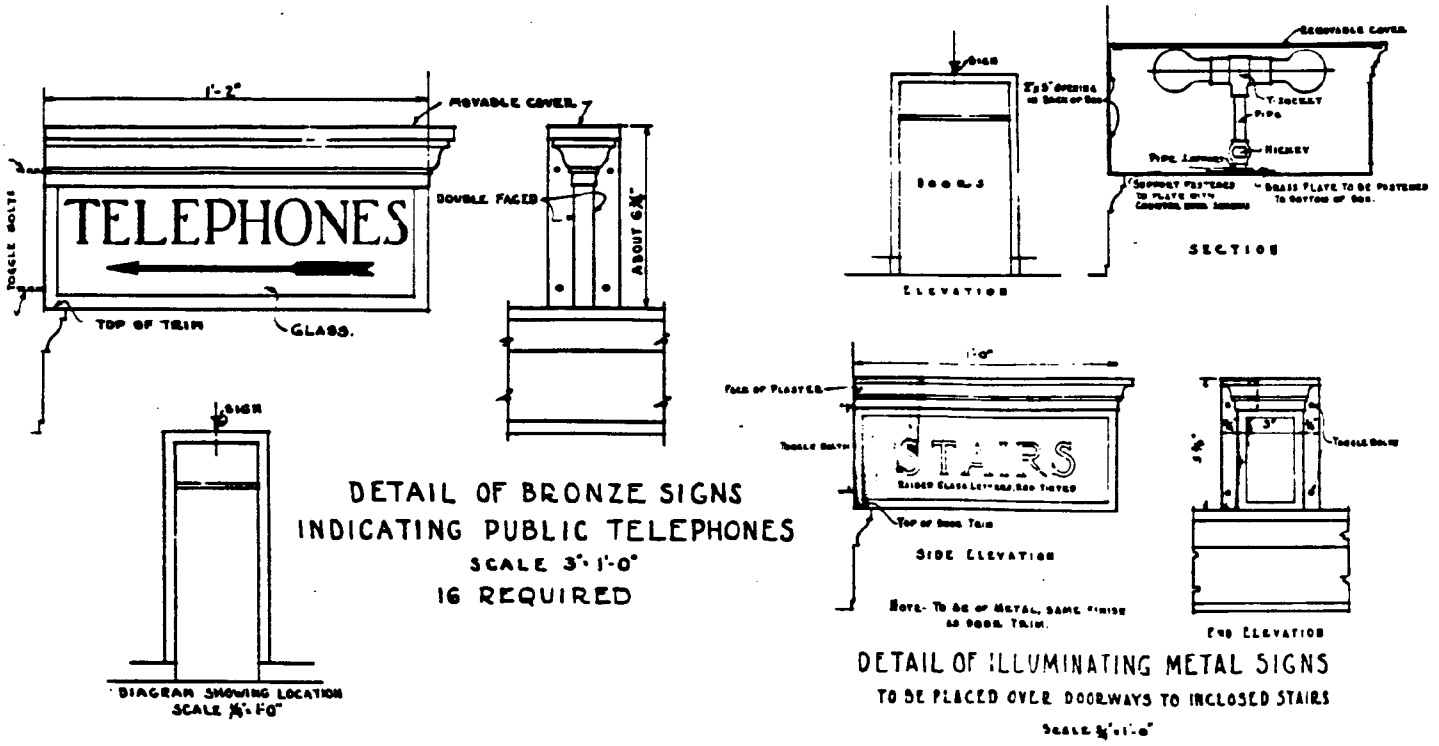


Fig. 131. Detail of original illuminated signs used for telephones, stairs, elevators and special offices.

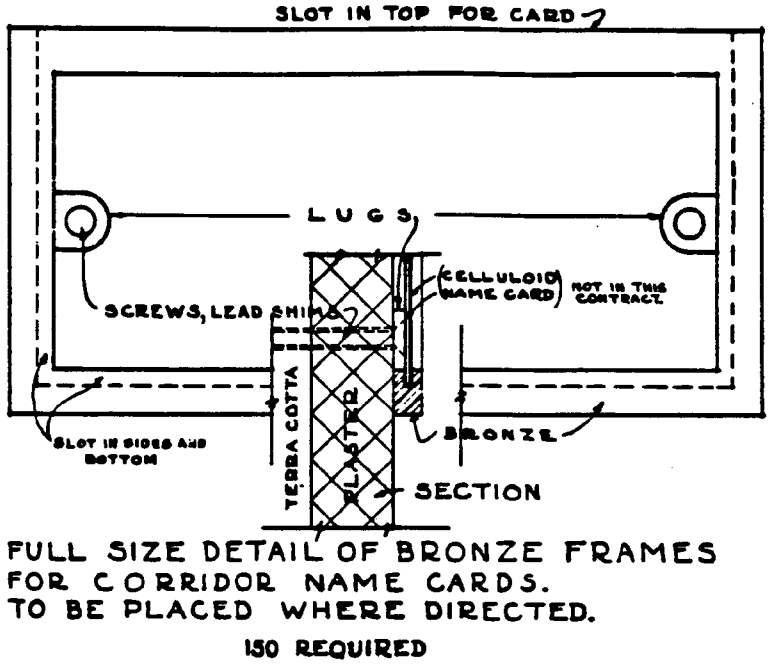


Fig. 132
Detail of original bronze corridor name card frames.

VI
MATERIALS CONSERVATION ANALYSIS

VI. MATERIALS CONSERVATION ANALYSIS

A. GENERAL CONDITION STATEMENT

The exterior and interior of the Internal Revenue Service Building in Washington, DC were examined on-site in November of 1979. All exterior elevations, roof, light courts and interior public spaces were surveyed from the ground, third and seventh floor promenades and rooftop elevator penthouse, using binoculars where necessary. The building is in good overall condition.

Most of the masonry is sound with areas of moderate to heavy soiling. The mortar joints on projecting elements such as the base course, belt courses, cornice and balustrade need to be repointed. Most of the wall surface joints are tight. There is very little cracking of the stone units; none on the vertical surfaces are critical. However, there is the potential of a major problem at the main cornice where two modillion blocks have already broken off. A large crack across one of the marble column bases is the only other masonry defect requiring major repair. However, the holes bored for the electric birdproofing system will cause large scale cracking and spalling problems if left unaltered.

The iron areaway grates have generally been kept well painted on top, but are corroding on the underside. The bronze entrance doors, frames and transoms are generally in good, though dirty, condition.

In the courtyards, the lower rails of the cast iron spandrel frames supporting the marble panels are corroding, as are the balcony railings on the third floor balcony. Masonry and metal problems and solutions are described in greater detail below.

On the interior, the historic finishes are generally in good condition. The marble and terrazzo floors have very few damaged areas. The marble baseboards are dirty from wax build-up. In the main lobby, the Mankato stone has been covered with a brown glaze-like coating. The marble wall surfaces are in excellent condition.

The interior bronze has been cleaned in a variety of ways; in some cases, the original statuary finish has been removed and the bronze polished.

The finish on the wood paneling in some of the manually-operated elevators and the Hearing Rooms has aligatored, but the wood itself has suffered minor damage.

Plasterwork throughout the building is generally good, but there are several instances of damage from moisture problems, in one instance involving ornate plasterwork.

More specific description of problems and solutions for the exterior and interior materials follow.

B. CLAY TILE

1. Existing Conditions

Mission or barrel tiles cover all of the roof areas except the 12th Street mansard and the elevator penthouse roofs. Less than 50 of the tiles are loose or damaged. Damage is concentrated along the valleys, ridges and expansion joints indicating that the damage has been caused by snow and ice buildup and foot traffic.

2. Alternative Treatments

a. No treatment. This will allow water penetration to continue, causing deterioration of the wood battens and the concrete decking.

b. Replace the damaged tiles with new to match the existing. Install new battens and flashing as required.

C. SLATE SHINGLES

1. Existing Conditions

Slate shingles cover only the north portion of the roof facing 12th Street (see Fig. 146).

a. Approximately 2% of the slate shingles are cracked, broken or missing. The major damage occurs on the lower, steeply sloped section of the mansard. Cause appears to be normal weathering.

b. Mastic used to secure the shingles on the upper, flatter roof surface of the mansard is oozing out at the bottom and sides of the shingles. The problem may be caused by the use of excessive mastic during installation or by the use of an incorrect product

2. Alternative Treatments

a. Broken and missing slate shingles

i. No treatment. This will permit water penetation to continue, causing deterioration of the decking and interior finishes.

ii. Replace broken and missing shingles with new ch to mat the existing. This treatment is recommended to prevent further moisture penetration. It will also improve the appearance of the roof.

b. Mastic

i. No treatment is a viable alternative at this point in time. Although the mastic is unsightly, the shingles appear to be secure. The roof should be monitored to detect any slippage of the shingles. The composition of the mastic is unknown. If it is an asphalt material it could cause deterioration of the adjacent copperwork.

ii. Remove all mastic from the surface of the slates shingles and adjacent copperwork. This will improve the appearance of the roof and eliminate potential deterioration of the copper.

D. GRANITE

1. Existing Conditions

Granite is used as the basecourse for all of the exterior walls, the entrance stairs and platforms, curbing and retaining walls for the ramp to the garage. Three major conservation-problems were noted:

a. The joints in all of the entrance stairs and platforms are deteriorated and in some places open (Fig. 137).

b. The basecourse in the Service Court has some surface scaling (Fig. 138). This is related to two factors: poor drainage of the paved parking surface with resultant absorption of water by the masonry walls along the perimeter of the courts, and the use of salt to melt ice in winter.

c. The basecourse in Court C (northeast courtyard of main building) is scaling also due to poor drainage of the courtyard garden plus deteriorated and improper pointing.

2. Alternative Treatments

a. Deteriorated and open joints in the stairs (Item 1a above)

i. No treatment. This will permit water to penetrate and collect between and beneath the stone. Freeze-thaw cycles may cause shifting of the stone and spalling of the stone units, thereby making the step surfaces unsafe. Moisture penetration of the concrete and brick foundations for the stairs is another serious concern. This will eventually cause failure in these materials and a misalignment of the steps, which can only be remedied by total dismantling and rebuilding of the entire stairway structure.

ii. Fill with pointing mortar. The simplest remedy, but not the most practical on horizontal step surfaces with joints wider than 1/4". The horizontal surfaces are more subject to weathering, i.e., standing surface water as well as more severe thermal movement. A more flexible material is prefered in these areas.

iii. Caulk joint with flexible sealant colored to match the granite backed with compressible polyurethane rod. This will provide sufficient flexibility for the expansion and contraction of the stone while preventing water accumulation and the associated problems. To provide an abrasion-proof surface, backing rod can be inserted approximately 1-1/2" deep in the joint, sealant applied above to a depth of 1/2" the width of the joint, with pointing mortar applied 1/2" plus deep above and flush with stone edges.

iv. Sand or shovel walkways and discontinue the use of salts to clear ice in the winter, as these cause a chemical discoloration and deterioration of both the stone and pointing mortar.

b. Surface scaling of granite in Service Court and Court C (Item 1b and c, above)

i. No treatment. This will permit the continued deterioration of the stone, which at this point is merely superficial in nature. Though the stone is only a facing material and not structural, further erosion of the stone would present aesthetic problems and may cause moisture problems along the inside of the walls. At that time, the entire stone would have to be replaced.

ii. Repoint the joints and discontinue use of salt or other chemicals on the adjoining surfaces. This is a viable alternative, as it would remove two of the three destructive forces, rain water entry and chemical attack. However, moisture absorption would continue affecting the stone as well as the new pointing, which would have to be watched carefully and replaced on a regular basis.

iii. Repoint joints, discontinue use of salt and regrade adjoining pavement or garden surfaces to drain away from the base of the walls. This is the best alternative for solving the aforementioned problems, as well as the rising damp condition. In the case of the garden courtyard, the grading for the drainage system would have to be carefully maintained to keep the rising damp problem from reoccuring.

E. LIMESTONE

1. Existing Conditions

Smooth limestone blocks were used for facing the wall surfaces of the street elevations and the courtyard up to and including the main cornice, balustrade and the recessed seventh floor walls. Limestone was also used for the columns and pilasters on the street elevations of the Extension. Five conservation problems were noted for the limestone surfaces:

a. The wall surfaces are unevenly soiled and have several types of staining including bird droppings, algae, lichen and rust. Areas of major dirt accumulation occur where there is continual exposure to automobile traffic, especially around the arched entrance to the Service Court and on the Pavillion immediately adjacent to the 12th Street line (Fig. 139). The fascia below the main cornice has several areas of heavy staining due to water run-off (Fig. 140). Staining from roosting birds is most critical around the column capitals on the colonnade and the small entrance porticos on 10th Street and the projecting third floor window lintels on 10th Street (Fig. 141). This problem is not only aesthetic. Soiling from cars and birds is causing deterioration of the stone that is especially critical around areas of carved detailing. Algae and lichen stains can also react chemically with the stone causing pitting.

b. Areas of the limestone need to be repointed. In the past, a caulking compound has been used on the parapet wall below the balustrade, and on the upper wall at the seventh floor level (Fig. 142). Deterioration of the caulking has left the joints vulnerable to moisture penetration in this critical area. The majority of other deteriorated mortar joints occur on the projecting moldings of the building, the cornices and beltcourses as well as the pediments on the 12th Street Pavillion, the fifth floor window heads, balustrade and seventh floor walls and all the wall surfaces within the 12th Street arcade.

There has been minor spalling of the stone along the mortar joints at the first floor of the 12th Street arcade walls (Fig. 143). The mortar used to repoint in the past appears to have been too strong, and when it was dislodged from the joint, it pulled some of the stone away from it. The bed mortar, however, is sound.

c. Two stone modillions have dropped from the cornice of the north side of the 12th Street Pavillion. There is evidence of moisture penetration into the cornice either through breaks in the cornice drains or flashing, or through the deteriorated joints in the face of the cornice. In all probability, the steel outriggers used in the cornice have started to corrode and expand, forcing the cantilevered modillions downward and finally causing them to break off at the wall plane. The extent to which this

condition affects the cornice as a whole is not known at this time.

d. The anchors for the electric pulse bird deterrent system are bolted directly into the stone at several levels around the entire perimeter of the building. In several places, the anchoring bolts and the insulators have loosened or come out of the masonry, leaving holes (Fig. 144) open to water collection which will cause cracking and spalling problems in the future.

e. The 12th Street Pavillion wall, which is withinone foot of the street curb, has been hit by automobile doors, fenders, etc., causing gouging of the stone.

2. Alternative Treatments

a. Soiled and Stained Stone (Item 1a.)

i. No treatment. This alternative is viable, although aesthetically there is a strong case for cleaning the stone. Eventually, the ingredients within the soil and stains, both organic and inorganic will chemically break down the surface of the stone. The longer the limestone remains soiled, the greater the chances of permanent stains and erosion occurring on the surface material.

ii. Cleaning the stone. Properly conducted according to test results, the cleaning operation will solve the aesthetic and conservation problems for many years.

b. Deteriorated Mortar Joints (Item 1b.)

i. No treatment. This will permit a gradually increasing amount of water to enter the walls, resulting in spalling of the surface stone and deterioration of interior wall materials.

ii. Fill joints with pointing mortar. This is a viable alternative, but not the most practical for the horizontal surfaces of elements such as the balustrade and courtyard balconies. In these areas, the high degree of exposure places additional stress on the joint material, which therefore deteriorates at a faster rate than in other areas of the building.

iii. Fill joints on vertical surfaces with pointing mortar and the joints on major horizontal surfaces with waterproof joint sealant.

c. Broken Modillions on the Main Cornice (Item 1c.)

i. No treatment. Due to the potential hazard which the falling stone poses to pedestrians, this alternative is not recommended.

ii. Remove all unsound stone. This alternative would have an extremely adverse effect on the appearance of the

structure and should not be considered.

iii. When staging is erected to repoint the main cornice, examine the modillions for fissure cracks in the stone at the wall plane. Also sound the stone with a rubber mallet to detect cavities within the cornice. Reattach loose pieces with epoxy or stainless steel hangers, depending upon the extent of damage. Selected systems should offer the least amount of impact on the appearance of the structure, while preventing further breakage. This would be the most responsible alternative.

d. Holes from the Birdproofing System (Item 1d.)

i. No treatment. The holes for the system are generally on horizontal surfaces and will readily fill with water. Large scale cracking and spalling of the stone will eventually occur.

ii. Restore electric birdproofing system. Studies by GSA have determined that the system is uneconomical to maintain, so this option is not within the limits of present policy.

iii. Remove system and fill holes with pointing mortar. This is a viable option, but due to the size of the holes, mortar is not the most practical filler material.

iv. Remove system and fill holes with waterproofing sealant which will be more flexible and able to maintain a watertight seal. Install a new passive deterrent system. Of the systems currently available, the least obtrusive consists of strips of aluminium prongs, spaced to prevent birds from roosting and nesting. They require little maintenence except for periodic removal of debris which may catch in the prongs. For any system chosen, attachment to the stone must avoid the use of ferrous metal to stone contact and the use of adhesives which are inappropriately colored or will stain the masonry.

e. Damaged Limestone on 12th Street Pavillion (Item 1e.)

i. No treatment. The damage is superficial in nature and does not pose future problems. However, the source of the problem will continue and this wall area, at pedestrian level, will become an unfortunate eyesore. The only solution, at that time, will be replacement of the stone block.

ii. Replace the stone. The present problem is aesthetic and not sufficiently serious to warrant the expense of replacing the stonework.

iii. Erect protective ballards. The wall should be protected from further damage. A low barrier could be erected along the curb which would prevent car doors or bumpers from coming into contact with the stone. Ballards connected by a taut chain would provide protection without being a series visual intrusion.

F. MARBLE

1. Existing Condition

Honed-finish marble blocks were used for the side reveal walls of the entrances, the columns on all but the Pennsylvania Avenue facade, the window entablatures on the Circle elevations and the spandrel panels in the courtyard. These elements are in excellent condition with only one defect in the base molding of one of the columns on the east end of the colonnade, where a large crack has developed (Fig. 108). This appears to have been caused by a fault within the stone itself and not from any external impact.

2. Alternative Treatments

a. No treatment. This is a viable alternative, but there is the possibility that the piece will become dislodged and lost. At that time, a new piece of marble would have to be carved to fill the void.

b. Fill the crack with pointing mortar or sealant. These treatments would keep water out of the crack, but would not bond the loose pieces of stone to the column base.

c. Carefully remove cracked fragment and reattach with polyester resin adhesive. This will preserve the existing stone and prevent further deterioration. Adhesive is advisable over the insertion of anchors, as there will be danger of further cracking from drilling to fit the anchors.

G. BRICK

The interior courtyards and areaway walls are faced with buff colored vitrified brick laid in common bond. The end walls at the northeast corridor of the 12th Street Circle and the west end of the Extension are of red brick, the latter wall painted gray. All brick is in excellent condition with no apparent deterioration.

H. COPPER

1. Existing Conditions

Sheet copper was used for sheathing the marquee over the loading platform in the Service Court, the dormer windows and decorative ridge cap on the mansard.

a. The marquee is soiled but in good condition, except for a few areas where the copper has been torn by trailers backing up to the platform (Fig. 145).

b. The dormer windows are in good condition, but the copper is heavily soiled. This accumulation of dirt not only impacts the appearance of the copper, but holds corrosive materials to the metal surface (Fig. 146).

c. The decorative ridge cap is streaked in appearance and is slowly being eroded by runoff from the upper slope of the roof (Fig. 146).

2. Alternative Treatments

a. Torn copper (Item 1a.)

i. No treatment. As long as trailers are prevented from backing into the copper again, the damaged portion is only an aesthetic problem. Repeated impact will jeopardize the condition of the wood framing of the marquee, which could only be repaired by large scale removal and replacement of the marquee structure and copper sheathing.

ii. Repair copper with new copper. This will protect the wood framing and return the marquee to its original appearance. The patches will visually stand out at first, but in the urban environment, the protective patina will develop quickly.

b. Soiled Copper Marquee and Dormers (Item 1b.)

i. No treatment. Continued build-up of soil will increase the possibility of corrosion of the copper. Remedial action, while the metal is still sound, is advisable.

ii. Remove dirt and grease from the copper surfaces with alkaline cleaner. The patina should be preserved, as it is the copper's natural protective coating. Application of a corrosion inhibitor will neutralize any salts or chlorides remaining on the copper, and temporarily prevent accumulation of new corrosives. The copper should be monitored for cleaning on a regular basis. Defects on the surface material should be repaired immediately. In this way, these elements can be preserved for the life of the building.

c. Eroded Copper Ridge Cap (Item 1c.)

i. No treatment. The copper will eventually be worn away. Beyond the detrimental appearance, this erosion will trigger deterioration of the slate roof and inner and roof framing systems.

ii. Replace copper ridge cap with new copper material detailed to match the existing. Due to the high cost of copper and the amount of specialized detailing, this alternative will be very expensive.

iii. Repair existing ridge cap and coat with waterproofing material colored to match the natural green patina of copper. This is a viable alternative that would preserve the historic material in place while detering further corrosion of the copper.

iv. Replace ridge cap with moulded polyurethane colored to match the natural green patina of copper. This treatment would retain the appearance of the copper while adding durability against the effects of the run-off. However, for the 250 lineal feet required, it would not be the most cost effective procedure.

v. Remove the decorative ridge cap and replacewith simple copper flashing. This alternative would provide good protection, but would seriously impact the appearance of the mansard, and is not recommended.

I. BRONZE

1. Existing Condition

The exterior bronze doors (Fig. 147), door frames, transoms and light fixtures are dirty and weathered, with the exception of the entrance doors along 12th Street, which have been cleaned in the recent past. This condition is essentially an aesthetic problem, though heavy accumulation of atmopheric pollution and salts will pit the surface of the metal.

2. Alternative Treatments

a. No treatment. Besides being unattractive, any corrosive products which remain on the surface will permanently damage the metal.

b. Clean the bronze using methods suited to their original finish (Fig. 112) and coat with an appropriate preservative. For the statuary finishes, bi-annual oilings help maintain the clean finish. For the polished doors, an acrylic coating will preserve the bright work for several years, though doors in high traffic areas may require yearly renewal of the coating.

J. IRON

1. Existing Condition

The exterior iron work; areaway grates, window and door grilles (Figs. 148 and 149), driveway gates, balcony railings and courtyard spandrel frames is generally in good condition. Most of the protective paint coatings have peeled and corrosion has developed on the metal, which can be remedied by wire brushing and repainting. However, there are critical problems which include:

a. The areaway grates, which have only been painted on the top side are corroding on the underside and at the edges (Fig. 148).

b. The spandrel frames in the courtyards which support the marble panels are poorly detailed, allowing water to enter the bottom edge of the frame and corrode the supporting members.

2. Alternative Treatments

a. Areaway grates (Item 1a)

i. No treatment. Eventually the corrosion of the underside of the grates and their supporting frames will destroy these original architectural elements. In the meantime, serious deterioration could pose a safety hazard to men working around the base of the building. In addition, if a section of the grillework collapses, the debris could break through a basement window and cause harm.

ii. Scrape, wire brushand repaint the top and undersides of the grates and framing in place. This treatment would temporarily check most of the problems, unfortunately, however the corrosion between the grates and frames would continue to grow. Eventually, the iron units would be deteriorated at the edges and would again be in danger of collapse. Replacement of the units and framework would then be required.

iii. Lift out the individual units, sandblast both the grate and frame to remove paint and rust scale down to sound metal, repaint all surfaces and replace. Maintain by periodic repainting on both the top and under sides. This method will assure that all the rust is removed and the metal sound before repainting. Any need for replacement of these elements would thereby be avoided.

b. Spandrel Frames (Item 1b)

i. No treatment. The spandrel frames support the marble panels in the courtyards. If the corrosion continues, the panels will eventually fall and break. Expansion of the frame due to the corrosion could also cause cracking of the marble spandrels. Continued deterioration will thus create an

increasingly hazardous situation, especially in the service court and courtyard "D", where there is pedestrian traffic.

ii. Remove all paint and rust down to sound metal, repair by spot welding, seal joint between iron and marble panel and repaint. This will restore the metal support and prevent future deterioration. The sealant will prevent water from re-entering the joint between the metal and the stone.

I. STEEL

1. Existing Condition

The steel railings and doors in the Service Court area are all in good condition and require only periodic painting.

The single significant problem concerns the steel windows which are in good condition but have been rendered inoperable by paint build-up.

2. Alternative Treatments

a. No treatment. This will have no effect on the material of the windows, but continued repainting will make more windows inoperable. As the energy shortage becomes more acute, it may be necessary to reduce dependence on mechanical HVAC systems, in which case it would be desirable to open the windows.

b. Remove all accumulated paint on windows to return sash to full operation and repaint. This will preserve the steel windows and assure the most options for ventilation of the interior spaces in the future.

J. INTERIOR MARBLE

1. Existing Condition

a. The marble flooring, baseboards and wall surfaces on the interior of the building are in good condition but are dirty.

b. The major areas of damage are small areas of the floor in the main lobby, where an exhibit structure was installed in 1968. The supports for the structure were bolted directly into the floor, creating holes in the marble that were patched with a black compound. The stairs to the second level of the exhibit space were suspended from the structure, but the last step repeatedly banged on the marble floor, badly scratching portions of the stone in that area.

c. Many plinth blocks at the base of door architraves throughout the building are broken or completely missing. Carts used for carrying mail, cleaning supplies or equipment repeatedly hit these stones, eventually breaking them.

d. There are some holes in the marble walls where items such as elevator call buttons have been removed.

2. Alternative Treatments

a. Soiled Interior Marble Surfaces (Item 1a above)

i. No treatment. While the type of wax and grime build-up on the marble is not harmful to the stone, it is aesthetically unappealing. Permanent staining could also occur.

ii. Clean and polish the marble surfaces. Proper cleaning and polishing will protect the original appearance of the marble and prevent staining or scratching of the surface.

b. Damaged Marble Flooring in Main Lobby (Item 1b above)

i. No treatment. The damaged area is insignificant in terms of the overall appearance of the lobby and does not pose any safety problems on the floor surface. Though the present patches do not match the original material, the overall patterning of the marble flooring disguises their presence. No restoration treatment is recommended. However, future exhibitions or other furnishings should only be installed after careful precautions have been taken to protect the flooring surface from wear and abrasion.

ii. Replace present patches and scratched marble with marble to match the color and design of the original flooring. The cost of this type of repair in relation to its impact upon the appearance of the space is unreasonable.

c. Broken or Missing Marble Plinth Blocks (Item 1c above)

i. No treatment. The damage makes the corridor doorways an eyesore. In addition, the same cart that damaged the marble plinth may continue to beat away at the door jamb, possibly denting the door surrounds or pulling loose areas of adjacent baseboards.

ii. Repair the broken or missing pieces with a plaster substance and paint to match the marble. Due to the vulnerability of the area, the plaster filler would be a very temporary repair. If the vehicles hit hard enough to break marble, it will not take long to dent and chip a plaster-type substitute.

iii. Repair with marble to match the existing original details. This will restore the original appearance of the hallways, and protect the adjacent surfaces from damage.

iv. Adapt carts and equipment used in the building with rubber bumper guards. This would protect the existing and restored doorways from future damage.

d. Holes in Marble Walls (Item 1d above)

i. No treatment. Openings in the marble wall surfaces detract from the appearance of the interior lobby and hallway spaces, and invite further defacement of the stone.

ii. Repair with plaster or resin tinted to match the surrounding marble. These materials will restore the uniform appearance of the marble and are sufficiently durable as a wall surface material.

iii. Repair with marble dutchmen. This process would work for larger areas but not for the typical small holes and cracks in the IRS Building. Finding matching marble and cutting to fit the holes exactly is difficult and not necessary here for the purposes of appearance or durability.

M. MANKATO STONE

1. Existing Condition

The Mankato stone walls in the Constitution Avenue vestibule, lobby and adjoining coridors have been treated with same coating which has colored the light gray walls a medium brown. Otherwise, the masonry is in excellent condition.

2. Alternative Treatments

a. No treatment. The darkened coatingof the stone does not pose a threat to the preservation of the material. However, it is a significant departure from the original light gray appearance of the walls.

b. Clean the Mankato stone to its natural color. This would restore the original appearance of the wall surfaces. It should be noted, however, that the initial reasons for applying the coating are unknown. It may be disguising stains in the natural stone which will be uncovered when the coating is removed. Or, it may have been applied to compliment the darkened colors of the decorative ceiling, which cannot be cleaned or otherwise reversed. Cleaning the walls will cause the ceiling to appear dirtier by contrast.

N. WOODWORK

1. Existing Condition

a. The wood paneling in the eight original Hearing Rooms is in good condition, but the varnish finish in several rooms is alligatored and spotted. The dropped acoustical ceiling appears to have been added without damage to the woodwork itself.

b. Most of the wood paneling in the elevator cabs is in good condition, with a little alligatoring of the finish.

2. Alternative Treatments

a. Woodwork in Hearing Rooms

i. No treatment. The deterioration of the finish on the woodwork does not affect the preservatioan of the material. However, the unattractive appearance invites abusive treatment such as the use of nails and thumbtacks for applying pictures and posters to hide the walls.

ii. Clean and refinish the woodwork. The renewed finish will restore the handsome appearance of the rooms.

b. Elevator Cab Walls

i. No treatment. The slightly alligatored finish does not affect the preservation of the wood paneling in the cabs. However, the deterioration of the coating will increase and worsen the appearance of the woodwork over time.

ii. Remove the finish and apply a new coating. The unusually beautiful detailing of the woodwork in the cabs will be preserved for many years to come.

O. PLASTERWORK

1. Existing Conditions

The interior plasterwork is sound throughout the building with the exception of isolated areas of damage.

a. One area of decorative plasterwork has been damaged at the ceiling level of the northeast corner of the Constitution Avenue Lobby. Deterioration at this locatioan appears to have been caused by leaking of radiator pipes from the floor above.

b. All other plaster damage has been caused by deterioration of the drainage/interior leader system and resultant moisture infiltration (Fig. 136).

2. Alternative Treatments

a. Constitution Avenue Lobby

i. No treatment. It is not known whether the radiator pipes are still leaking. If so, no treatment will result in continual deterioration of the plaster and paint.

ii. Repair the leaking radiator piping and patch or replace the deteriorated plaster.

b. Other Plaster

i. No treatment. Some recent repairs have been made to the flashing at the seventh floor, thereby alleviating the cause of the plaster damage at this location. Other damage resulting from interior leaders will only continue to worsen if leaders are not repaired.

ii. Repair the exterior drainage system and provide continued maintenance to ensure rapid disposal of storm water (Figs. 134 and 135). Repair or replace the interior leaders and repair the damaged plaster.

Fig. 133
Tile is in good condition with only minor breakage. Note the gutter detailing.

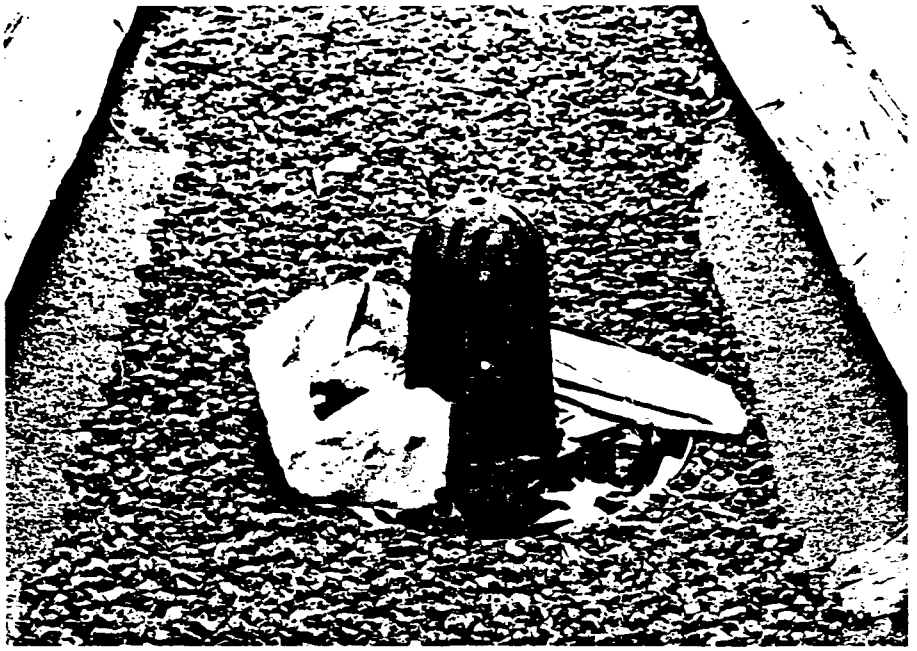


Fig. 134
Typical detail of drain in promenade level. Debris from roof collects here after a storm and should be cleaned out.

Fig. 135
Stainless steel flashing on top of the main cornice was covered with sheets of black mastic which has bubbled and curled. This surface was intended to drain inward to downspouts located along the building wall. The mastic condition is preventing proper drainage and enough moisture is collecting to support plant life.

Fig. 136
Detail of plaster damage at the seventh floor. In this case, the interior leader may be clogged and split, allowing the rain water to drain into the surrounding corridor and office plaster walls.

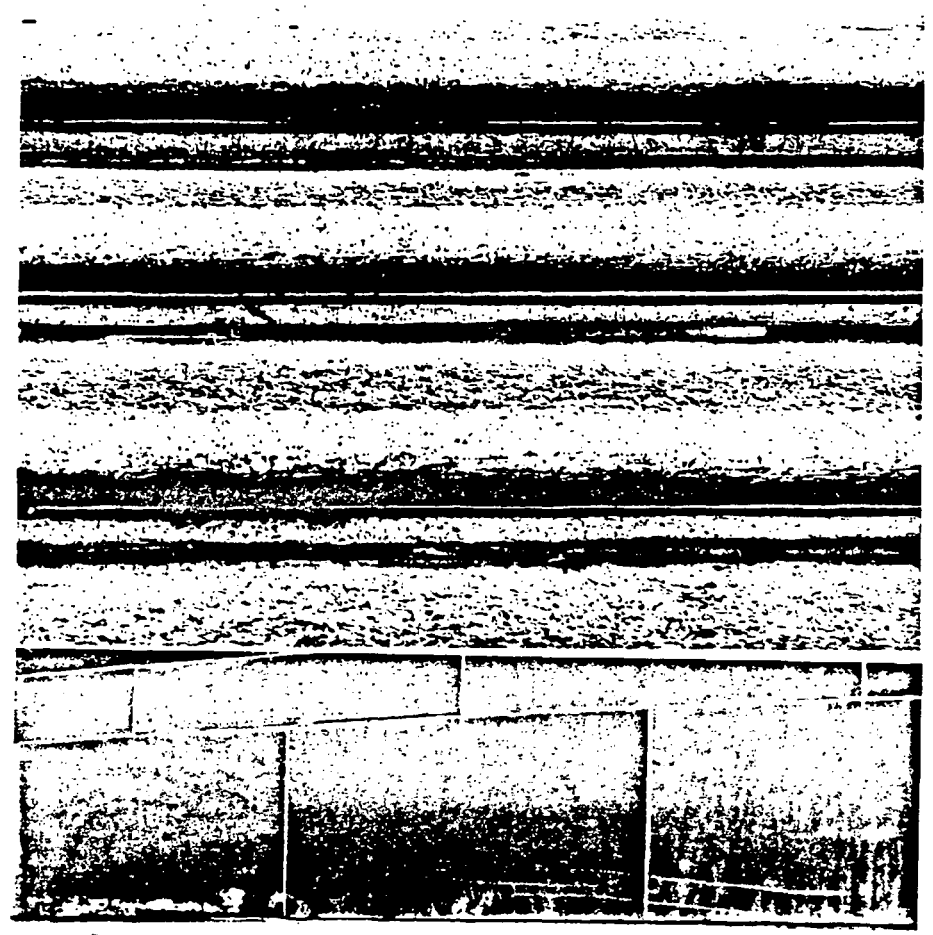


Fig. 137
Typical condition of pointing on exterior stairs.

Fig. 138
Granite basecourse in Service Court: scaling of the granite here is probably due to the use of salt crystals to melt ice on the parking lot in the winter. Similar conditions exist in Court C.

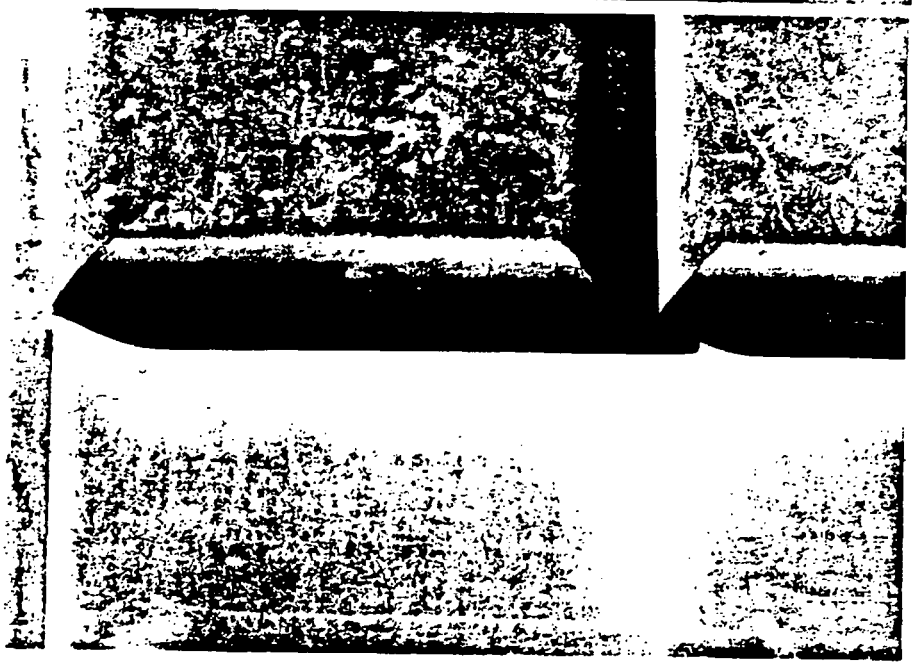


Fig. 139
Detail of typical soil problems on rusticated base of street elevations. Masonry on upper floors is generally not as dirty.

Fig. 140
Example of heavy staining on the fascia of the main cornice due to drainage problems.

Fig. 141
Bird droppings on column bases. The birdproofing system is not operative.

Fig. 142
Detail of wall at seventh floor level showing caulking compound pulling out of mortar joints.

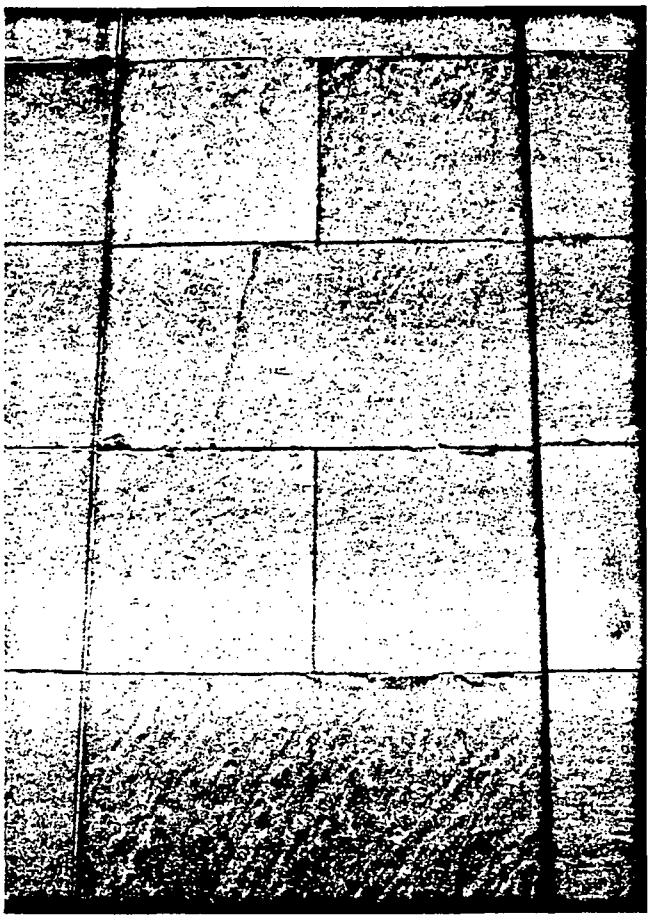


Fig. 143
Detail of wall in 12th Street arcade showing spalling of stone due to improper repointing with high Portland cement content mortar.

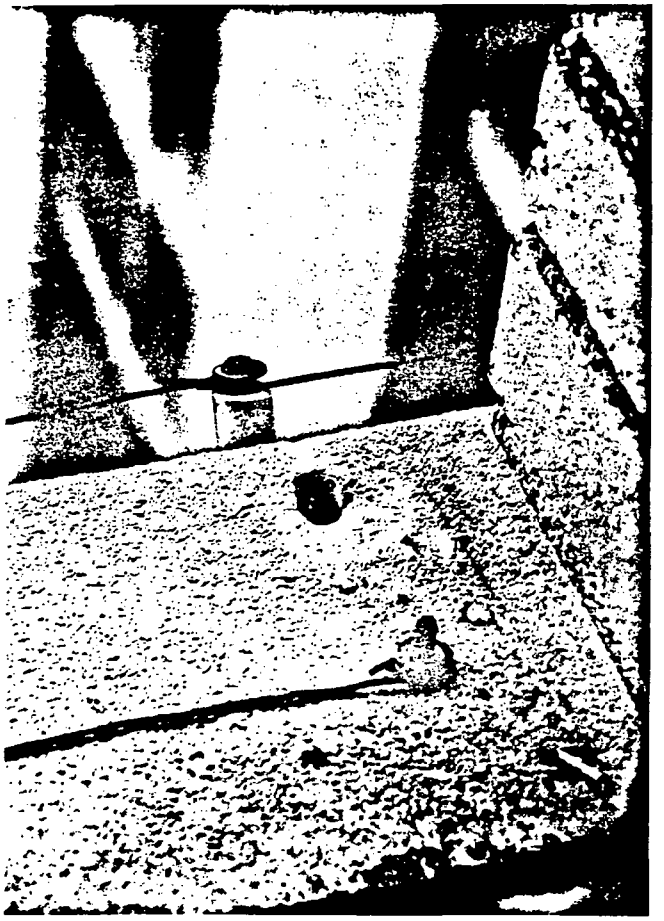


Fig. 144
Holes such as this, approximately ½" wide and deep are occurring all over the building as the defunct birdproofing system is allowed to deteriorate. This example is located on a fifth floor window sill in the courtyard.

Fig. 145
Detail of copper clad marquee in Service Court showing some of the damage from trucks backing up to the loading platform.

Fig. 146
Detail of mansard on pavilion showing soiled copper sheathing on dormer windows, and streaking on copper ridge cap. Slate on mansard is generally in good condition with a few broken, slipped or missing shingles. Black mastic bedding material has flowed out between the slates on the upper roof slope.

Fig. 147
Typical condition of the original bronze doors.

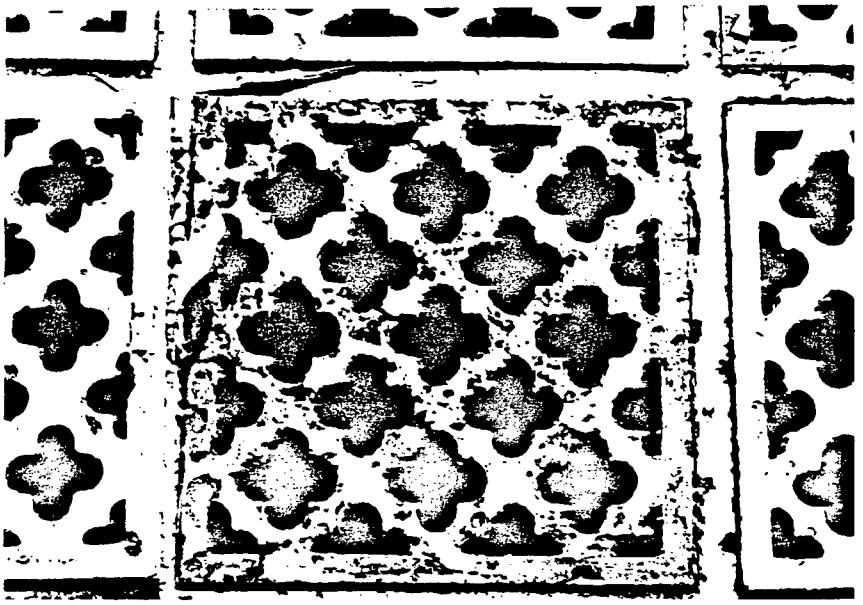


Fig. 148
Detail of cast iron grate unit on the areaway around the exterior perimeter of the building. Generally, these units are in good condition, but are in need of cleaning and repainting.

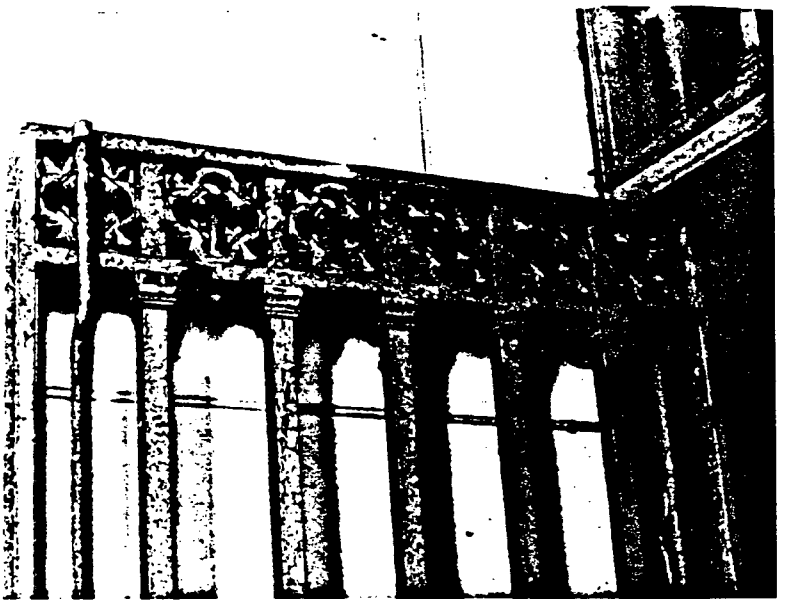


Fig. 149
Detail of iron grill at doorway in the Extension. Cleaning and repainting is recommended.

VII
EXTERIOR MASONRY and METALS CLEANING ANALYSIS

VII. EXTERIOR MASONRY AND METALS CLEANING ANALYSIS

A. DESCRIPTION OF STAINS AND SOILING

The exterior surfaces of the Internal Revenue Service Building were examined visually to determine the location, condition and causes of general staining and deterioration affecting the masonry and metals.

The building has accumulated the effects of 50 years of air pollution, traffic exhaust, bird excrement and organic growth. If left unchecked, all of these factors are harmful to the stone and metals.

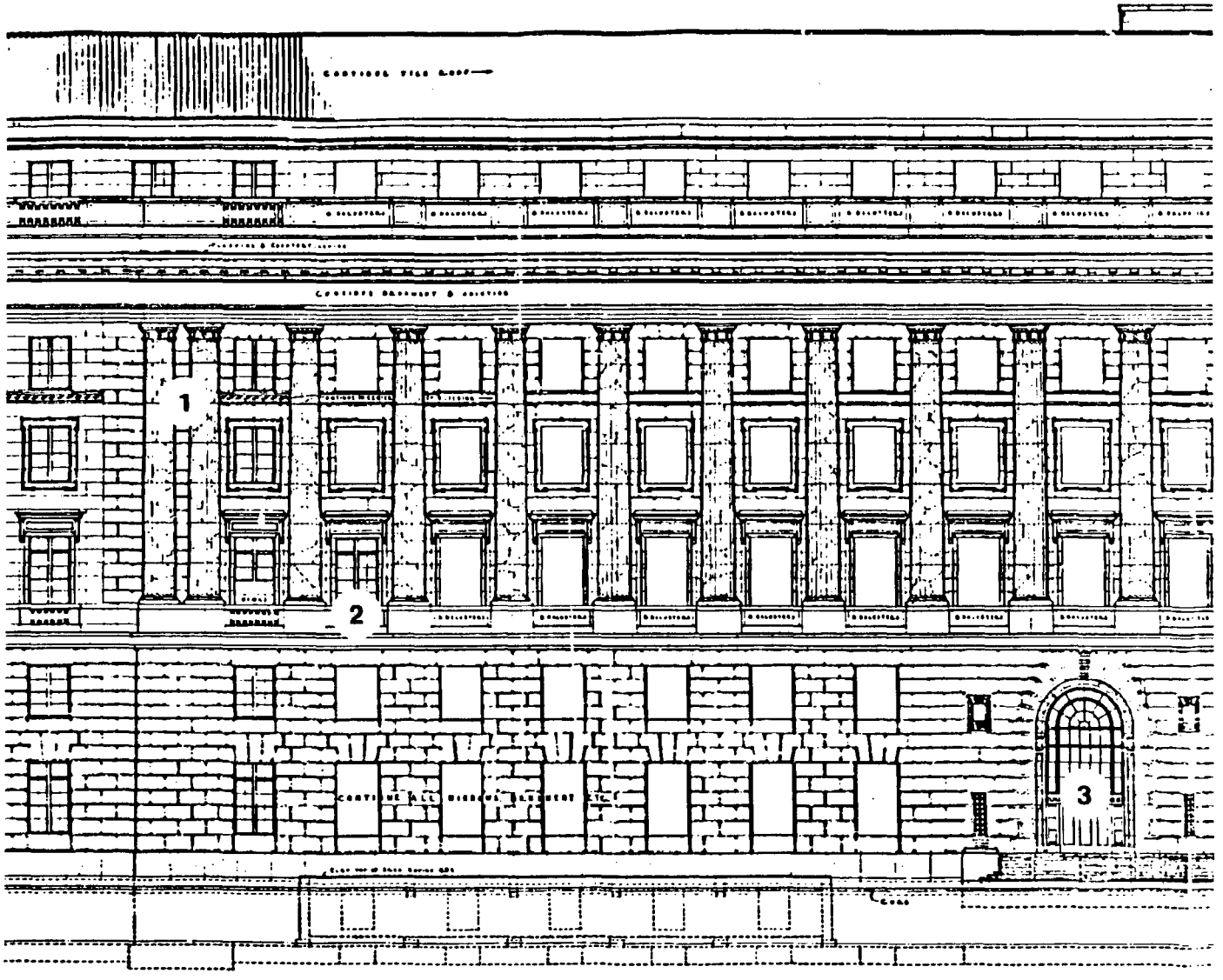
The following chart lists and describes the materials, location, condition and cause of deterioration.

TYPICAL CONDITIONS AND CAUSES OF DETERIORATION OF MASONRY AND METAL ELEMENTS

MATERIAL AND SURFACE TREATMENT	LOCATION ON BUILDING	ATTACHMENT SYSTEMS	GENERAL CONDITION/ APPEARANCE	AREAS AND TYPES OF DIRT, STAINS AND SOILING	CAUSES OF SOIL AND DETERIORATION
Limestone (Indiana oolitic) Smooth, dressed face, ashlar	Street elevations: wall surfaces, balustrade, cornice columns at north end of 10th Street and on Pennsylvania Avenue. Courtyards: 1st and 2nd floor walls, 3rd floor balcony, belt-courses, cornice.	6-12" stone facing blocks over brick infill. Some steel anchors. Cornice: steel outriggers. 10th Street pediment: 3/4" brass dowels. Columns: 6" granite cubes centered between drums.	Good (light soiling of upper walls)/heavy dirt accumulation at lower floor levels (some wind erosion of 7th floor balustrade), some staining at cornice level, one incident of graffiti.	Overall walls: soot Wall surfaces adjacent to columns and pilasters: small amount of bird droppings. Balconies on north street and courtyard elevations: algae. Pediment roofs on 10th Street: lichen. Main cornice: moisture stains.	Traffic exhaust Inoperable bird deterrent system. Moisture penetration and insufficient direct sunlight for drying out. Relatively level slope allows moisture penetration and plant growth. Improper drainage from upper surface of cornice and/or 7th floor promenade.
Limestone (Indiana oolitic) Picked face, ashlar	Street elevation: blocks immediately adjacent to arched masonry openings.	Same as above	Same as above	Same as above	Same as above
Marble, gray (clear-faced Tavernelle marble, Tennessee) Honed smooth face	Street elevations: reveal of entrance ways, all columns and pilasters and capitals (except for those already noted as being limestone). 12th Street pavilion and circle: 3rd and 4th floor window architraves.	Wall surfaces tied to brick backing with steel anchors. Columns: 3/4" brass dowels between drums. Column capitals: attached to overhead steel outriggers with 1" steel bolts.	Good/light soiling.	Overall: light soot. Column bases and capitals: bird droppings.	Traffic exhaust. Inoperable bird deterrent system.
Marble, green Honed smooth face	Interior courtyards: spandrel panels.	2" thick slabs set in cast iron frames.	Good/light soiling.	Light soiling.	Air pollution.

MATERIAL AND SURFACE TREATMENT	LOCATION ON BUILDING	ATTACHMENT SYSTEMS	GENERAL CONDITION/ APPEARANCE	AREAS AND TYPES OF DIRT, STAINS AND SOILING	CAUSES OF SOIL AND DETERIORATION
Granite, gray (Mt. Airy, North Carolina) Smooth, dressed face ashlar	Street and courtyard elevations: stairs and basecourse, driveway ramp embankment wall.	Stairs: set on brick and concrete foundations Basecourse: 1'3" thick blocks sit on concrete foundation.	Good, light surface spalling of basecourse in courtyard and service court/light soiling.	Overall: light soot.	Traffic exhaust. Spalling from moisture absorption due to poor drainage of adjacent courtyard surfaces.
Granite, pink (Deer Isle, Maine) Polished	Courtyards B, C & D: fountains, benches & urns.	Fountains: reinforced concrete foundation. Benches and urns: bronze dowels.	Good, some benches and urns are unlevel/light soiling.	Overall: light soot.	Air pollution Settlement of courtyard infill.
Brick, buff, standard size, vitrified finish	Street elevations: areaway walls. Courtyards: areaways and 3rd through 7th floor wall surfaces.	Areaways: concrete foundations. Courtyards: brick infill with some steel anchors.	Good/very light soiling.	Overall: light soot.	Air pollution
Brick, red standard size, fired finish	End wall of 12th Street circle	Brick infill with some steel anchors.	Same as above.	Same as above.	Same as above.
Brick, red standard size, painted	West wall of Extension	Same as above.	Good/some paint peeling.	Same as above.	Air pollution Weathering of paint coatings.
Sandstone, buff (trade name: Ambastone)	Street elevations: pavement of arcades, 10th and 12th Streets. Courtyards: pavement of garden paths.	Arcades: concrete foundation, mortar joints. Courtyards: concrete foundations, grass in joints.	Good/soiled and worn.	Arcades: soot	City street dirt tracked or washed onto surface.
Bronze, extruded polished finish	Street elevations: entrance doors and hardware sign lettering.	Lettering: lead plugs in limestone.	Good/dirty, all but the 12th Street doors have not been kept polished.	Soot Normal oxidation Doors: a little corrosion on bottom rail.	Air pollution Insufficient maintenance Use of salts to clear ice in winter

MATERIAL AND SURFACE TREATMENT	LOCATION ON BUILDING	ATTACHMENT SYSTEMS	GENERAL CONDITION/ APPEARANCE	AREAS AND TYPES OF DIRT, STAINS AND SOILING	CAUSES OF SOIL AND DETERIORATION
Bronze, extruded, medium statuary finish	Street elevations: entrance door frames, transoms and fixed sash, light fixtures.	-	Good/dirty	Soot Normal oxidation Doors: a little corrosion on bottom rail.	Air pollution Insufficient maintenance Use of salts to clear ice in winter.
Bronze, cast, medium statuary finish	Light fixtures, grilles in 12th Street pavilion.	-	Good/dirty	Same as above	Same as above
Copper, rolled, natural patina	Service Court marquee	-	Good, minor tears/ very dirty	Soffit: soot	Traffic exhaust
Copper, crimped, natural patina	Street elevations, dormer windows, 12th Street mansard.	-	Good/light soiling	Soot	Air pollution
Steel, painted	All elevations: windows Courtyard elevations: doors (including doors within the driveway) Service Court: railing and garage doors	-	Good/windows: paint build-up		
Iron, wrought painted	Street elevations: 10th Street arcade and driveway, grilles on doors and windows Courtyards: driveway gates, balcony railings.	-	Good/localized corrosion.	Soot and rust stains	Air pollution Peeling, blistering paint.
Iron, cast painted	Street elevations: areaway grilles Courtyards: driveway, gate posts, wheel guards, spandrel frames		Same as above	Same as above	Same as above



1. Marble columns, pilasters and capitals at either end of the colonnade lightly soiled with heavy bird excrement at base. Clean as gently as possible with special attention to preserving detail of the carving and molded profiles.

2. Limestone balusters. Heavily soiled. Clean as gently as possible to protect original surface and profiles.

3. Polished and statuary bronze doorways. Heavily soiled.

CONSTITUTION AVENUE ELEVATION: PROBLEM AREAS

12TH STREET PAVILLION AND ARCADE: PROBLEM AREAS

1. Limestone cornice and fascia. Areas of heavy waterstaining above either end bay from leaking roof drains. Expect some permanent stains to remain after cleaning.

2. Marble window architraves at third floor level. Heavily soiled from traffic exhaust. Clean gently to protect original surfaces and profiles.

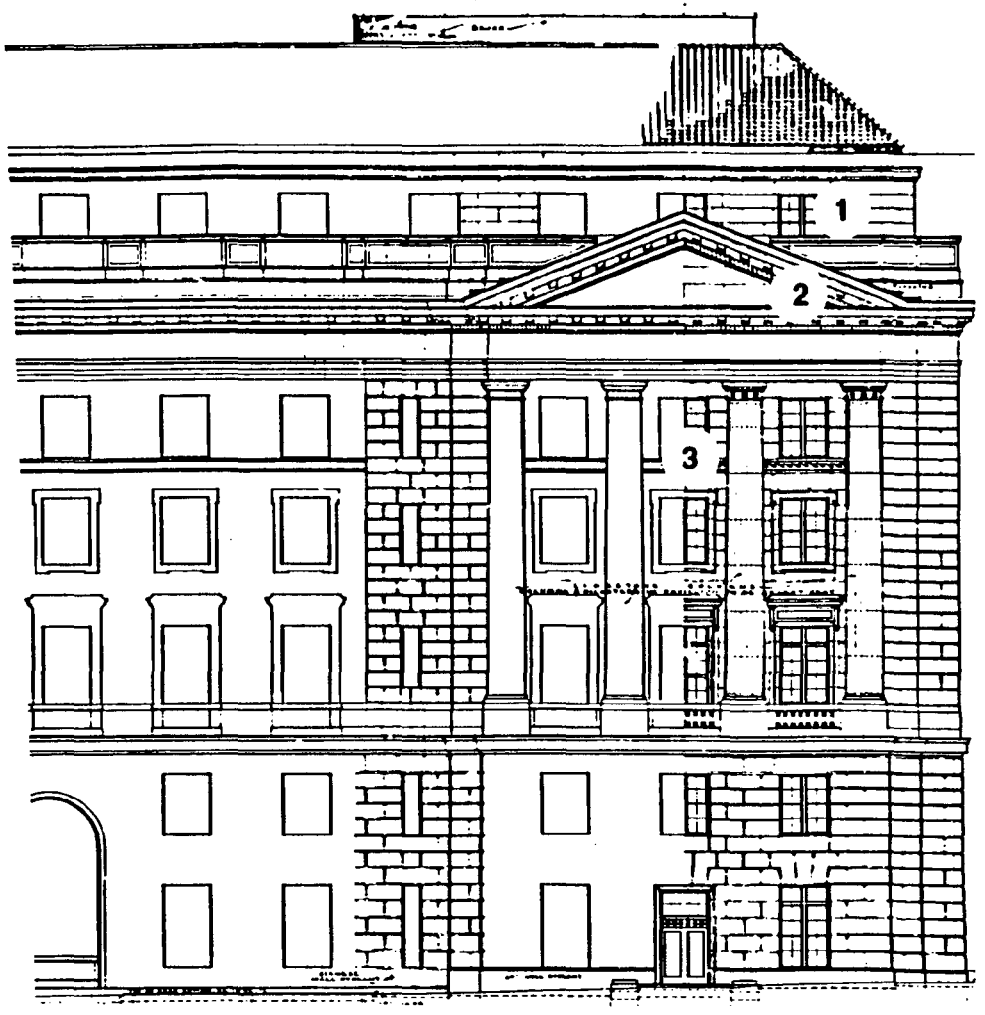
3. Limestone wall and molded trim.

   a) Heavily soiled from traffic exhaust. Expect some permanent stains to remain after cleaning.
   b) Many types of repointing material on all walls of the pavilion and along the Circle, repoint entire first floor level.
   c) Heavy damage to wall from automobiles and trucks, sidewalk - 1 foot wide, do not attempt to patch or replace stone, damage not structural. Erect protective bollards and chains to prevent further damage.

4. Limestone arcade walls. Scuff marks along walls and piers from pedestrian and hand cart traffic. Clean the entire arcade wall surfaces.

5. Limestone south wall of the pavilion. Graffiti. Spot clean.

6. Copper dormers and ridge flashing. Soot accumulation, abrasion and staining from roof mastic.



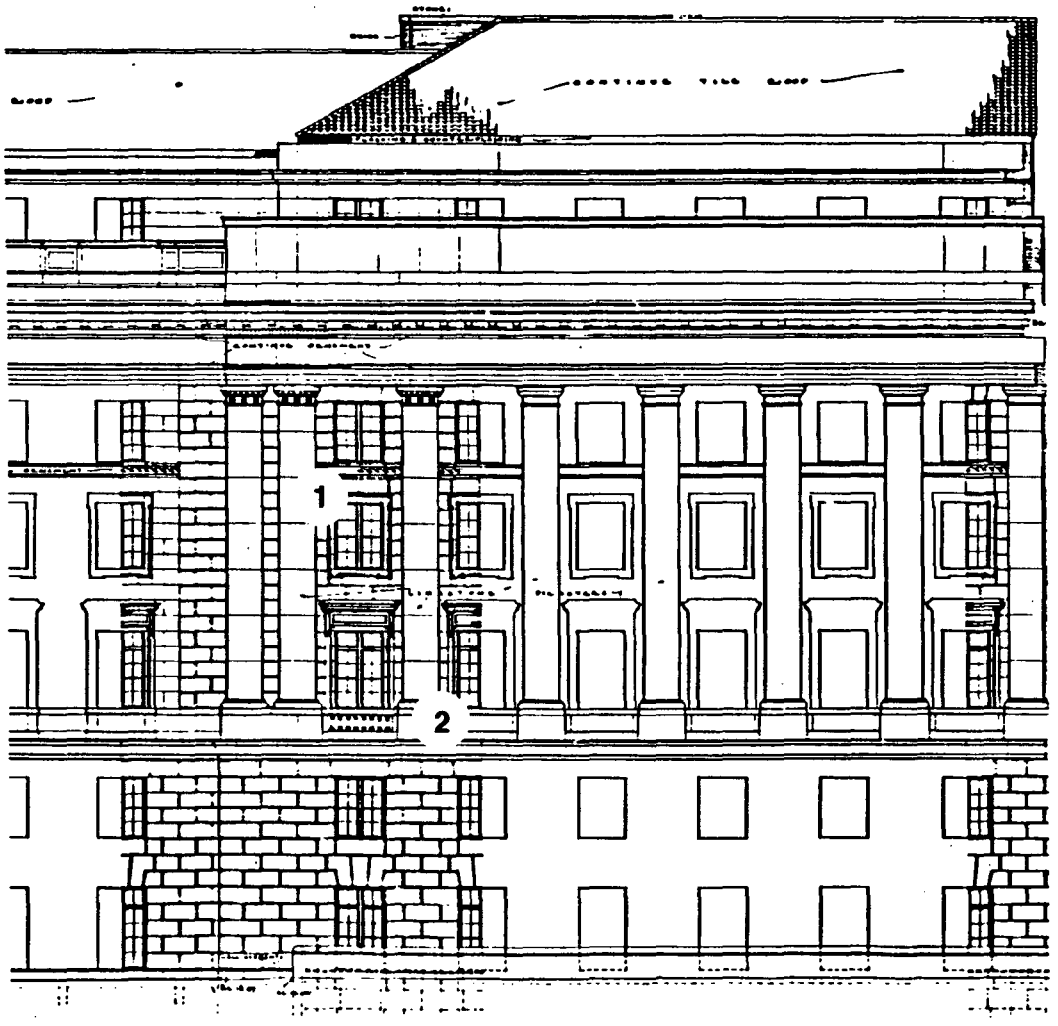
1. Limestone wall surface. Rust stains from iron window grilles.

2. Limestone pediment. Vertical joints of the roof surface and cornice are open. Roof surface is covered with lichen.

3. Limestone columns, pilasters, capitals, window architraves and wall surfaces within the portico. The area is heavily soiled by roosting birds and from traffic exhaust. Expect some permanent stains to remain after cleaning.

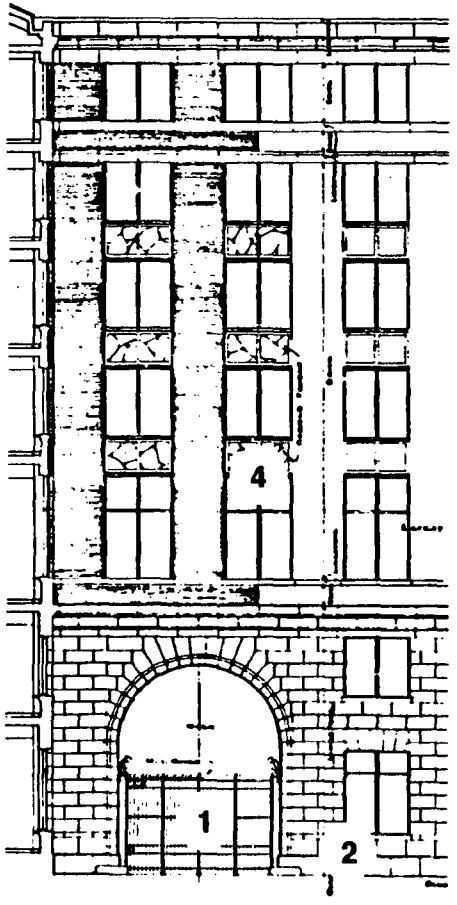
10TH STREET, NORTH PORTICO: PROBLEM AREAS

PENNSYLVANIA AVENUE ELEVATION: PROBLEM AREAS

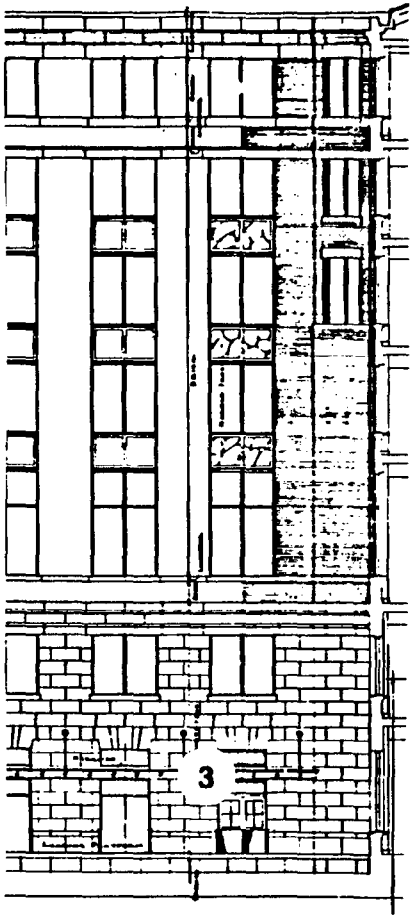


1. Limestone walls and pilasters (N.B. not marble pilasters as on the other facades). Heavily soiled from traffic exhaust. Expect some permanent staining to remain after cleaning.

2. Third floor limestone balustrace beltcourse. Covered with algae. Repoint vertical joints in this section of the beltcourse and replace flashing on upper edge as needed.



WEST WALL, SOUTH CORNER



EAST WALL, SOUTH CORNER

1. Iron gate, southwest corner. Spot rusting.

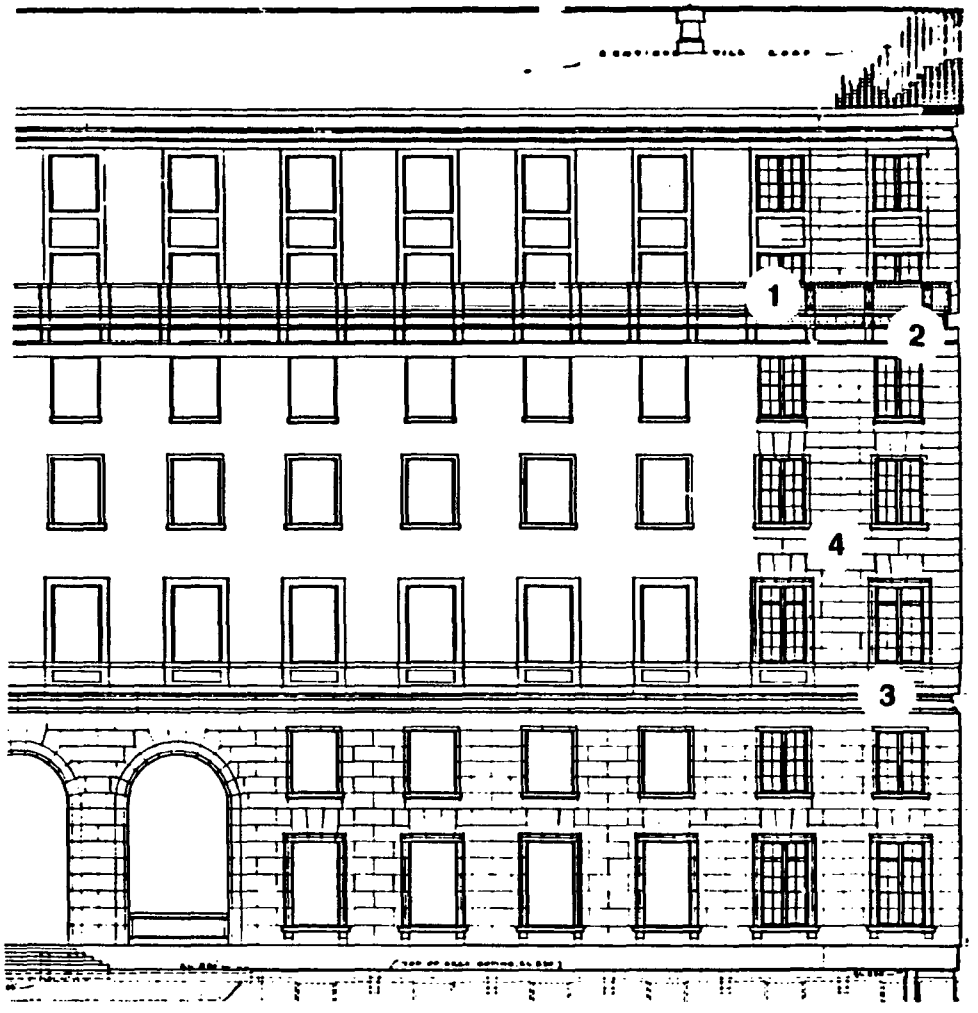
2. Granite basecourse. Surface scaling due to rising damp from paved parking area, and the use of salts on the ice in the winter. Improve drainage on pavement as possible. Substitute sand or ash for salts or chemicals to melt ice on the pavement in the winter.

3. Copper marquee. Heavily soiled, torn in several areas. Repair and patch soffit as needed using new copper.

4. Spandrel panel frames: corrosion along bottom edge.

SERVICE COURT: PROBLEM AREAS

EXTENSION COURTYARD: PROBLEM AREAS



1. Iron railing. Spot rusting.

2. Limestone balcony. Stained with rust from the railing. Expect some permanent stains to remain after cleaning.

3. Limestone beltcourse. Vertical joints open.

4. Limestone walls. 50% of the joints need repointing.

1. Brick walls, soiled and flaking paint. Scrape off loose material and repaint.

2. Corner brickwork on adjoining elevations. Paint has been completely removed. Repaint.

END WALL OF EXTENSION: PROBLEM AREAS

B. MASONRY CLEANING

In general, the IRS Building is moderately soiled and stained. The three major types of dirt are: soot, bird excrement, and moss, algae and lichen growth, each of which can cause damage to the masonry, i.e., lime mortar, limestone, marble, granite and sandstone. The soot which is generated by the heavy vehicular traffic surrounding the building usually contains sulphur dioxide and other pollutants that react with rainwater and become damaging salts or aggressive compounds on and in the masonry. Large quantities of bird excrement dissolved in rainwater can form phosphoric acid and nitric acids which etch stone; the amount present on all facades is sufficient to cause masonry decay. Moss, algae, lichens and other growth can also damage masonry by secreting acids, retaining water, and sending out roots. From a conservation standpoint, cleaning is required to remove these aggressive elements.

Cleaning for aesthetic and cosmetic reasons is also desirable. As part of the monumental Federal Triangle, the building is one of the symbolic "homes" for the Federal government and a focal point for visitors to Washington. The location of the Federal Triangle Metro stop, immediately across 12th Street, has increased the visibility of this building, which in relation to its newly cleaned neighbor, the Old Post Office, appears very dingy and badly maintained.

The interior courts do not have the same public visibility as the street elevations. However, the lower floors faced with limestone are heavily soiled and most of the balconies have algae growth. Cleaning should be conducted at these levels to protect the stone from deterioration. The upper walls and walls of the areaways are vitrified brick and do not need to be cleaned, but should be at least rinsed off when the lower walls are washed.

The courtyard within the Extension is faced entirely with limestone. This area is visible from Pennsylvania Avenue and 11th Street. When the Old Post Office building rehabilitation is completed with a new entrance to the south and east, pedestrian traffic will increase in this area. The walls of this courtyard will be visible next to the street elevations from several vantage points. Therefore, it is recommended that this area be cleaned in conjunction with the street facades.

The appearance of the building after cleaning takes place is to be uniform. Since removal of all dirt and stain particles is not necessary and would be impossible to achieve without removing part of the stone itself, some slight discoloration is to be expected. The object of the process is to clean the surface of the stone or brickwork, not to remove it. There will be no visible damage to the granite, limestone, brick or marble surfaces. Whatever method(s) are approved for the final cleaning process, special consideration must be given to the treatment of all carved surfaces, such as around window openings and column capitals. In these areas, lighter pressure cleaning, or manual

scrubbing with bristle brushes may be necessary to preserve the original detailing. It may be necessary to accept a slightly darker appearance of these areas of the masonry, rather than to lose the stone surface. Safeguards are to be taken to prevent future problems from salts or moisture penetration to metal hangers or interior surface materials. Reflectance of the cleaned limestone, granite and marble (as measured thorugh tests outlined by E. M. Winkler in the Association for Preservation Technology Journal, Vol. XI, No. 2, 1979 found in Appendix B) should be near but not greater than that of unweathered stone).

1. Environmental Considerations

During the selection of and preparation for any cleaning operation, various conditions and influential factors must be considered. They are the stone anchoring system, the environment, and previous surface treatments.

a. Stone Anchors

Original masonry detail drawings show various fasteners comprising the stone anchoring system. Commonly, the parapet walls and balustrade are connected both vertically and horizontally with 3/4" diameter brass dowels and cramps. Cornice stones are tied to the masonry back-up and steel framing by 5/8" diameter galvanized wrought iron tie rods, steel angles, and metal cramps. The material for the cramps or slot anchors is not called out; it is assumed they are steel or wrought iron. At the cornices the cramps are in places less than 3" from the face of the stone. Face or cornice stone is tied horizontally by dowels again assumed to be steel or iron. The face stone is tied to the back-up brick masonry with cramps, some as close as 1-1/2" from the surface. Arch stones are tied to back-up masonry arches with galvanized tie rods and window lintels are supported by steel angles.

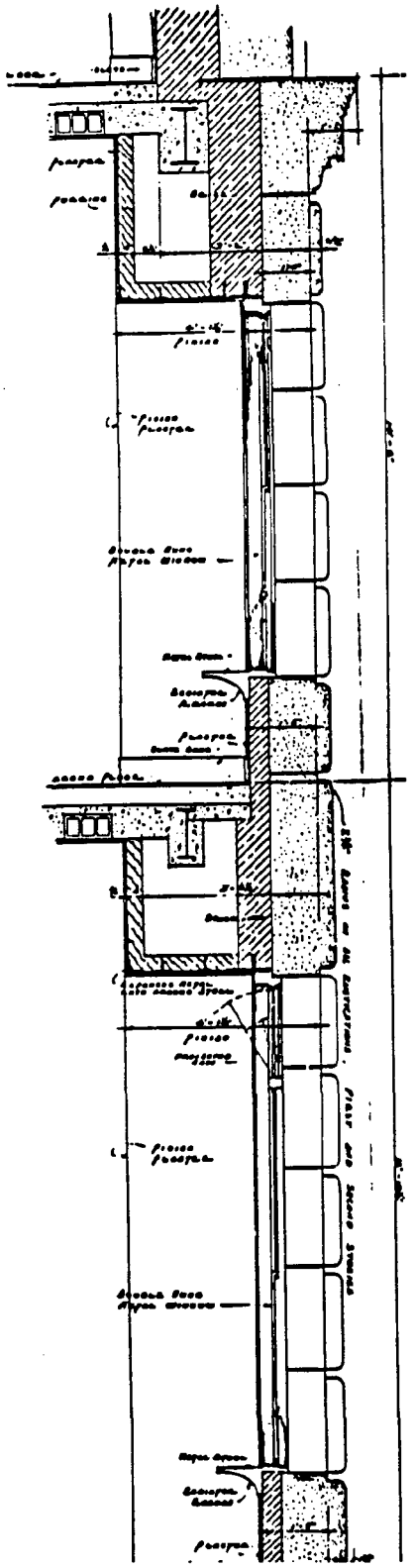
b. Environment

The IRS Building is situated in a heavily trafficked area and is surrounded by numerous conditions that require special and protective treatment during any cleaning operations, especially methods employing chemicals. In order to prevent injury to vehicles and pedestrians from falling water and water vapor containing chemicals, the driveways, parking and delivery areas in the courts, the parking areas in the Service Court and the street adjacent to the 12th Street pavilions must be closed off during cleaning. Sidewalks and walkways in the arcades should also be closed off. Waterproof enclosures should be erected around two of the entrances to provide safe access into the building while cleaning operations are underway. Moreover, provisions for waste water disposal must be made so that it does not drain into the areaways. Large and small trees on the street

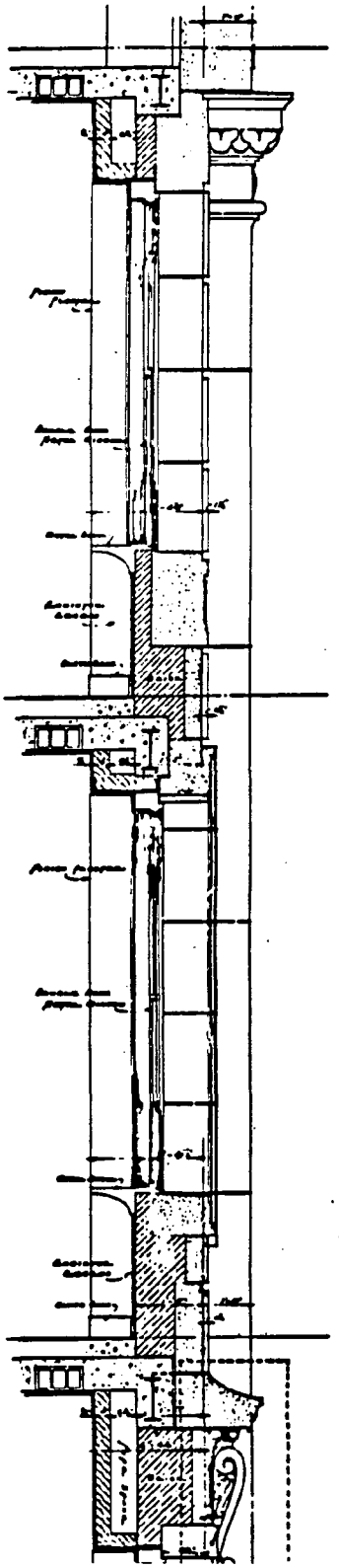
facades and in the courts can be sufficiently protected from spraying by shielding on the scaffolding. However, foundation plantings and grass must be covered with sheathing. Additionally, building materials other than those being cleaned such as steel, iron, bronze or slate must be protected from direct, repeated or prolonged exposure to water and chemicals. Danger to pedestrians and disruption to the building can be minimized by working at night, but experience has shown that it is difficult to judge cleanliness of the masonry surface under artificial light.

c. Previous Surface Treatments

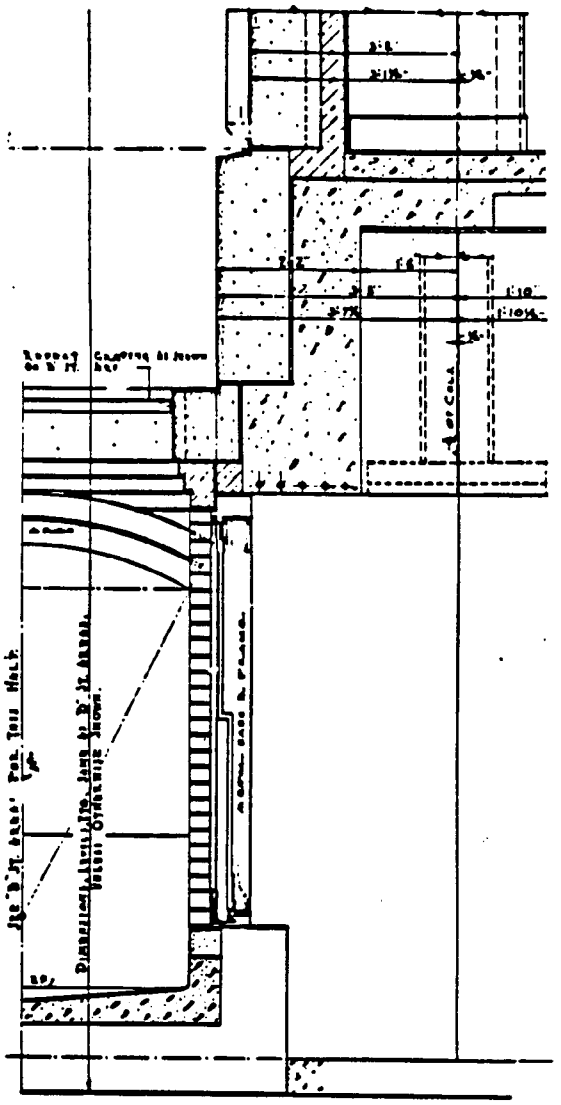
There are no records of previous cleaning or waterproofing treatments on the IRS Building since it was steam cleaned immediately after construction.



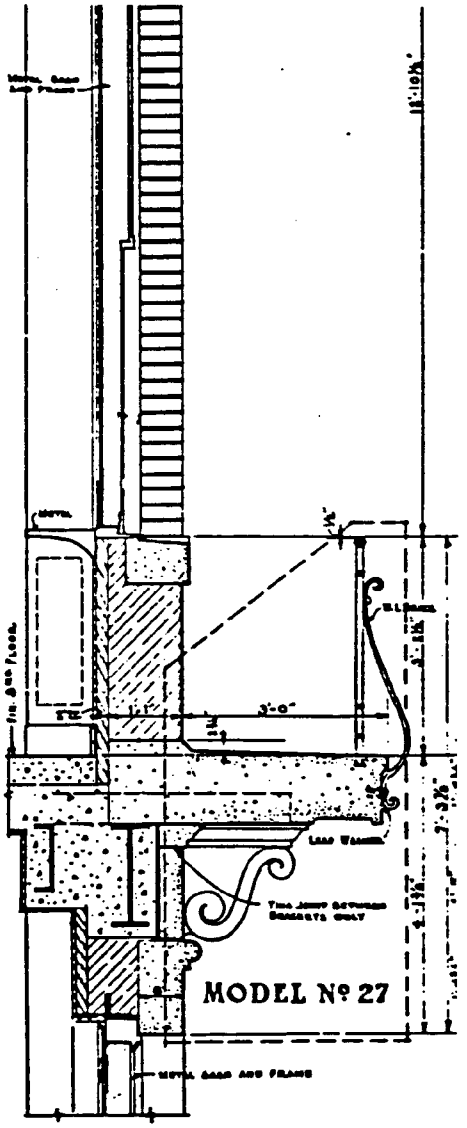
Typical section through wall at first and second floor levels, street elevations.



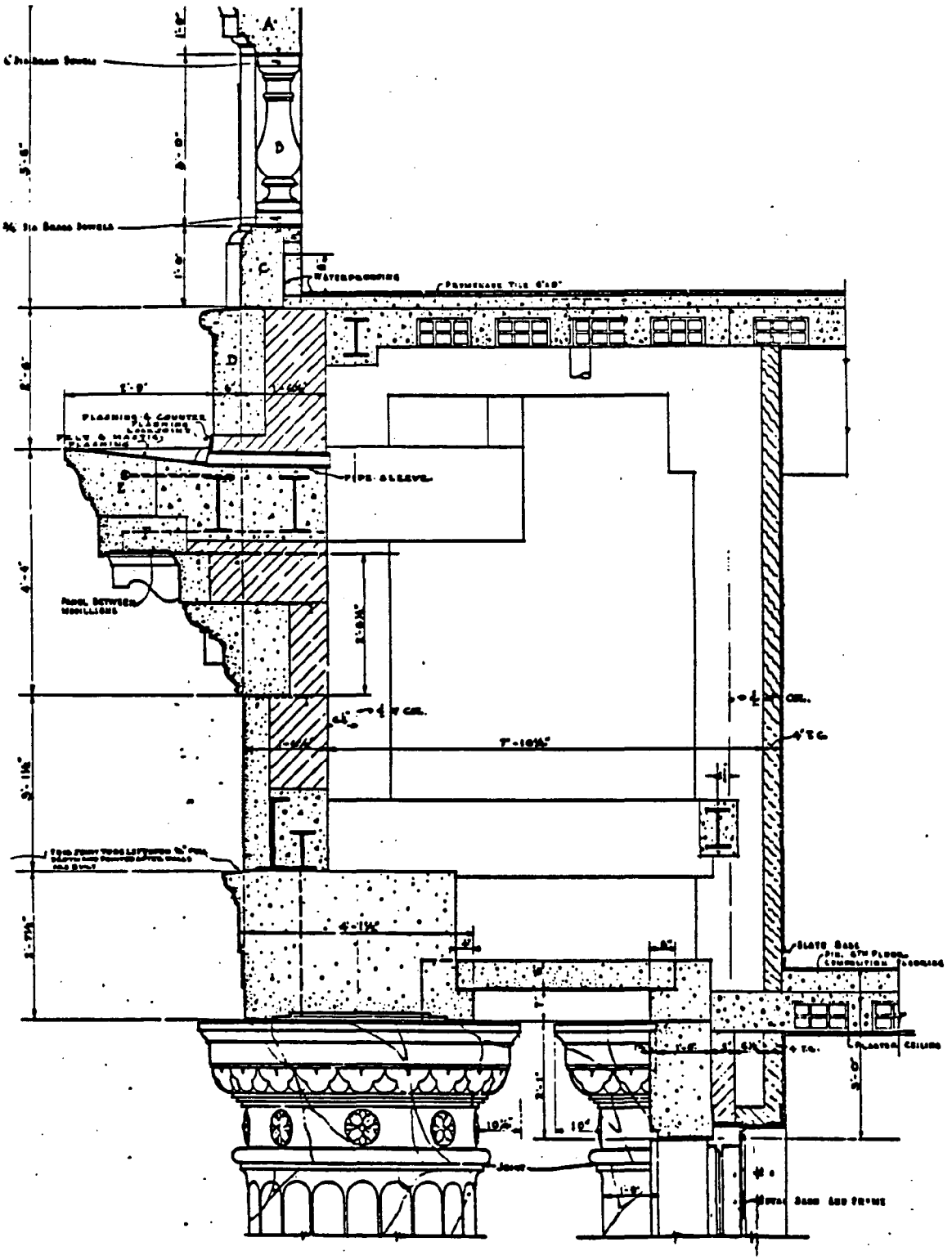
Typical section through wall at third through fifth floor level, street elevations.



Typical section through granite basecourse and areaways, street elevations.



Typical section through balcony and court walls at third and fourth floors of courtyard.



Section through entablature of colonnade showing typical section through main cornice.

2. Masonry Cleaning Methods

Several stone cleaning techniques are available and considered suitable for use on the IRS Building. Prior to selecting one technique, the advantages and disadvantages of each should be deliberated and each method tested carefully. It may become apparent that in order to adequately clean the masonry, several methods will be required. Presented below are potential cleaning techniques and their suitability for use at the building.

a. Water Treatments

All cleaning methods involving water or water vapor can be used only when there is no danger of frost during application and drying time which can range from a week to a month or more. Therefore, testing and use of water treatment on the building should be conducted between late April and early September.

i. Prolonged Spraying

In preparation for this treatment, staging is erected in front of a wall area measuring approximately 40 feet square and is encased in polyethylene sheeting to create an enclosure along the top of the cleaning areas. Perforated hoses are set up along the top of the wall and a continuous fine mist of water sprayed onto the masonry. The wall is soaked in this manner for as long as a week or until the dirt deposits soften sufficiently to be easily removed. This treatment may be followed by a low to moderate pressure (200-600 psi) washdown to remove the dirt. The enclosure would then be dismantled and re-erected in another area and the process repeated. Cleaning would begin at the top of the building so that the water would run down and soften the dirt below. This process requires minimal expenditures for materials and equipment. However, this method is considered inappropriate for use for several reasons: it is inefficient and awkward to erect and re-erect an enclosure of limited size around a building of this size and it may not be effective on highly textured stone, which often will not come clean without supplementary scrubbing with bristle brushes consuming much time and labor. Prolonged soaking also poses a number of potential hazards and chances of indirect damage. It may cause additional staining by dissolving minerals and other soluble substances within the stone and drawing them to the surface with the evaporating water. In addition, saturation of the wall may damage anchors, steel framing, and other concealed metalwork, as well as mortar joints, wood finishes and interior plaster work. Finally, it is difficult to insure proper drainage and dispose of large quantities of waste water.

ii. Water Wash

A medium (400-800 psi) to high (800-1200 psi) pressure warm water (80-120 degrees F) wash is sprayed over the

masonry surface which at the same time may be scrubbed with a natural bristle brush to loosen and remove the dirt. Occasionally, detergents are used in combination with a water wash. However, on limestone and marble, detergents containing sodium sulphate should not be used as they can leave a film or cause efflorescence. Water wash is good for final rinsing after other cleaning operations and allows retention of the patina. It has effective cleaning capabilities as a sole cleaning method on lightly to moderately soiled limestone or marble.

Heavily soiled areas which have dirt embedded in the pores of the stone will not be sufficiently cleaned in one washing operation. While superficial dirt is removed by water washing, the deeper soil deposits will be pulled to the surface as the stone dries, producing a brown stain. This staining may be avoided or removed by repeating the cleaning process.

Several areas of the weathered limestone on the building will not withstand a moderate pressure wash without loss of surface material and detail. The column capitals and seventh floor balustrade should only be cleaned using a low pressure wash. As with prolonged spraying, drainage should be carefully monitored.

Water wash will be tested on-site for use on lightly to moderately soiled areas of the building.

iii. Steam Cleaning

Steam generated in a flash boiler is directed against the masonry surface with a low pressure (40-80 psi) nozzle. Steam cleans more readily than a plain wash, by swelling dirt deposits and is considered the only effective method for removing dirt from irregular surfaces without damage to the stone. Generally, however, much of the steam condenses before hitting the masonry surface, and thus becomes no more effective than a warm water wash. Steam cleaning, however, uses only approximately 10% of the amount of water used for a water wash and thus alleviates some of the problems of staining and indirect damage. Steam cleaning is slower and therefore more costly than other methods and is not recommended for large scale cleaning. Steam cleaning may be helpful in removing bird excrement if other methods prove ineffective, and will be tested on-site for this particular cleaning problem.

b. Chemical Treatments

i. Acid Cleaners

Hydroflouric acid (HF) is the only cleaner known to leave no soluble salts in masonry. It is the most commonly used acid cleaner and is applied in a (2-5%) dilute water solution, usually with a surfactant or wetting agent and traces of phosphoric acid to prevent staining. It cleans by dissolving part

of the masonry surface and thereby loosening attached dirt. The dissolved material is then washed off.

Though suitable for granite and sandstone, this technique is not generally recommended for use on limestone, marble, or brickwork with a lime mortar because calcium carbonate is readily dissolved by the acid. It may be used successfully on limestone or marble if acid concentrations are very low (3%) and application is followed immediately by a water wash to stop the reaction. Unlike other methods, cleaning should proceed from the bottom of the building to the top to prevent streaking. Any process utilizing acids carries the risk of damage to surrounding glass, bronze, painted surfaces, wood, vegetation and humans. Spray from cleaning may damage paint and glass on passing automobile traffic. Disposal of the run-off has to be carefully controlled to prevent damage to nearby vegetation. Some cities do not allow drainage of toxic chemicals into the sewer system.

This treatment will be tested on-site for cleaning of granite and heavily soiled limestone and marble.

ii. Alkaline Cleaners

The most commonly used alkali solutions are sodium hydroxide (NaOH), potassium hydroxide (KOH) and ammonium hydroxide or ammonia (NH4OH). These chemically react with the dirt to liberate it from the stone surface. A dilute (5%) solution is applied with bristle brushes or power spray and then rinsed off with a medium pressure (600-800 psi) or high (800-1200 psi) water wash.

Alkaline cleaners will not dissolve limestone, marble, or brick mortar as the acidic solutions do. They do, however, tend to form soluble salts which crystallize as efflorescence; this occurs more readily with sodium hydroxide than ammonia. If the surface is rinsed and if no water repellant coating--which might cause spalling as the salts crystallize in the stone--is applied afterwards, the danger can be greatly reduced. However, heavily soiled areas requiring more than 2 or 3 applications of the cleaner should be cleaned by another method to avoid damaging the masonry and causing efflorescence to occur. Alkaline cleaners are mainly used for lightly or moderately soiled limestone or marble. It is, therefore, recommended that they be tested on-site for use on general soil problems. Note that ammonia corrodes bronze and copper. Therefore, all entrance ways and the seventh floor copper dormer surrounds must be carefully masked out or receive a continuous water rinse if an ammonia product is used.

iii. Organic Cleaners

Organic compounds such as complexphosphates, sodium pyrophosphate (NA4P2O7) or sodium tripolyphosphate (NA5P3O10) are applied as a 5% solution in water, brushed or sprayed onto the stone surface working from the bottom of the wall

up. This followed by a medium to high pressure water wash, starting from the top down.

Because they clean by reacting with dirt, these compounds pose little danger to either the limestone, marble or the granite. Though the process has not yet come into wide scale use, it is recommended for on-site testing at the IRS Building.

c. Abrasive Treatments

In abrasive cleaning, the masonrysurface is bombarded with a fine aggregate, which removes the dirt layers mechanically by removing the surface of the stone. The aggregate may be sand, shells or other particles; they may be applied wet or dry and under a range of pressures. In removing the dirt surface, all conventional abrasive techniques remove part of the masonry as well. This method is not recommended for use on historic buildings and will not be tested at the IRS Building.

d. Special Cleaning Problems and Treatments

Iron stains: Staining from the oxidation of ferrous window bars and concealed anchoring is almost impossible to remove completely from masonry surfaces. Some acids will dissolve not only the iron stains and oxide particles but also will corrode carbonate rocks such as limestone, marble and lime mortar. Aqueous solutions that are neutral or slightly alkaline may have some effect on the stains, but should be carefully monitored during application to prevent build-up of salts within the stone.

Algae and lichen: Organic stains can be treated with bleaches such as hydrogen peroxide or hypochlorite solutions applied in a poultice. The plant material should first be removed with a high pressure (800-1200 psi) water rinse. Then a fungicidal treatment to kill the organic growth within the pores of the stone should be applied. These contain zinc fluorosilicate, copper napthenate or a variety of quartenary ammonium salts. Treatments should be conducted only on a dry day (30% RH or less).

Graffiti: Alkaline chemicals such as lye or caustic soda are effective for dissolving paint from stone but should be used sparingly and should be followed quickly by a neutralizing water wash to avoid build-up of harmful salts in the stone. Ammonia is also an effective solvent for oil paints. Most paints can be removed by using a stripper containing methylene chloride. This solvent is highly toxic and slow working but is safe for use on limestone and marble and is effecive. Trisodium phosphate is another effective paint remover.

Three products found effective on Indiana limestone are (1) DRW No. 1 (KRC Research Corp., Moorestown, NJ); (2) Kwik Marine Paint and Varnish Remover (Chemical Products Co., Inc., Aberdeen, MD); (3) Hydrotech HT 301 (Hydrotech Corp., Laurel, MD).

C. METALS CLEANING

The metal ornamentation and architectural elements outlined in this report can be preserved and maintained as an integral part of the original exterior design of the IRS Building. The specific methods for their care are outlined on the following pages and in Section X, I.

At present, the principal cause of deterioration is lack of maintenance. The recommendations for treatment are based on the most efficient means for preserving the metals, recognizing the limited resources of the building maintenance staff. While several of the long term maintenance procedures can be undertaken by the GSA employees, the initial cleaning and repair work must be conducted by a professional conservator.

The cleaning and repair methods outlined are standard treatments. All treatments should be tested first and inspected before the large scale task is undertaken.

Due to their continual and increasingly corrosive character, cleaning, repair and maintenance are not only desirable, but mandatory for the preservation of metals. Further comments regarding the cleaning criteria are included under the individual metal headings. At the present time, the metal architectural elements on the exterior of the building are in good condition but in need of repair as previously noted.

1. Bronze

a. Polished Bronze

The entrance doors which originally were polished bright will be cleaned of grease, dirt, and salt deposits. Several metal cleaners are available which are mildly abrasive and can be applied with a clean soft cloth, rubbing along the grain of the metal. To avoid staining, the cleaner should be applied to a limited area and quickly buffed. A pointed orangewood stick can be used to remove excess polish from crevices and corners. Staining can be removed by additional applications of the cleaner. Two suitable cleaners include:

i. Marine Type Metal Polish Formula (Industrial Chemical Division, Leo Silfen, Inc., 2236 E. 177th Street, New York, New York, telephone - 914/699-4800);

ii. McIntyre Metal Cleaner (McIntyre Metal Maintenance, 1615 South Broadway, Los Angeles, California).

Steel wool is not to be used because it can contain a steel wool corrosion inhibitor which may discolor the bronze.

Any existing old lacquer can be removed using a methylene chloride flush-away type remover. Wash thoroughly with clean water and cotton cloth to remove all the cleaners, lacquer

removers and residue. The metal is then dried with a soft cloth and then wiped with a clean rag soaked with inhibitor/cleaner (1% Benzotriazole solution, 40 grams to one gallon of warm water). Repeat if any residue dirt is left on the cloth. A final wipe to remove water spots may be made, but rubbing or polishing with a dry rag is undesirable.

To avoid a rigorous maintenane schedule of polishing, the bright finished work should be lacquered immediately following the cleaning operations. In no case should a time lapse of more than 4 hours be permitted between surface preparation and coating to avoid hand contact and exposure to oxides and sulphides on the cleaned metal surface.

The clear coating of Incralac should be sprayed on using conventional spray equipment. The first is a mist coat followed by a wet coat with at least 30 minutes air dry time between coats. Subsequent coats should be wet just short of sagging (or running). Four to five coats are desirable. The finish coat should be allowed to dry for 48 hours.

The coating should not be applied in inclement weather or under conditions of high humidity as this will produce milkiness in the drying lacquer film.

Sources for Incralac:

(1) Industrial quantities (5 gallons and over):

Mass and Waldstein
2121 McCarter Highway
Newark, NJ

StanChem, Inc.
East Berlin, CT 06023

(2) Any quantity plus aerosol formulation:

Carmote, Inc.
376 Third Street
Everett, MA 02149

Eastman Organic Chemicals
9th Ave. and 52nd St.
New York, NY (Distributor for Carmote, Inc.)

Sources for Benzotriazole:

Sherwin Williams Chem. Co.
P.O. Box 3638
116 St. Clair Avenue, NW
Cleveland, OH

Eastman Organic Chemicals
Rochester, NY

Geigy Chemical Corporation
Ardsley, New York

b. <u>Statuary Bronze</u>

Intended to have a darkened color, the statuary bronze elements only need to be cleaned of accumulated soil and grease. A non-abrasive cleaner such as Ivory soap can be used with a soft cloth. The cleaner residue is to be removed with two

applications of a standard solvent such as a 4:1 toluene/acetone mix followed by a dryer/degreaser such as butyl cellosolve or trichlorethylene.

The bronze surfaces with the statuary bronze finish must be maintained by periodic oiling. "Lemon Oils" can be used which are in the main mixtures in varying proportions of either Lemon Oil, U.S.P. or preferably Lemon Grass Oil, Native E. I. with a high grade distillate paraffin oil of about 100 second viscosity, with a flash point above 350 degrees F, containing napthenes but free of cracked stock such as kerosene. The best mixture is one containing 5 ounces of Lemon Grass Oil per gallon of paraffin oil.

The oil is to be applied by rubbing with a clean soft cloth, followed by a brisk rubbing with a second clean soft cloth in order to remove all excess oil. On irregular surfaces such as moldings, a soft fiber brush may prove helpful as an applicator. The cloths used to apply the oil should be retained and discarded only when they wear out.

Entrance frames and trim and similar areas subjected to light traffic will be oiled on a monthly basis. If possible, the exterior transoms and window frames above the main entrance doors can also be oiled monthly. If such a schedule is too demanding on the custodial staff, consideration should be given to oiling such building components on a quarterly basis or even once every six months. Should such a schedule be selected, then consideration will be given to including a provision that the bronzework be wiped down with a soft dry cloth once a month in order to remove accumulated dust and dirt particles. Perhaps this can be done as part of the window washing schedule.

c. Bronze Lettering

An abrasive typewriter eraser can be used for polishing the bronze letters which are individually mounted on the limestone near several entrances to the building. This is more effective than commercial metal polishers as there is little chance for staining the adjacent stone. This type of cleaning can be done on a six month basis to prevent build-up of grime and harmful salts. Lacquering or oiling the lettering is undesirable because it will discolor the adjacent stone.

d. Allied Maintenance Procedures

To avoid staining of adjacent bronzework, the glass panels on the doors and transom windows should be washed with clear water only. A small amount of alcohol may be added in the winter months in order to prevent freezing.

As an alternative, water to which commercial wetting agents have been added may be used. Wetting agents will have a pH of from 7.0 to 8.0 in order to avoid staining of the metal or possible pickup of copper salts with subsequent redeposition on

adjacent materials such as masonry. Organic sulfates and organic sulfonates are basic ingredients in most proprietary wetting agents.

Mild soaps, such as Ivory, and mild detergents with a pH or approximately 8.0 may also be used. Unlike wetting agents, soap and detergent solutions should be rinsed off with clear water.

All wash water should be removed from the bronzework as soon as possible in order to avoid staining.

The use of alkaline soaps, detergents containing pyrophosphates and ammonia solutions are to be avoided, especially where metal surfaces are lacquered, since these materials tend to undermine organic coatings.

Stains from salt-laden slush and snow should be removed immediately from all oiled bronzework simply by rubbing with oil.

2. Iron and Steel

a. Spot Welding

In areas such as the cast iron spandrel frames, where the iron has cracked or split, spot clean to bare metal by dry grit blasting (fine grit no. 10-45 at 80-100 psi) or non-ferrous wire brushing. Without attempting to close the crack or split, spot weld to joint and fill the opening. Grind the weld to make it level with the surrounding metal surfaces. The adjacent masonry and glass surfaces are to be shielded during the abrasive and welding processes. (Approximate linear footage of soldering joints requires equals 368 feet.)

b. Paint Build-up, Rust and Scale Removal

Paint build-up, rust and scale can be cleaned off by dry grit blasting (fine grit no. 16-45 at 80-100 psi), again protecting surrounding masonry and glass from damage. Paint build-up does not have to be cleaned down to the bare metal, but enough to assure improvement of the appearance and operation of the object after it has been repainted. To avoid promoting corrosion, paint should not be applied when the temperature is below 50 degrees F, or when the humidity is high.

Where bare metal is exposed, clean off residual grit with air blasting and prime immediately (within 2 hours) with two brush applied coats of rust inhibitive lead primer such as Lead Chromate Gray No. 360, having a minimum dry film thickness of 2 mils. The second coat of primer should be a distinctly different color from the first.

c. Repainting

Previously painted surfaces can be prepared either with dry grit blasting (fine grit no. 16-45 at 80-100 psi) or non-ferrous wire brushing. The residual grit can be removed by air blasting. These methods of cleaning are only intended to remove dirt and to abrade the surface slightly for better adhesion of the new paint layers. It is not necessary to go down to bare metal, unless there is evidence of corrosion of the substrate.

The finish coats of paint for the metal will be an alkyd resin, gloss, non-chalking, exterior enamel to match color specified. Metal which has been cleaned down to the substrate, must be primed and should receive three coats. Other metal may require only two coats. The paint is to be applied by brush.

3. Copper

All of the copper dormer window surrounds and service court and marquee are covered with soot and dirt, but have also developed a natural patina. This green cupric oxide or copper sulphate layer takes from 8 to 10 years to form. Since the process is generally self-limiting, formation of these films protects the underlying copper from further degradation. Although this layer retards corrosion, copper still can be attacked by alkalies, ammonia, and combustion fumes (traffic exhaust). Therefore, any soot accumulating on the surface should be washed off. No attempt should be made to polish the copper.

D. ON-SITE TESTING PROGRAM

1. Procedures

As outlined above, there are a variety of masonry cleaning techniques which can be used on the IRS Building, each with a range of potential effects. It has generally proven very difficult to determine in advance the exact reaction of building stones and soils to cleaning techniques, particularly since some of the most serious problems, such as staining or salt deposits released from inside the stone, may not become apparent until one or more annual weathering cycles have passed. Therefore, it is recommended that a number of cleaning techniques be tested on-site, with their effectiveness analyzed both immediately after application and at the completion of one annual weathering cycle.

The following masonry cleaning methods will be tested:

a. Medium and high pressure warm water wash alone;

b. Dilute (5%) ammonia application followed by low (450 psi) pressure warm water wash and high (600-1800 psi) pressure warm water wash;*

c. Dilute solution (5%) of complex phosphate (sodium pyrophosphte or sodium tripolyphosphate) application followed by medium (800 psi) pressure warm water wash;

d. Dilute solution (5%) of potassium hydroxide in combination with wetting agents and thickening gels followed by a medium pressure (800 psi) water wash.

e. Dilute (3%) hydroflouric and phosphoric acid application followed by medium (800 psi) pressure water wash;

f. Steam.

2. Test Areas

Each method will be used on areas of the most heavily soiling. The test panels will include sections of marble and granite adjacent to the limestone or brick wherever possible. Each area will be masked to protect adjacent stonework, and grilles and windows shall be covered with protective materials. Each test area and the techniques used on it will be noted on elevations sketches and the cleaning process will be documented photographically.

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*Do not use ammonia solution in conjunction with bleach on the areas of algae and lichen staining. The resulting mixture is extremely toxic.

The test panels will be examined at the completion of washing operations and after the duration of one weathering cycle. The degree of stain and soil removal will be noted, as well as the condition of the stone. After the initial cleaning, the Masonry Testing Report (see below) will be prepared by the conservator, outlining the techniques employed, location of test panels, descriptions of any problems encountered during application, analysis of the effects of cleaning and a schedule for monitoring the test panels during weathering.

3. Cost Estimates

To obtain estimates for the cost of conducting the masonry cleaning tests, Tuck Tyler, representative of the Service Master Cleaning Corporation, was consulted in January 1980. To execute the required test patches would take a two-man team two days at the site with the test materials and equipment. At a cost of $600/day for labor, equipment and materials, the projected cost of the cleaning test would be $1,200.

E. ON-SITE MASONRY CLEANING TESTING

1. Methodology

On April 17, 1980, masonry cleaning tests were conducted on the Internal Revenue Service Building in Washington, D.C. The sites chosen for the test panels were on the west (12th Street) elevation of the building, immediately south of the Service Court driveway (Figs. 150-152). The stone in this area was heavily soiled from traffic exhaust, representative of the worst conditions on the building.

Methods 1-8 were tested on the limestone which comprises the largest amount of surface material on the building. Areas of granite adjacent to the limestone panels were cleaned using methods 1, 4, 5 and 6. The materials tested on the marble were restricted to methods 2 and 5. Acid was ruled out for use, as it would etch the honed marble surface. Due to the delicacy of the mortar joints in the marble, high pressure water wash was not attempted as it would undoubtedly damage these joints.

Test panels were also applied to the brick walls of the guard house immediately inside the driveway gates in the Service Court (Fig. 137). The brickwork matches that on the upper walls of the courtyards and was easily accessible. Acid cleaner was not tested because it would etch the vitrified surface of the brick. Therefore, the tests on the brick were restricted to water wash, alkaline cleaner B and an organic cleaner, methods 2, 6 and 7.

The weather was clear and dry with unseasonably cool temperatures ranging from 34 to 65 degrees F. over the 24 hour periods immediately preceding and following the tests. The tests were administered by Bill Green of SERMAC, a building cleaning franchise contractor from Silver Spring, Maryland, under the supervision of Sarah Sweetser from BCT.

The cleaning methods tested were as follows (all pressure readings were taken at the nozzle):

Test No. 1. Low-pressure water wash: Warm water (140 degrees F) at 450 psi, was passed twice over the surface with the nozzle held approximately 8 inches from the surface.

Test No. 2. Medium-pressure water wash: Warm water (140 degrees F) at 800 psi was passed twice over the surface with the nozzle held at approximately 8 inches from the surface.

Test No. 3. High-pressure water wash: Warm water (140 degrees F) at 1200 psi was passed twice over the surface with the nozzle held approximately 8 inches from the surface.

Test No. 4. Acid Cleaner: The stone was prewet and dilute (3%) hydroflouric acid in water containing a trace of phosphoric acid was brushed on the limestone and granite surfaces using a bristle brush. It was immediately rinsed with a warm water (140 degrees F) rinse at 800 psi with the nozzle held 6 inches from the surface.

Test No. 5. Alkaline Cleaner A: The stone was prewet and a 5% solution of potassium hydroxide with chelating agents, surfactants and thickeners in water, was brushed on the surface working from the bottom up. After 20 minutes, the solution was rinsed off with warm water (140 degrees F) at 1200 psi holding the nozzle at 6 inches from the surface.

Test No. 6. Alkaline Cleaner B: The stone was prewet and a 5% solution of ammonia in water was scrubbed on the surface. It was rinsed with warm water (140 degrees F) at 450 psi with the nozzle held 6 inches from the surface.

Test No. 7. Organic Cleaner: The stone was prewet and a 5% solution of sodium tripolyphosphate in water was brushed on the surface from the bottom of the panel upward. After waiting 5 minutes, the panel was rinsed with warm water (140 degrees F) at 800 psi with the nozzle held 6 inches from the surface.

Test No. 8. Steam: A mist of steam (water at 212 degrees F) at 80 psi was passed slowly over the surface working across and then up and down over the test panel.

2. Results

The test panels were examined during and immediately after the testing and again on May 5, 1980, eighteen days after the cleaning tests were conducted. The weather was dry and clear, with temperatures ranging from 75-80 degrees F. Observations were made both at 11:00 a.m., when the masonry was in the shade, and at 2:00 p.m., under partial sunlight.

In all the test panels, the heavy soiling was not removed from all of the pores in the stone. The overall appearance was slightly darker than the upper curved edges of the stone blocks, which have been kept relatively clean by the continual wash of rain water and therefore are closer to the original appearance of the stone. It should be expected that the limestone will retain this slightly darkened patina. More rigorous cleaning methods than those tested should not be considered.

The appearance of the test panels, ranked on the accompanying chart, were as follows:

Test No. 1. Low-pressure water wash: 450 psi cleaned the limestone and granite moderately well and revealed the natural grain or variegation of the stone (Fig. 138). The surface characteristics of the stone were unchanged. There appeared to be no problems from oxidation of materials within the stone, nor any

streaking, or surface residue. This method was not tested on the marble or brick.

Test No. 2. Medium-pressure water wash: 800 psi cleaned the limestone slightly better than the low pressure wash, but left a slightly uneven appearance (Fig. 155). Again, there was no apparent affect on the surface texture of the limestone. This technique was equally successful in cleaning the marble, and had no apparent impact on the honed finish of the marble door jambs (Fig. 156). It was not possible to remove surface soils from the courtyard brickwork, despite repeated passes with the nozzle (Fig. 163).

Test No. 3. High-pressure water wash: 1200 psi cleaned the limestone easily and well, without any effect on the masonry surface or adjacent pointing (Fig. 157). As with the lower pressure water washes, there was no apparent reaction with soluable materials in the stone. The surface dried with a slight gray cast.

Test No. 4. Acid cleaner: The test panel cleaned with acid dried with a stronger gray cast than the panel cleaned by high pressure water rinse (Fig. 158). However, the acid did not remove existing crayon marks or staining from an adhesive strip. Because acid can chemically attack calcium carbonates such as limestone, more rigorous cleaning with the solution was not tested for fear of damaging the stone.

The granite areas treated with acid came clean immediately. This included one heavily soiled curb in the driveway (Fig. 159). The surface texture appeared to have been undamaged, but a final conclusion on the use of this material must wait at least a year to determine if there are any long range effects.

Test No. 5. Alkaline Cleaner A: The area of limestone and granite tested appeared as clean as those treated with the high pressure water or acid (Fig. 160). However, previous stains were not completely removed, and the cleaning contractor noted that the product would not remove bird droppings. There appeared to be some streaking on the right side of the test panel, due to uneven cleaning action of the product. This area should be carefully noted on future site visits.

The area of marble cleaned with the Alkaline Cleaner A appeared as clean as that cleaned by water wash with no powdery residue or other harmful effects (Fig. 161).

Test No. 6. Alkaline Cleaner B: The application was not very effective in cleaning simple surface soils on the limestone and granite and the required scrubbing left an uneven appearance (Fig. 162). It was moderately effective in cleaning the brickwork, though stains from the tire marks were not affected (Fig. 163).

Test No. 7. Organic cleaner: The phosphate application did not clean the limestone, despite hard scrubbing (Fig. 164). Its

effect on the brickwork was similar to the ammonia solution (Fig. 163). Neither of these solutions appeared to alter the surface texture of the brick nor the mortar joints.

Test No. 8. Steam: The steam test panel appeared the cleanest of all the test samples (Fig. 165). The treated masonry is uniform in color with no streaking or emergence of harmful by products as a result of the cleaning process.

Graffiti Removal: Methylene chloride paint remover was applied with a natural bristle brush to the defaced limestone area. Approximately 5 minutes after the application, the test area was given a "power rinse" at 1200 psi. The graffiti was lightened approximately 40%, but remained visible. Therefore, a second application of paint remover was made which was rinsed off after 5 minutes. This application removed approximately 20% of the residual paint, however, traces of the graffiti remained where the paint had been absorbed into the pores of the stone. Since the second application of the paint remover had little additional effect on the graffiti, a different cleaner was chosen and applied to the stone surface. Alkaline Cleaner A was brushed on with a natural bristle brush; was allowed to "work" for approximately 15 minutes; and was rinsed off with a high pressure warm water wash. Results of the three applications were satisfactory and left a cleaned and undamaged surface with a slight shadow remaining from a previous cleaning treatment.

Algae Removal: Algae and bird excrement removal were not tested on the IRS Building. They were, however, tested on the Federal Building (New Post Office) directly across 12th Street. A sample area of limestone covered by algae was given a "power rinse" with a high pressure (1200 psi) warm water wash holding the hose nozzle about 6 inches from the stone surface. This treatment was extremely effective, leaving the surface clean. If in the future the algae grows back, this method can be easily applied again.

Bird Excrement Removal: During the test cleaning, evidence of pitting and damage to the stone due to bird excrement was found on the limestone and granite surfaces. In testing the Acid Cleaning Method No. 4, the acid cleaner reacted with the bird excrement forming a gray brown film on the surface of the stone which was difficult to remove. The best results were obtained with the high pressure (850 psi) warm water wash and steam application which left a clean surface; did not harm the stone; and was easy to perform.

3. Reflectance Tests

In an attempt to measure the degree of cleanliness of each of the test panels, the reflectance values for each area were calculated using the technique developed by Dr. Erhard M. Winkler (see Appendix B). The process is based on the comparative measurement of light readings from the sample areas and

standardized test cards using the spot meter of a single lens reflex camera.

Readings were made 18 days after the tests were conducted, on a clear sunny day when the wall surfaces were in moderate shade and dry. A Kodak Neutral Test Card with 18% reflectance was placed against each test panel on the vertical stone surface between the dirty and cleaned areas. The light meter in an Olympus OM-1 camera was used to take the readings from the standard card, the soiled areas and cleaned panels, by holding the shutter speed constant and adjusting the lens opening (F-stop) until the meter read zero in each case. The readings were plotted on the "log-log plot of diaphragm settings for camera lens versus absolute diffuse light reflectance," published as Figure 3 in Dr. Winkler's article. The resulting reflectance values could then be compared to determine changes (in this case, cleanliness) in the appearance of the stone.

The results of these tests are included in the following chart. Discrepancies between the readings and the visible differences in the stone indicate that this technique was not an effective tool in this particular case. This lack of reliable results may be due in part to the rather rough surface of the stone, as opposed to a smoother surface which would react more drastically to cleaning efforts, or the lack of sunlight directly on the stone (due to a shade tree). Due to the failure of the reflectance tests to produce a conclusive measurement of cleanliness, determination of the most effective method will be based on visual inspection.

4. Masonry Cleaning: Weathering Cycle

The test panels will be inspected in April 1981 to determine the effects of the cleaning methods on the stone through one complete weathering cycle.

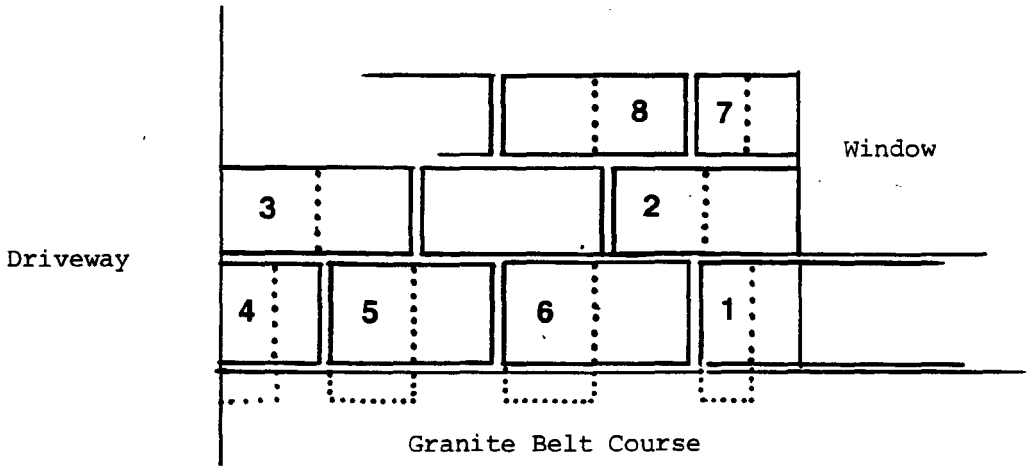
MASONRY CLEANING TEST
Reflectance Measurements of Limestone

TEST	STANDARD		SOILED STONE		CLEAN STONE		CHANGE IN
PATCH	F	%R	F	%R	F	%R	REFLECTANCE
1	4	20	4	20	5.6	37	17%
2	4	20	4.5	23	5.6	37	14%
3	4	20	4	20	5.6	37	17%
4	4	20	4	20	5	27	7%
5	4	20	4	20	4	20	0%
6	4	20	4	20	4	20	0%
7	4	20	4	20	4	20	0%
8	4	20	4	20	6	40	20%

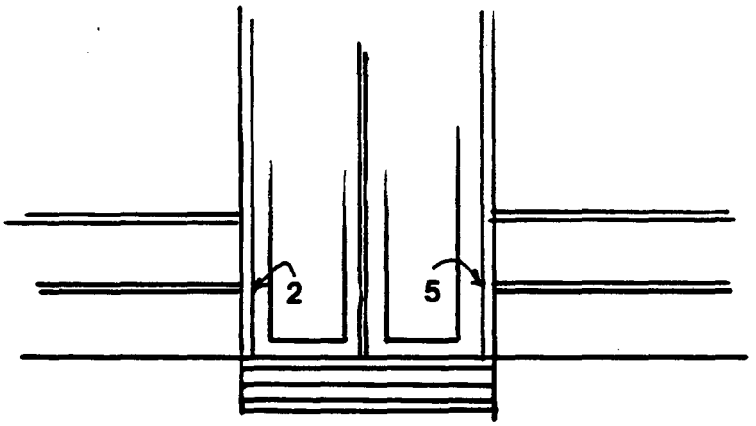
MASONRY CLEANING TESTS

LOCATION OF TEST PANELS

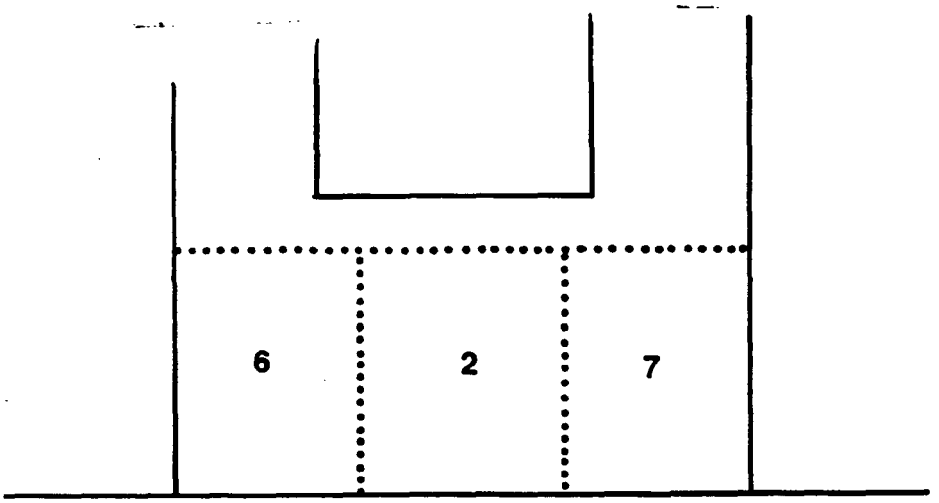
(Numbers keyed to text)



12th Street Elevation: limestone blocks south of driveway.



12th Street Elevation: marble entrance jambs, first doorway south of driveway.



Service Court: brick Guard House, east wall.

Fig. 150

Fig. 151
Limestone and granite test panels on 12th Street elevation. Driveway is to the left of the picture. May 1980.

Fig. 152
Marble test panels were on jambs of doorway entrance to the right. Limestone test panels are visible to the left. May 1980.

Fig. 153
Brick test panels on the side wall of the Service Court guard house. May 1980.

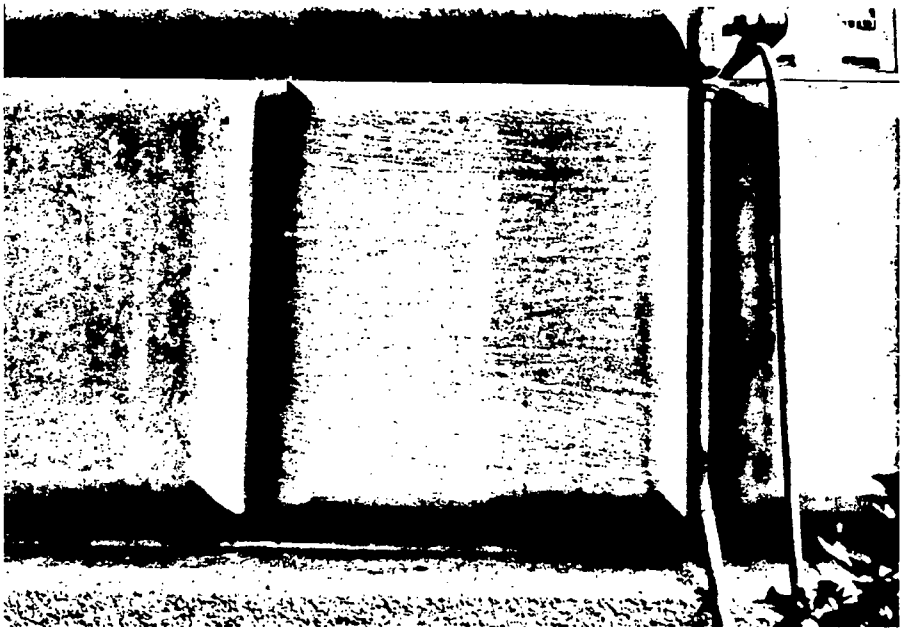


Fig. 154
Low pressure water wash panel (Test #1). May 1980.

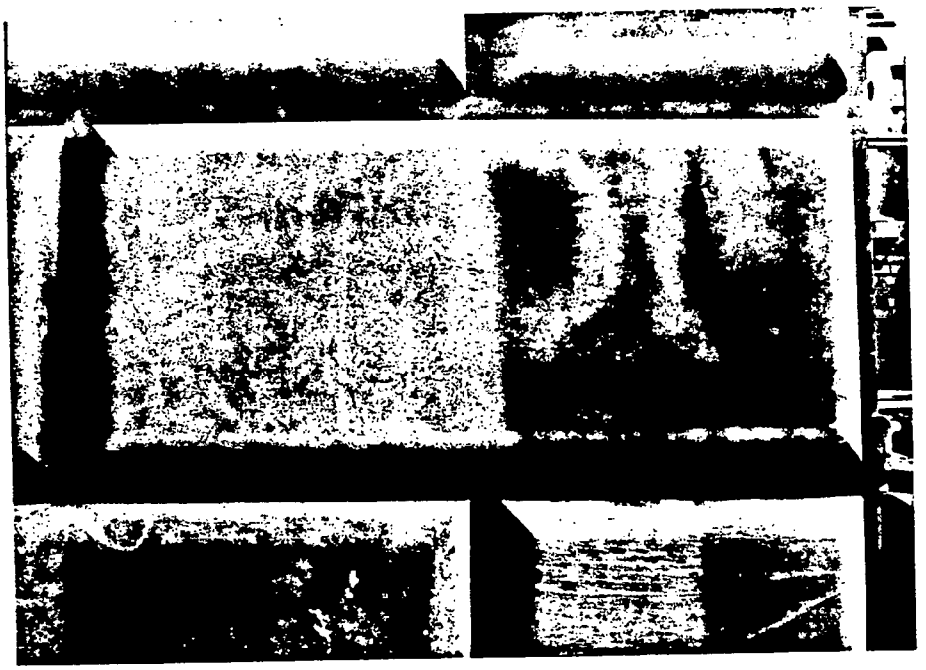


Fig. 155
Medium pressure water wash panel (Test #2). May 1980.

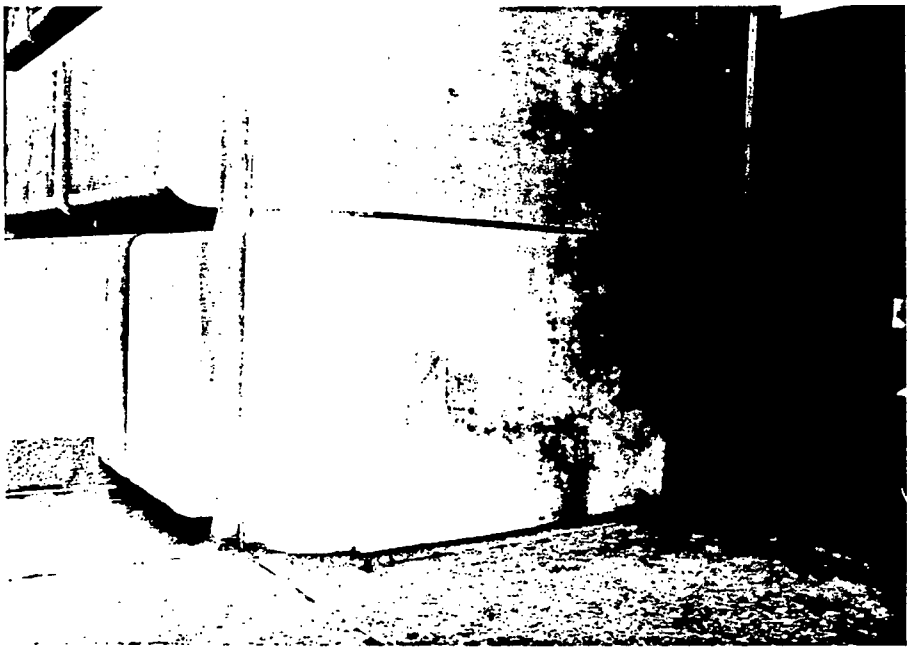


Fig. 156
Medium pressure water on marble door jamb (Test #2). May 1980.

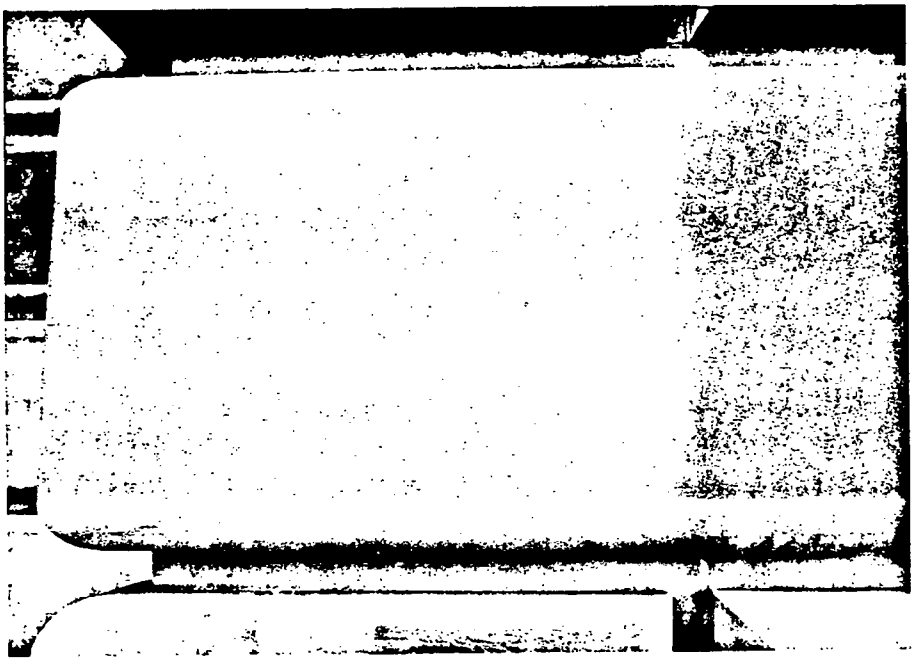


Fig. 157
High pressure water wash (Test #3).
May 1980.

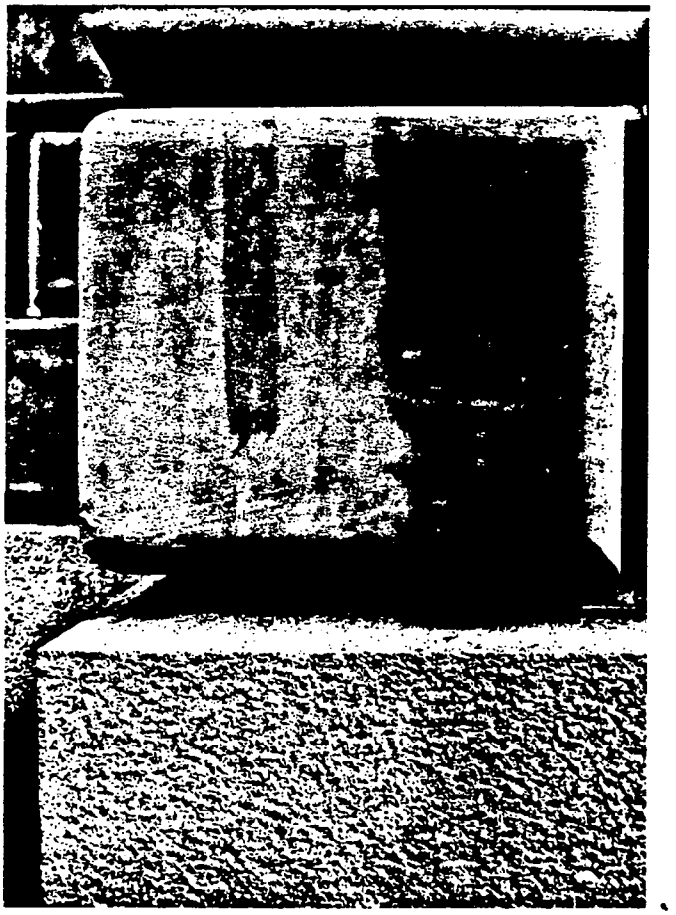


Fig. 158
Acid cleaner (Test #4).
May 1980.

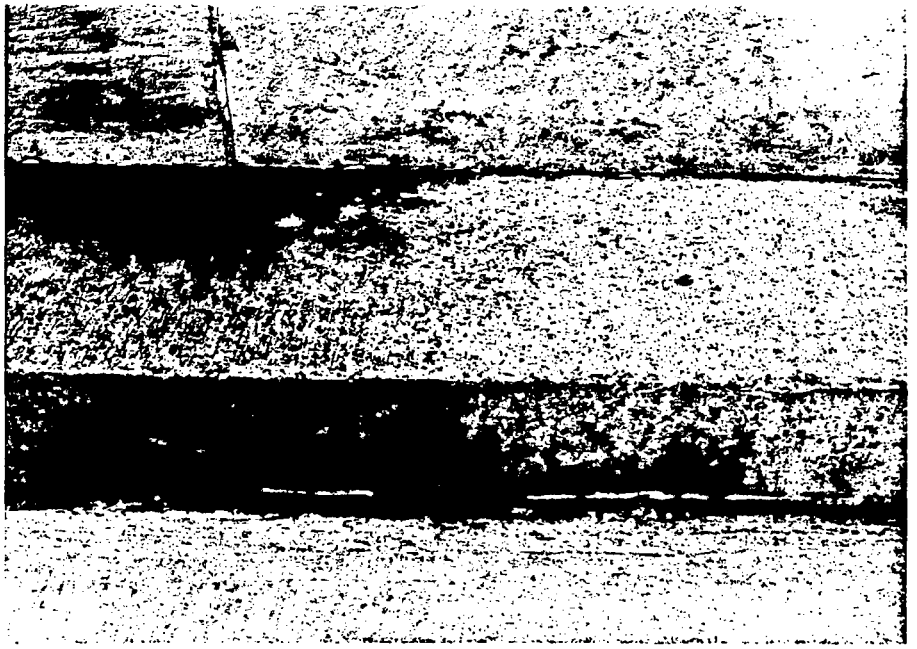


Fig. 159
Area of curb along driveway cleaned with acid solution (Test #4).
May 1980.

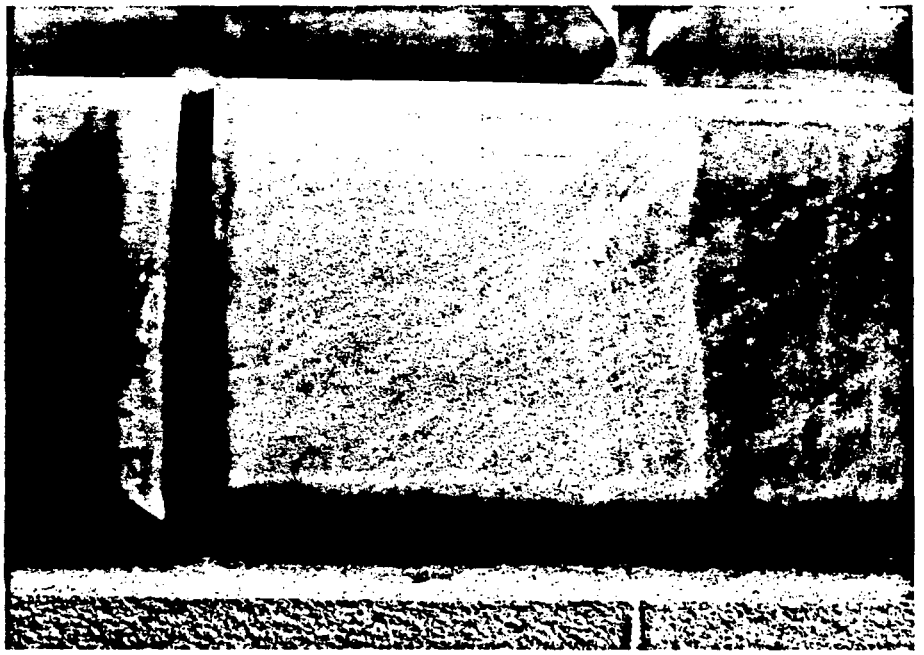


Fig. 160
Alkaline Cleaner A (Test #5).
May 1980.

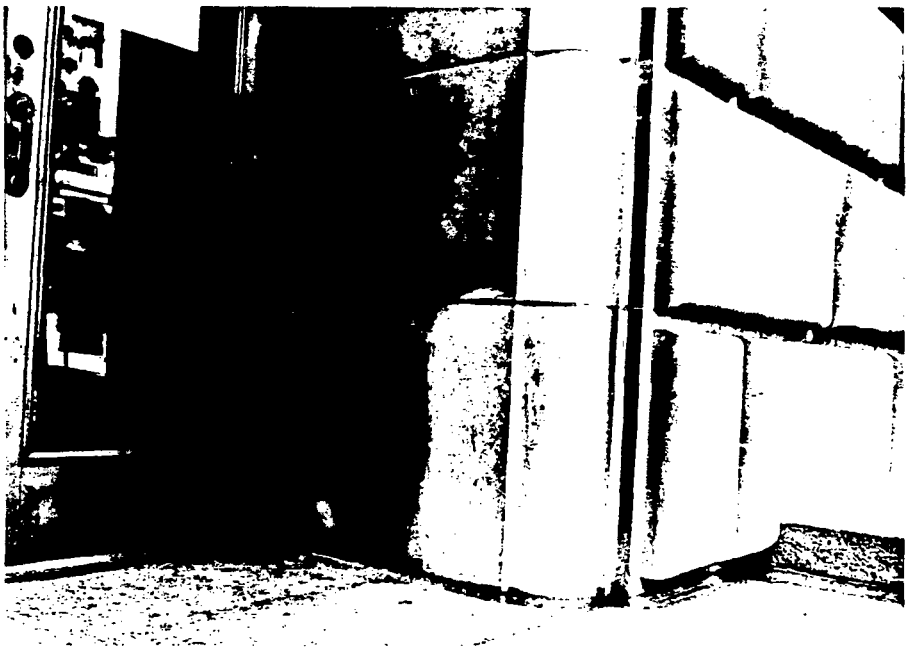


Fig. 161
Alkaline Cleaner A on marble door jamb (Test #5). May 1980.

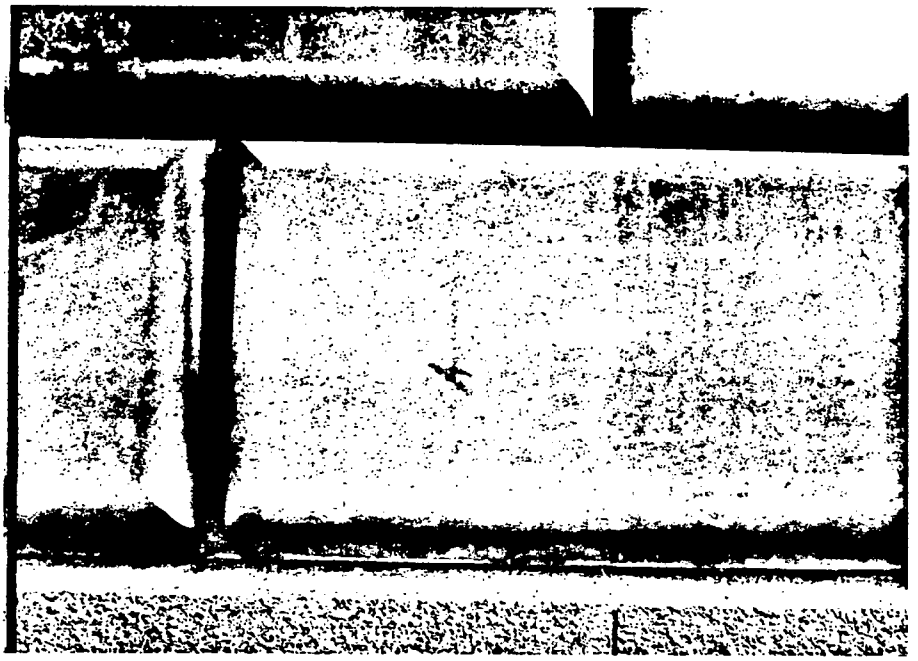


Fig. 162. Alkaline Cleaner B (ammonia solution) (Test #6). May 1980.

Fig. 163. Test panels are on area of brick below window sill. From left to right: Alkaline Cleaner B application (Test #6); medium pressure water wash (Test #2); and phosphate application (Test #7). May 1980.

Fig. 164. Phosphate application was made on left half of square block (Test #7). May 1980.

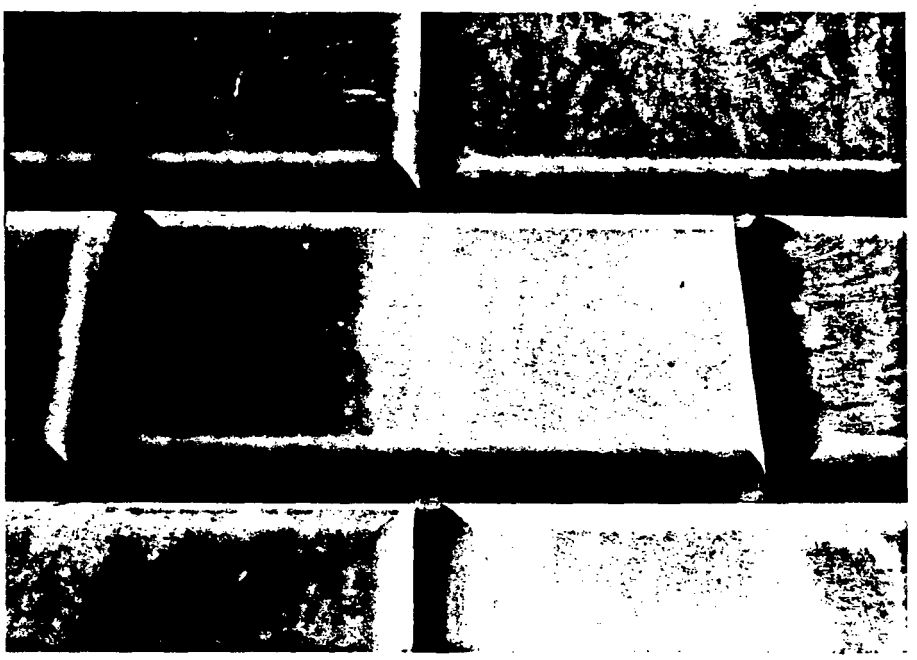


Fig. 165. Steam cleaning (Test #8). May 1980.

VIII. MORTAR ANALYSIS

On January 10, 1980, the exterior masonry surfaces of the Internal Revenue Service Building were examined to establish a) the visual characteristics and composition of the original pointing and b) the condition of the pointing, possible causes of deterioration and methods for repointing. Originally, there were three types of pointing mortar used at the IRS building: 1) for limestone and marble; 2) for granite; and 3) for brickwork. Since the building was completed, several different types of repointing materials have been used to repair joints. Mastic caulking has been used extensively to seal vertical joints in the basecourse, beltcourses, balustrade and on the exterior wall surfaces at the seventh floor. Portland cement mortar has been used on the piers and wall surfaces around the 12th Street arcade.

At the time of the visual survey, 20% of the street elevations, 10% of the interior courtyard facades and 50% of the Extension walls needed repointing. Deterioration of the existing pointing ranges from cracked or dislodged mortar to open joints. These conditions have been caused by rising damp, extreme weathering, inadequate flashing and drainage systems, or structural movement. When waterproof caulking has been used to repoint areas affected by rising damp, the sealant has prevented moisture from evaporating from the surface of the joint and caused saturation of the adjoining stone. In some areas, the stone has begun to decay or spall. Where Portland cement was used, the mortar is too rigid to absorb the thermal expansion and contraction of the stone and has been pushed out of the joints. Staining from dirt washing through open vertical joints is most evident on the cornices and balustrades of the courtyard elevations.

The following is an itemized listing of the linear feet (LF) recommended for repointing:

Constitution Avenue

7th floor wall and cornice, limestone	1,593 LF
main cornice and balustrade, limestone	3,922 LF
5th floor window heads, limestone	216 LF
vertical joints, basecourse, granite	360 LF
stairs, granite	585 LF
Total	6,676 LF

10th Street

vertical joints, pediments, limestone	180 LF
7th floor wall and cornice, limestone	2,628 LF
main cornice and balustrade, limestone	5,017 LF
5th floor window heads, limestone	296 LF
vertical joints, basecourse, granite	520 LF
stairs, granite	532 LF
Total	9,173 LF

Pennsylvania Avenue

7th floor wall and cornice, limestone		761 LF
main cornice and balustrade, limestone		1,450 LF
5th floor window heads, limestone		88 LF
3rd floor beltcourses, limestone		690 LF
vertical joints, basecourse, granite		60 LF
	Total	3,069 LF

12th Street

7th floor wall and cornice, limestone		1,064 LF
main cornice and balustrade, limestone		2,925 LF
5th floor window heads, limestone		160 LF
1st floor pavilion and arcade walls, limestone		5,596 LF
vertical joints, basecourse, granite		305 LF
stairs, granite		155 LF
	Total	10,205 LF

Extension Courtyard

walls, balconies, cornice, limestone		16,659 LF
vertical joints, beltcourse, limestone		214 LF
	Total	16,873 LF

Typical Inner Courtyard

cornice and beltcourse, limestone		651 LF
balcony, limestone		1,535 LF
vertical joints, second floor window, sills, limestone		62 LF
vertical joints, basecourse, granite		279 LF
	Total	2,527 LF
		X 4
	Total 4 courtyards	10,108 LF

Approximate Total of Building 56,104 LF

Laboratory Report

Mortar samples were taken for each of the three types of masonry: granite (marked "A"); brick (marked "B"); and limestone (marked "C") for laboratory analysis. The granite sample was taken from the basecourse of Court "C", the brick from Court "B" and the limestone from the walls and piers of the 12th Street arcade. These areas were chosen because the mortar 1) appeared to be original, 2) was in good condition and protected from deteriorating factors, and 3) could be removed without jeopardizing the condition of the surrounding masonry. The mortar for the limestone was visually identical to the mortar used on the marble.

The results of the laboratory tests (ASTM C-85 and C136) were used as a basis for formulation of repointing mortar mixes. The only exception was the limestone sample, which was a Portland cement mix, apparently a repair. Because the Indiana limestone on the IRS building is similar in detailing with the Federal Building (New Post Office) immediately across 12th Street, the same limestone mortar mix is recommended for use.

The results of the laboratory analysis follow.

THE THOMPSON & LICHTNER CO., INC.
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8 ALTON PLACE, BROOKLINE, MASS. 02146 · TEL. (617) 232-2105

CONSULTATION · DESIGN · INSPECTION AND TESTING LABORATORIES · INVESTIGATIONS · RESEARCH · MANAGEMENT ENGINEERING

January 25, 1980

BUILDING CONSERVATION TECHNOLOGY, INC.
WASHINGTON, D.C.

CHEMICAL ANALYSES OF MORTARS

INTERNAL REVENUE BUILDING
WASHINGTON, D.C.

Test Number - DD-255

Date Received - 1-21-80 Date Tested 1-22-80

Source - Submitted by you reference your letter dated 1-15-80

Samples - Three mortars from Internal Revenue Building, Washington, D.C. identified as follows:
- A, Granite
- B, Brickwood
- C, Limestone

Test Procedure - Standard methods of inorganic analysis

Results - The following data have been obtained:

	% by weight			Proportions by weight			Proportions by volume		
Sample Mark	A	B	C	A	B	C	A	B	C
Cement	32.9	18.2	51.2	1	1	1	1	1	1
Hydrated Lime Equivalent	12.9	7.1	none	.39	.39	none	.73	.73	none
Sand	54.2	74.7	48.8	1.65	4.10	.95	1.94	4.82	1.12
Ratio by Volume Sand/Lime plus Cement							1.12	2.79	1.12
ASTM C-270 Type							N under sanded	N	None

Test Number DD-255

Gradation - Reclaimed Aggregate

	% Passing		
# 4	100	100	
8	97	99	100
16	85	90	99
30	65	66	87
50	28	27	38
100	13	16	15
200	2	0	2
F.M.	2.12	2.02	1.61

THE THOMPSON & LICHTNER CO., INC.

G E Jacobs

G. E. Jacobs

GEJ:j
2c

Recommendations

The building should be repointed in the areas indicated by the visual examination. The new pointing is to match the color, width and profile of the original joints.

According to the standard notation of the Munsell Color Systems, the original colors are:

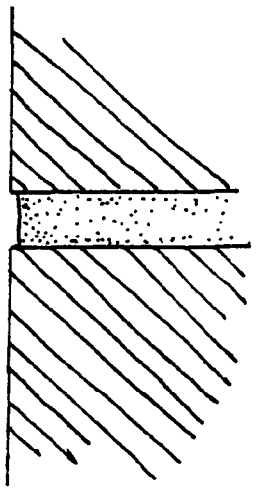
1)	limestone and marble	2.5Y 8/2, light yellowish grey
2)	granite	10YR 7.5/2, light yellowish grey
3)	brick	10YR 8/2, light yellowish grey

Use of these colors is contingent upon the results of any cleaning operations conducted on the masonry. The original intent of the pointing was to blend into the stone work. Therefore, the color of the repointing mortar should be adjusted to match the color of the adjoining masonry when both materials have fully dried.

The width of the joints vary slightly as follows:

1)	limestone and marble, vertical and horizontal	=	± 1/4"
2)	granite, vertical and horizontal	=	± 3/8-1/2"
3)	brickwork, vertical and horizontal	=	± 1/2"

All of the joints have a smooth flush finish as illustrated.



Not to Scale

JOINT PROFILES FOR BOTH HORIZONTAL AND VERTICAL JOINTS

The recommended mortar mixes are as follows:

1) Limestone and Marble Mortar

a. Aggregate: light to medium brown in color

Sieve Size	Percent Passing
No. 4	100
No. 8	100
No. 16	97
No. 30	76
No. 50	17
No. 100	6
No. 200	0

b. Proportions:

cement: 1 part by volume
lime: 2 parts by volume
sand: 6 parts by volume
water: to form a workable consistency

Note: This mixture contains a larger proportion of aggregate than the mortar sample. The existing mix contains a relatively low percentage of sand, which can cause excessive shrinkage and cracking, and may have aggravated the weathering of the joints in the past. Therefore, it is recommended that a more flexible mix with better bonding qualities or a mix closer to that specified by the Indiana Limestone Institute (1 part cement:: 1 part lime :: 6 parts sand) be substituted.

2) Granite

a. Aggregate: light to medium brown in color

Sieve Size	Percent Passing
No. 4	100
No. 8	97
No. 16	85
No. 30	65
No. 50	28
No. 100	13
No. 200	2

b. Proportions

cement: 1 part by volume
lime: 1 part by volume
sand: 5 parts by volume
water: to form a workable consistency

Note: This mixture contains a larger proportion of aggregate than the original sample for increased flexibility and better bonding qualities.

3) Brick Mortar

a. Aggregate: light to medium brown in color

Sieve Size	Percent Passing
No. 4	100
No. 8	99
No. 16	90
No. 30	66
No. 50	27
No. 100	16
No. 200	0

b. Proportions:

cement:	1 part by volume
lime:	1 part by volume
sand:	5 parts by volume
water:	to form a workable consistency

Note: As with the limestone and granite mortars, this mixture contains more aggregate than was present in the sample for workability and flexibility.

It is recommended that sealants be used on horizontal surfaces of elements exposed on more than one side such as the balustrade, cornices, and coping. Due to the increased exposure of these architectural elements, the masonry and pointing materials are subjected to greater expansion and contraction than on protected surfaces and the normal mortar material does not hold up. Sealants are more effective in these locations.

Sealant is also recommended for use on the stairs where frequent pooling of rain water make the normal wall pointing mortar ineffective. The sealant system would include backing rods, and a final pointing with mortar to give an abrasion resistant surface.

IX
PAINT ANALYSIS

IX. PAINT ANALYSIS

A. Methodology

A paint seriation analysis was conducted for all of the painted surfaces on the exterior and in the architecturally significant interior spaces of the Internal Revenue Service Building, Washington, D.C., by Sarah Sweetser of Building Conservation Technology, Inc. between March 10 and April 1, 1980. As described in the contract, the architecturally significant interior spaces are: "public lobbies and corridors, stairwells, windows, elevator cabs, and eight former hearing rooms on the second floor (now offices)." The purpose of the examination was to establish the original 1930's paint scheme for the building.

The on-site examination involved the use of a scalpel to cut through and expose all the separate layers of paint on individual architectural elements. Each layer was then examined in-situ through a hand-held 7x microscope. Numerous samples on each repetitive element were studied to ensure that complete sequences or polychromatic schemes were identified and recorded. In addition, since a paint color can differ according to its location, exposure, composition and type of pigment or medium used, several samples on each individual element were compared.

Laboratory analysis, involving the use of a 40x binocular microscope, was conducted on representative samples taken from the building. This step was included to confirm on-site readings, and to provide a better understanding of the several metallic painted surfaces found in the lobby spaces.

Distinction is made between the different periods of application by variations in color and the accumulation of dirt, visible between the paint layers as a thin, dark film. A layer of paint which has been exposed for an extended period collects dirt and dust, which causes an imperfect bond with the subsequent paint layer. This dirt layer and the poor adhesion allows identification of each finish layer and provides a relative measurement of the length of time the layer was exposed.

Each layer down to the substrate material was described using a common color name and recorded in sequence on the accompanying charts. Each vertical column corresponds to the architectural elements sampled, identified at the head of the column. The earliest layers are located at the top; the recent layers at the bottom of each columns.

Biographical data for paint analyst:
Name: Sarah M. Sweetser
Date of Birth: May 8, 1950
Place of Birth: New Bedford, Massachusetts
Sex: Female

All the color schemes were matched in-situ under natural or 3200 degree Kelvin artificial lights using the Munsell System of Color Notation (Munsell Book of Color: Glossy Finish Collection, Macbeth Division of Kollmorgen Corporation, Baltimore, Md. 21218). The code numbers have been recorded beneath each of the color names on the paint charts. Specific notes regarding the paint layer, color or the architectural element have been made in the lower portion of each column. Decorative painting such as graining and marbling has been noted as such and only the base color of these have been color coded.

All typical paint seriation areas are shown in Figures 167-168. Permanent plexiglass box framing of the following design (Fig. 166) will be installed on typical seriation samples. Framing will not be installed on decorative plaster surfaces, i.e., cornices and ceilings as frequent repainting or paint removal from these surfaces is not likely and installation could cause damage to the plaster work.

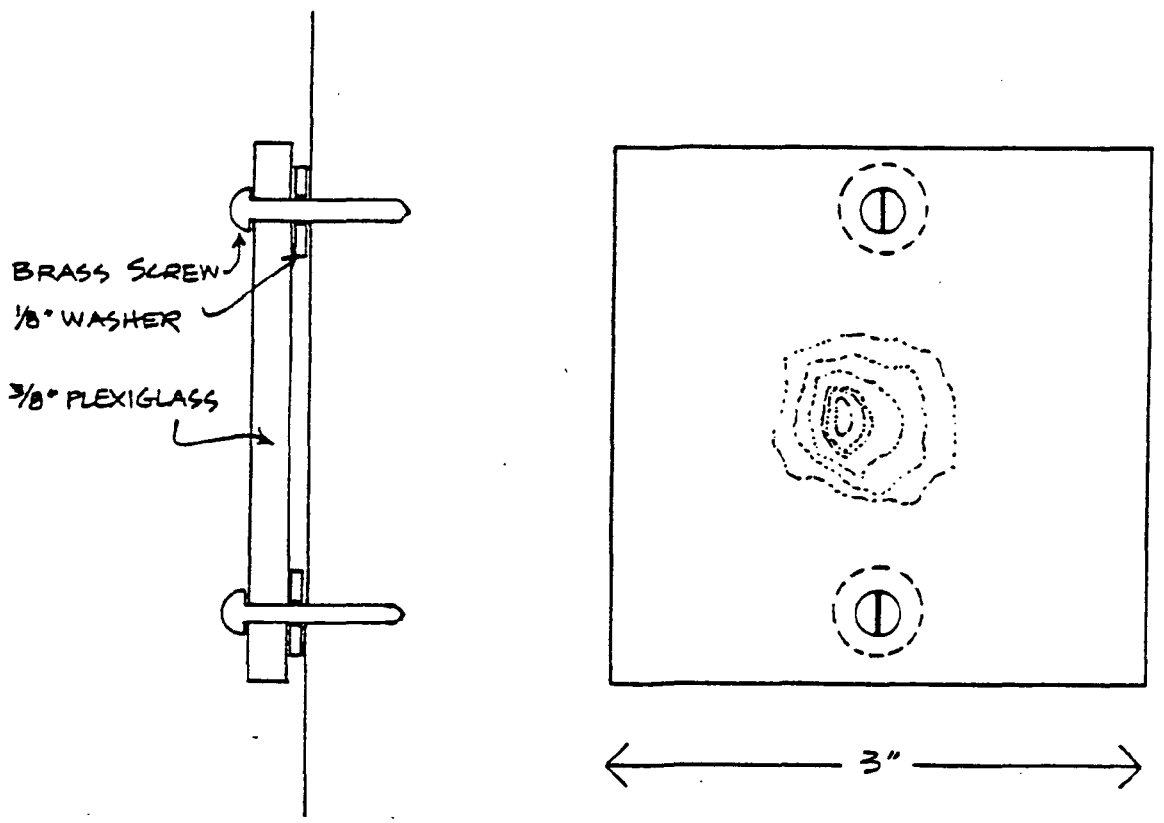


Fig. 166

B. Data

The following are descriptions of the paint schemes found on the IRS Building.

1. Exterior

All of the steel windows and doors and the cast-iron spandrel frames of the courtyards were originally painted a light tan to match the color of the new limestone (2.5Y 8/2). The only element painted in contrast with the building's masonry was the grillework. The iron areaway grilles were painted medium gray (N 4.5) while the iron driveway gates, window and door grilles, and steel doors in the driveway arch were painted a warm gray (2.5Y 5/2). The wrought iron rails in the courtyards were painted with dark gray (10B 3/1). When the Extension was completed, the same color scheme was continued. The red brick end wall to the Pennsylvania Avenue wing of the building was also painted tan (2.5Y 8/2) to camouflage the abrupt ending to the building.

Subsequent paint schemes on the exterior of the building continued the use of neutral tones, grays and tans, to complement the stonework. The iron railings contain several layers of dark grays and blacks.

The paint is in good condition on the steel windows and doors. However, the finish of the iron grillework on the areaways, doors, driveway gates, and balcony railings in the courtyards is flaking off and needs repainting (see Section X, Outline Specifications).

2. Interior

a. Main Lobby - Constitution Avenue

The exposed decorative paint on the ceiling of this space is the original scheme (Fig. 169) and matches the description listed in the "Specification for Decoratives and Decorative Painting in Bureau of Internal Revenue Building, Washington, D.C." dated December 28, 1931. The specifications outlined "Paint and Stippled Finish" and "Textural Glaze Finish in Tones of Marble," "Gold," and "Glaze Color in Two Tones" (see Appendix C)*.

The ceiling designs consists of coffers with large plaster rosettes centered in each. The rosettes are covered with copper-gold metallic paint. The field of the coffers is painted gold with a stencilled pattern of pale blue green (10G 7/1) triangles. The coffers are framed by a leaf molding painted with the copper

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*The National Archives, Record Group 121, General Correspondence, 1910-39, Entry 31, Box 1342.

gold color. The "gold" used is not gold leafing, but a high quality copper-bronze powder paint which has been glazed. The original effect was intended to be slightly darkened or "antiqued."

A grid of embellished beams separates the coffers. The sides and soffits of these beams are painted to imitate stone (Fig. 170). The cream colored base (2.5Y 7/4) is covered with an ochre glaze which creates the stone "veining." Moldings surrounding the soffit panels are painted with copper-gold paint. Within the soffit panel is a Greek key design, the body of which is painted cream (2.5Y 8/2) with "shadows" of warm gray (10YR 5/2).

The denticulated cornice surrounding the ceiling continues the decorative stone pattern with gold waterleaf molding above and below the dentils. All the painted ceiling surfaces were finished with a thin glaze.

The walls of the lobby are faced with Mankato stone and remain unpainted. There has been some discoloration due to aging of the materials of the paint and glazes. However, the original pattern and design is clearly visible, in good condition and should be preserved as is. It may be desirable to clean the ceiling at some point in the future. Specification of the cleaning materials and methodologies and execution of the actual cleaning should be done by a qualified professional conservator.

b. Constitution Avenue Lobby, Corridors and Vestibule

The decorative painting used in the Main Lobby was continued into the adjoining first and second floor corridors which surround it. The plaster walls, cornice and ceiling had a lighter base coat (2.5Y 8.5/2) with ochre glazing in a stippled pattern, which was more subtle than that of the Main Lobby ceiling (Fig. 172). The two levels of water leaf molding in the cornice were coated originally with a gold flake paint and a glaze.

The second floor corridor walls have three layers of paint below the stippled glaze layer. This area may have been treated separately at first, but since the walls are visible from the first floor lobby through the archways, it was probably decided to paint to match the first floor. At both the first and second floor levels, the stippled glaze layer corresponds in character to the ceiling of the Main Lobby and was undoubtedly part of the same scheme.

Subsequent paint layers on all the glazed surfaces consist of a series of light cream and gray colors up to the presently exposed coat. The existing exposed layer on the cornice molding of copper gold paint covered with a brown pigmented glaze is not the original paint layer, but a later repainting. The window sash appear to have been stripped of the early paint layers. The currently exposed glazed gold surface corresponds to the second glazed gold paint on the cornice moldings.

The metal door frames and doors and the wood doors retain their original finishes. The metal is grained to imitate walnut; the wood doors have a walnut stain and varnish.

c. 12th Street Circle Vestibule and Lobby

The plaster ceilings and cornices in the 12th Street vestibule and lobby were originally painted white (5Y 9/1) with bands of gold around the edge of the ceiling and on several elements of the cornice. Of the decorative paint scheme outlined in the 1931 specifications, none of the "paint and stippled finish," "textural glaze finish in two tones of marble," or "overglaze in texture," could be found. Only the gold border corresponds to the description in the documents.

Subsequent paint layers continued the basic white or cream scheme with gold bandings at several locations on the cornice. As in the Main Lobby corridors and vestibule, the quality of the "gold" paint, however, changes in the more recent layers. The original gold flake paint is 14-carat gold in the form of tiny lamina platelets which overlap to form a film. Due to the inert nature of gold, this layer has retained its brilliance despite age and subsequent layers of paint. Unfortunately, the film is such a thin fragile layer that attempts to expose any large area of its surface were unsuccessful.

The paint used in the later repainting of the building is not made from real gold, but from a bronze powder similar to that used in the Main Lobby coffered ceiling. This material is inferior to gold in every respect, changing color and losing brilliance rapidly, even with a protective coating of lacquer. It is distinguished from the gold flake by the dull brownish copper appearance.

The window sash in the vestibule and lobby were originally painted tan (2.5Y 8/2). Subsequent layers varied between creams, olive, gray, and tans which complimented the surrounding marble walls. The existing light yellow matches the ceiling and cornice color, and all the paint surfaces are in good condition.

The walls of the vestibule and lobby are sheathed in marble and are unpainted.

d. Central Entrance, 10th Street

The ceiling and cornice of the lobby in the central entrance on the 10th Street side of the building were painted in a more elaborate scheme than that used in the 12th Street circle lobby. The predominant color of the first finish layer was cream (2.5Y 8.5/2). Gold flake paint highlighted the decorative banding in the ceiling and the entire cornice. On the frieze, the field of metopes and grooves within the triglyphs were gold, but the

rosettes and triglyphs were painted in a marble pattern to imitate the real marble on the walls. This marbling layer was covered with a glaze which had a brushed surface. On the embellished beams which divide the six bays of the lobby, the decorative marbling was painted on the border of the soffit panel. The molding of the panel itself was highlighted in gold, while the panel was painted the same cream as the center of the ceiling. This scheme coincided with the 1931 specifications which described "textural glaze lighter tone than wall."

The vestibule cornice and ceiling were more modestly decorated with the cream color divided by bands of gold on the cornice.

The original decorative finishes were later completely painted over with a cream colored paint, followed by a white layer. Copper-gold paint was used as a border on the ceiling in combination with the white. A layer of cream colored paint separates this layer from the existing finish coat of light yellow. The walls are sheathed in marble and remain unpainted.

e. North Entrance, 10th Street (Extension)

The lobby and vestibule of the north entrance in the Extension were decorated in a less elaborate scheme than the central lobby on 10th Street. As in the other lobbies, the basic ceiling and cornice color was cream (10YR 8/2). In the vestibule, bands of gold flake paint accented the edge of the ceiling and the base of the cornice. The frieze had a slightly gray glaze over the cream, perhaps in imitation of the marble walls. However, the character of this finish is not the same as the marbling in the other lobbies. This area is part of the Extension completed five years after the main portion of the building. The decorative finishes may have been intended to match the existing ones, but in application, were greatly simplified.

Beneath the earliest paint layers, the lobby ceiling has a cloth covering, a common technique for smoothing out cracked plaster. It is possible that the plaster was not permitted to cure properly before it was first painted, and developed extensive hairline cracking. The original finishes above this cloth layer match the cream and the gold flake paint used in the vestibule. Here, the gold is used in two one inch borders on the ceiling between the band of ribbing and the cornice. The remainder of the ceiling and cornice were painted cream.

Subsequent layers of paint were all colored cream up to the existing white, with the exception of the vestibule walls. These were painted medium green-gray, light gray, and tan before the present finish.

f. Hearing Rooms

The eight hearing rooms have mahogany walls finished with a walnut stain and varnish. The upper portions of the walls, plaster cornice, ceiling, embellished beams and ornate brackets all have three coats of cream colored paint. The window sash were originally painted with a high gloss brown color (5YR 3/4) which complimented the woodwork and the painted graining on the hall door surrounds. The windows have since received several coats of dark brown paint and a layer of green. The black marble baseboards have been painted with one coat of high-gloss black paint.

At present, the decorative plasterwork is hidden from view by the dropped acoustical tile ceilings, but the paint is in good condition. The varnish on the woodwork has alligatored badly in several of the rooms, notably rooms 2116 and 2411.

g. Office Corridors and Elevator Lobbies

The corridors and elevator lobbies throughout the building were painted the same first five layers, all cream and gray colors. The doors had a walnut stain and varnish, and the metal door frames were painted in imitation of walnut wood graining.

Later wall colors continued the gray and cream tones with few exceptions. The multi-color scheme which identifies the quadrants of the building is only found in the existing exposed paint layer.

h. Stairwells

The stairwells, walls, stair balusters and newel posts and the window frames and sash were originally painted cream (2.5Y 8/2). The doors and door surrounds were painted in the same walnut graining used throughout the building, and still visible around the floor level sign above the hall doors. The stair, handrails and baseboards were painted black (N0.75).

Most of the surfaces have a series of cream, gray and tan layers, beneath the existing cream. However, the windows have as many as eight layers in a variety of creams, yellows, olives and grays. The existing finishes are all in good condition.

i. Windows

The steel office windows were originally painted a tan color (2.5Y 7/2). Subsequent layers reflect the individual office colors.

j. Elevators

The interiors of the existng original elevator cabs on the 12th Street circle are wood coated with the original varnish layer (Fig. 173). In several places the finish is alligatored and should be cleaned off and revarnished.

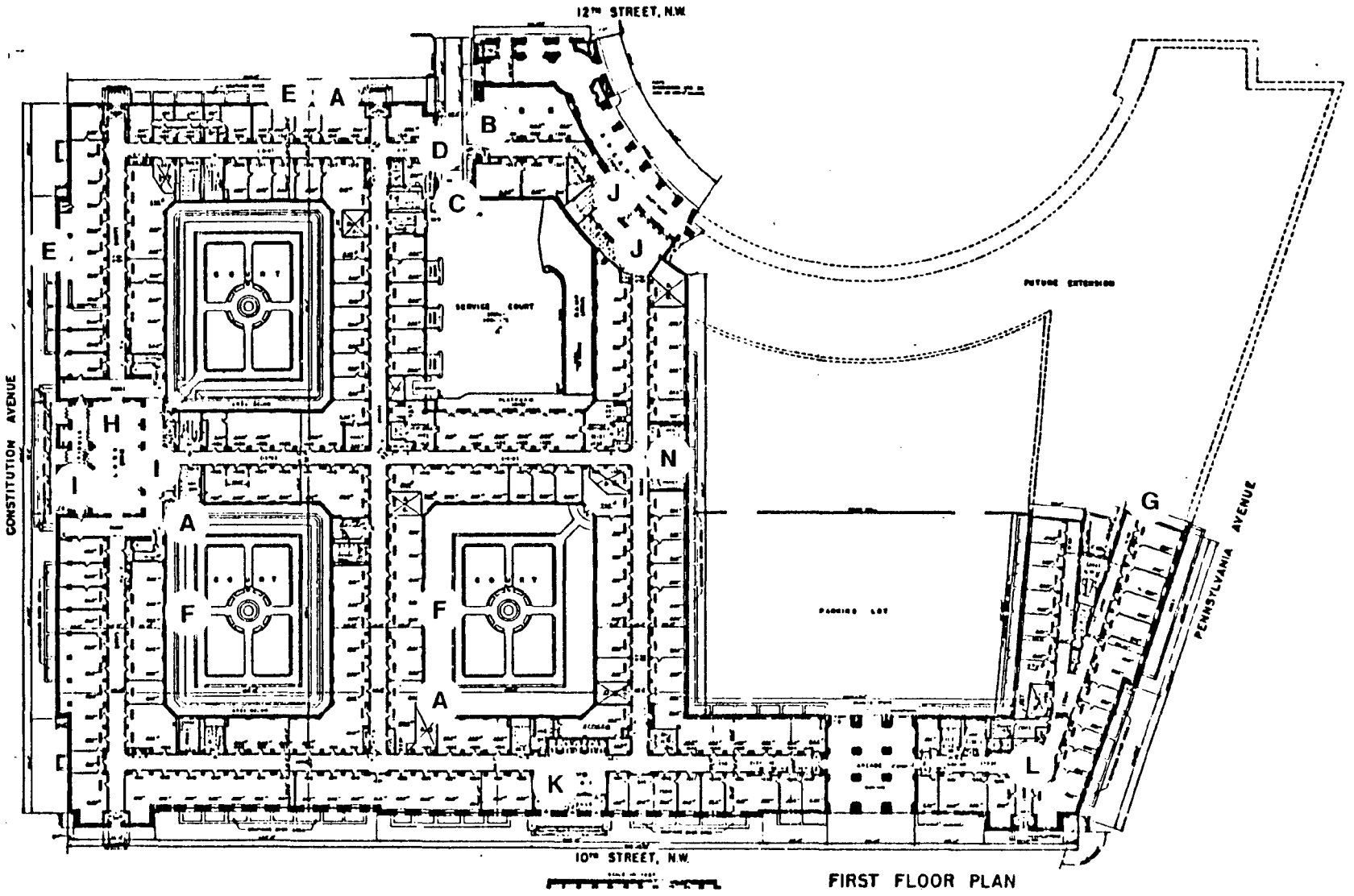


Fig. 167. Typical sample study locations keyed to paint charts.

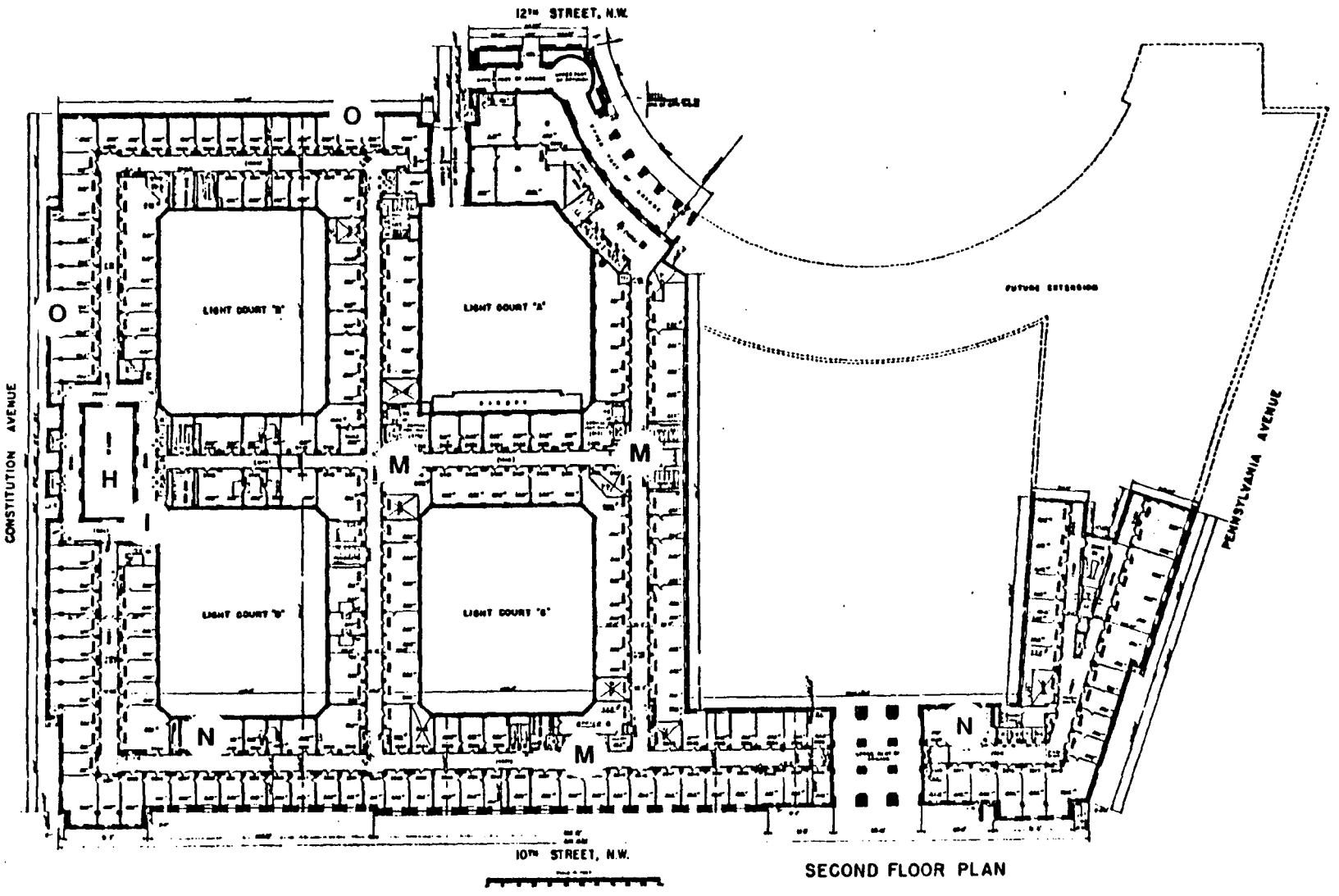


Fig. 168. Typical sample study locations keyed to paint charts.

	IRON COURTYD SPANDREL FRAMES (A)	STEEL WINDOW SASH AND FRAMES (A)	STEEL DOORS AND FRAMES (A)	DRIVEWAY WINDOW GRILLES (B)	DRIVEWAY GATES (B)	DRIVEWAY DOORS & FRAMES (D)	AREAWAY GRATES (E)	COURTYARD BALCONY RAILINGS (F)	RED BRICK ENDWALL (G)
	iron orange prime	steel red prime	steel red prime	iron red prime	iron orange prime	steel red prime	iron orange prime	iron red prime	brick
	tan 2.5Y 8/2	tan 2.5Y 8/2	tan 2.5Y 8/2	brown-grey 2.5Y 5/2	brown-grey 2.5Y 5/2	brown-grey 2.5Y 5/2	grey N4.5	grey 10B 3/1	tan 2.5Y 8/2
	tan 10YR 8/2	tan 10YR 8/2	tan 10YR 8/2	tan 10YR 8/2	tan 10YR 8/2	tan 10YR 8/2	dark grey 10B 4/1	dark grey 10B 4/1	
	grey 5Y 6/1	grey 5Y 6/1	grey 5Y 6/1	grey 5Y 6/1	grey 5Y 6/1	grey 5Y 6/1	grey N6.0	black N0.75	
	grey 5Y 6/1	grey 5Y 6/1	grey 5Y 6/1	grey 5Y 6/1	grey 5Y 6/1	black 5Y 2/1			
				grey 5Y 6/1	grey 5Y 6/1				
	white prime	white prime	white prime						
	grey 5Y 8/1	grey 5Y 8/1	grey 5Y 8/1		grey 5Y 8/1				
	cream prime	cream prime	cream prime						
	grey N6.5	grey N6.5	grey N6.5	grey N6.5					
					orange prime				
	white 10Y 8.5/1	white 10Y 8.5/1	white 10Y 8.5/1	grey 5Y 6/1	tan 2.5Y 7/2	dark grey 5Y 4/1	grey N6.0	dark grey 5Y 4/1	white 5Y 9/1

(H) CONSTITUTION AVENUE LOBBY CEILING AND CORNICE

Exposed paint layers are original.

	ROSETTE	COFFER FIELD	COFFER MOLDING	BEAMS	SOFFIT PANEL MOLDING	SOFFIT PANEL FIELD	GREEK KEY IN SOFFIT PANEL	CORNICE DENTILS	CORNICE MOLDINGS
	plaster	plaster	plaster	plaster	plaster	plaster	plaster	plaster	plaster
	gold flake paint	gold flake paint with blue triangles 10G 7/1	gold flake paint	imitation stone base 2.5Y 7/4 glaze 2.5Y 6/5	gold flake paint	imitation stone base 2.5Y 7/4 glaze 2.5Y 6/5	tan 2.5Y 8/2 grey shadow 10YR 5/2	imitation stone base 2.5Y 7/4 glaze 2.5Y 6/5	gold flake paint
	glaze	glaze	glaze	glaze	glaze	glaze	glaze	glaze	glaze

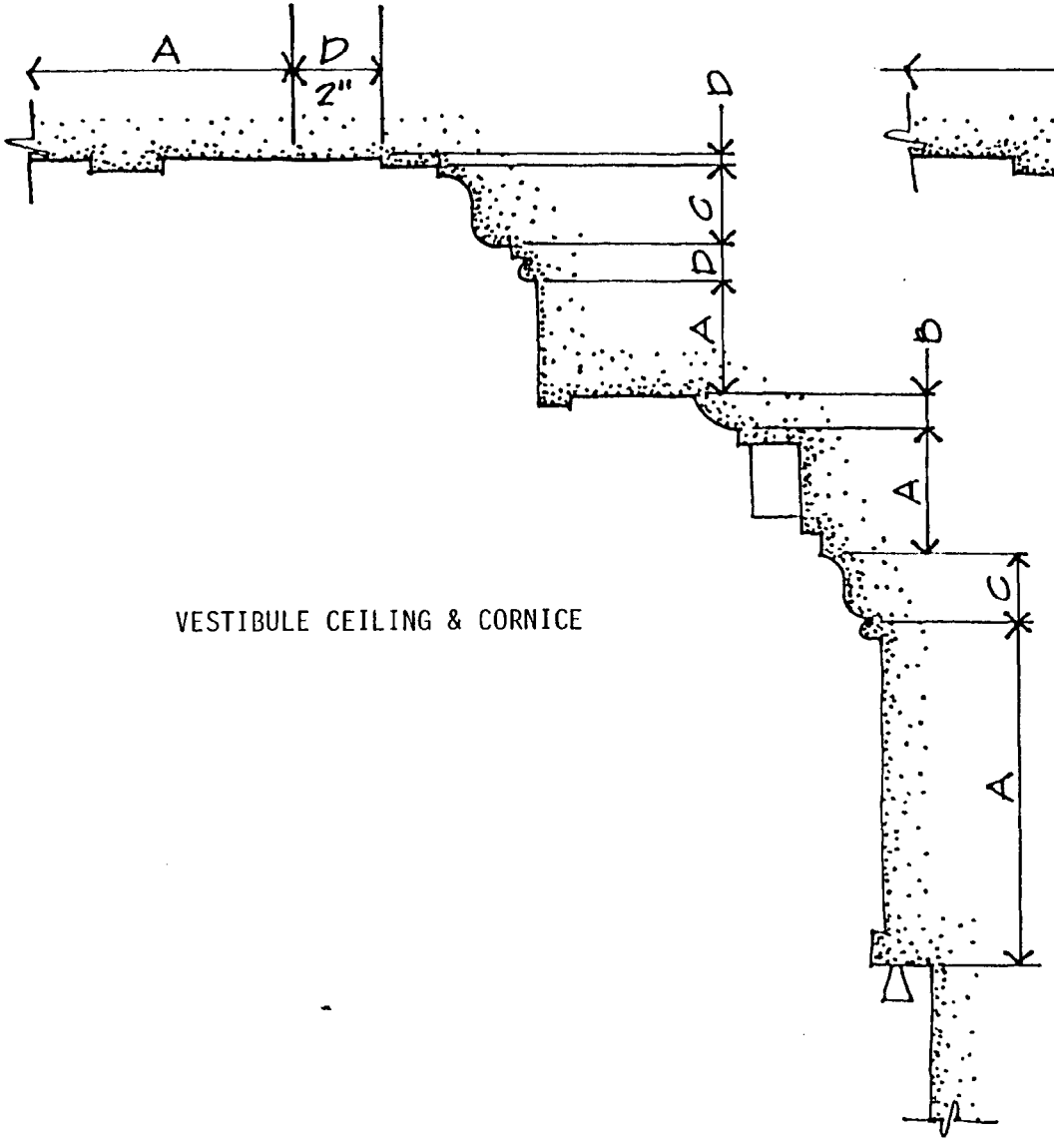
(I) CONSTITUTION AVENUE LOBBY, CORRIDORS, STAIRHALL AND VESTIBULE

			CEILING	CORNICE	CORNICE MOLDING	FIRST FLOOR WALLS	SECOND FLOOR WALLS	SECOND FL DOOR FRAMES & DOORS	SECOND FLOOR DOORS	SECOND FI WINDOW SASH & FRAMES
			plaster	plaster	plaster	plaster	plaster	steel	wood	steel
							tan 2.5Y 8/2			
							white 5Y 9/1			
				light grey 10YR 8/1			light grey 10YR 8/1			
			cream base 2.5Y 8.5/2	cream base 2.5Y 8.5/2	cream base 5Y 9/1	cream base 2.5Y 8.5/2	cream base 2.5Y 8.5/2	walnut graining	walnut stain varnish	
			glaze	glaze	gold flake glaze	glaze	glaze			stripped
			light grey 10YR 8/1	light grey 10YR 8/1	light grey 10YR 8/1	light grey 10YR 8/1	light grey 10YR 8/1			
			tan 10YR 8/2	tan 10YR 8/2	tan 10YR 8/2	tan 10YR 8/2	tan 10YR 8/2			
										prime
			grey 5Y 7/1	grey 5Y 7/1	gold flake brown glaze	grey 5Y 7/1	cream 2.5Y 8.5/2			gold flake brown glaze
			cream 5Y 9/2	cream 5Y 9/2		cream 5Y 9/2	cream 5Y 9/2			

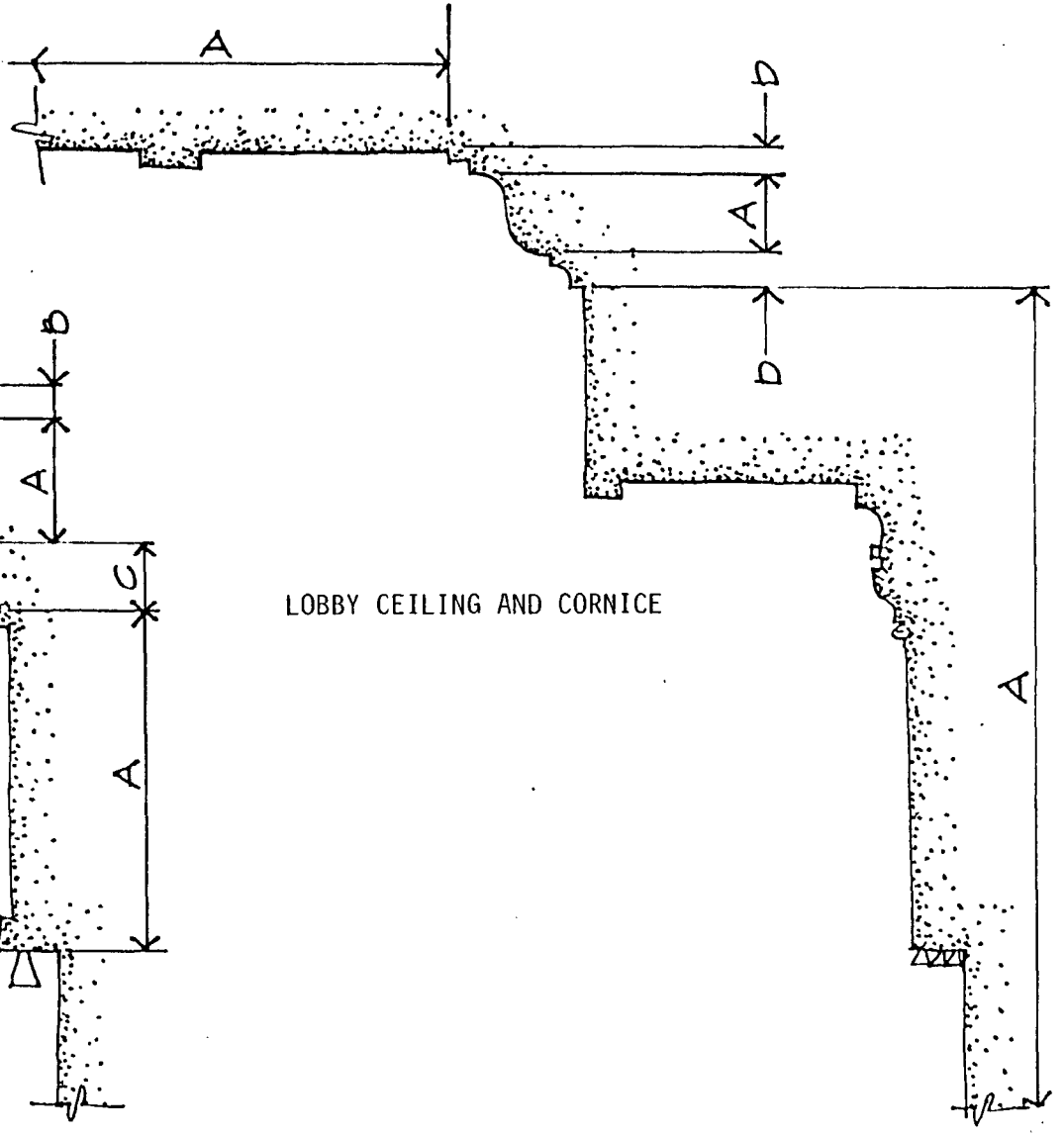
(J) 12TH STREET CIRCLE LOBBY AND VESTIBULE

					* A	B	C	D		WINDOW SASH & FRAMES
					plaster	plaster	plaster	plaster		steel red prime
										blue prime
					white 5Y 9/1	white 5Y 9/1	white 5Y 9/1	gold flake paint		tan 2.5Y 8/2
					cream 2.5Y 8.5/2	cream 2.5Y 8.5/2	cream 2.5Y 8.5/2	gold flake paint		cream 2.5Y 8.5/2
										yellow green 7.5GY 6/2
										green grey 2.5GY 7/2
					cream 10YR 9/2	cream 10YR 9/2	gold colored paint	cream 10YR 9/2		tan 10YR 7/2
										cream 7.5Y 9/2
					light yellow 2.5Y 9/2	light yellow 2.5Y 9/2	light yellow 2.5Y 9/2	light yellow 2.5Y 9/2		light yellow 2.5Y 9/2

* keyed to detail sketch



VESTIBULE CEILING & CORNICE



LOBBY CEILING AND CORNICE

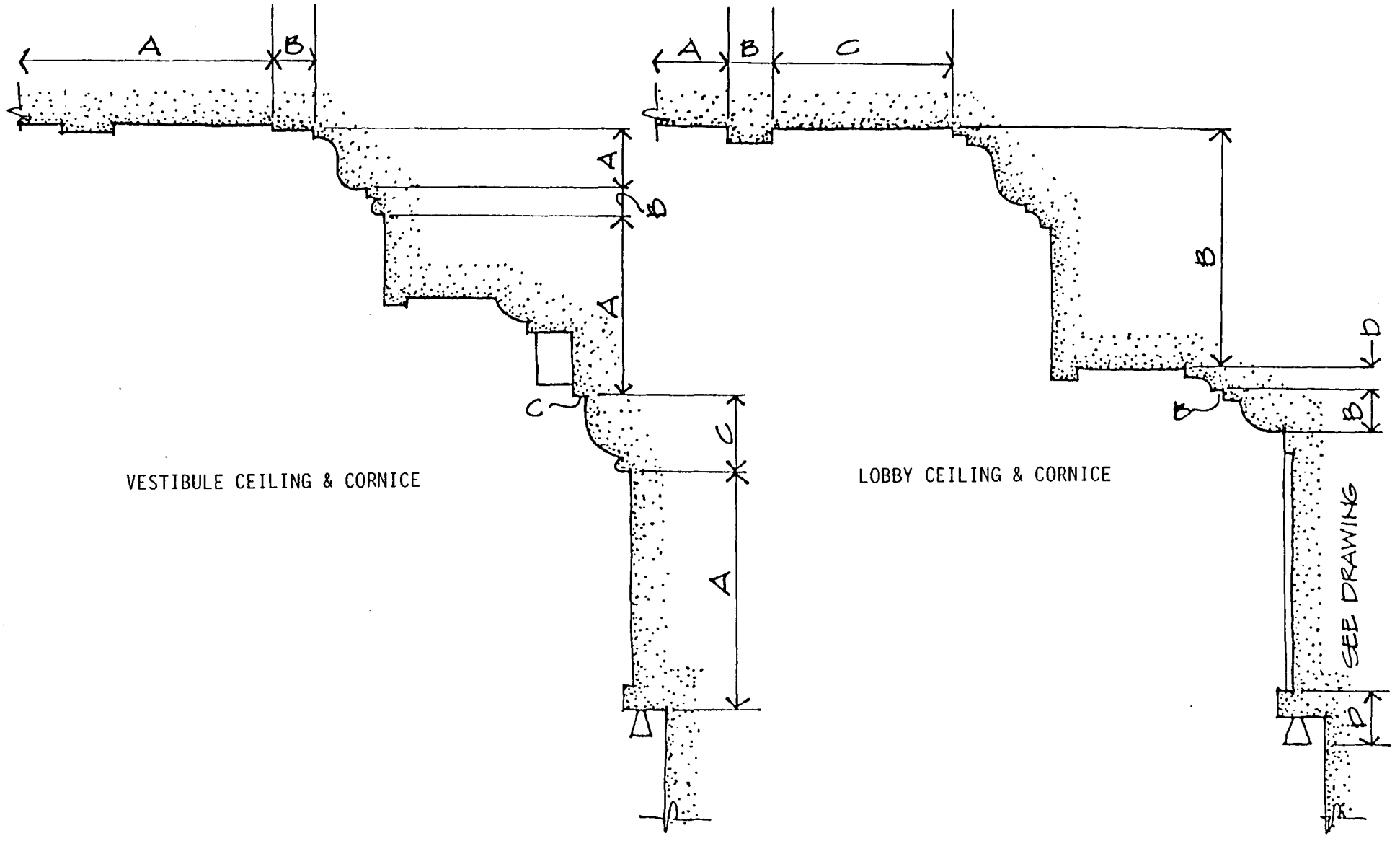
12TH STREET CIRCLE ENTRANCE

IRS Building, Paint Seriation

(K) CENTRAL ENTRANCE, 10TH STREET LOBBY AND VESTIBULE

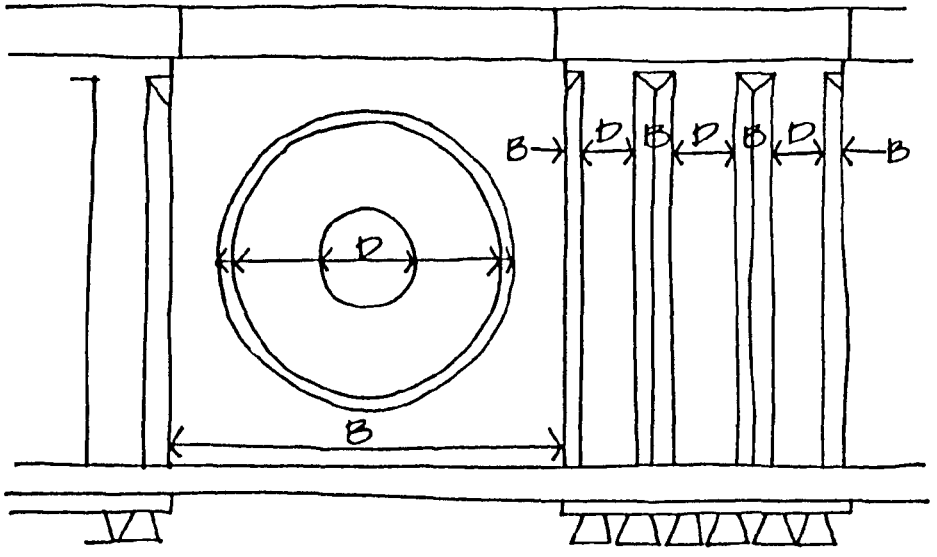
							* A	B	C	D
							plaster	plaster	plaster	plaster
									white 5Y 9/1	
							cream 2.5Y 8.5/2	cream 2.5Y 8.5/2 gold flake paint	cream 2.5Y 8.5/2 gold flake paint	cream 2.5Y 8.5/2 grey glaze N8.5 marbling
							white 5Y 9/1	white 5Y 9/1	gold paint	white 5Y 9/1
							cream 10YR 9/2	cream 10YR 9/2	cream 10YR 9/2	cream 10YR 9/2
							light yellow 2.5Y 9/2	light yellow 2.5Y 9/2	light yellow 2.5Y 9/2	light yellow 2.5Y 9/2

*keyed to detail sketch

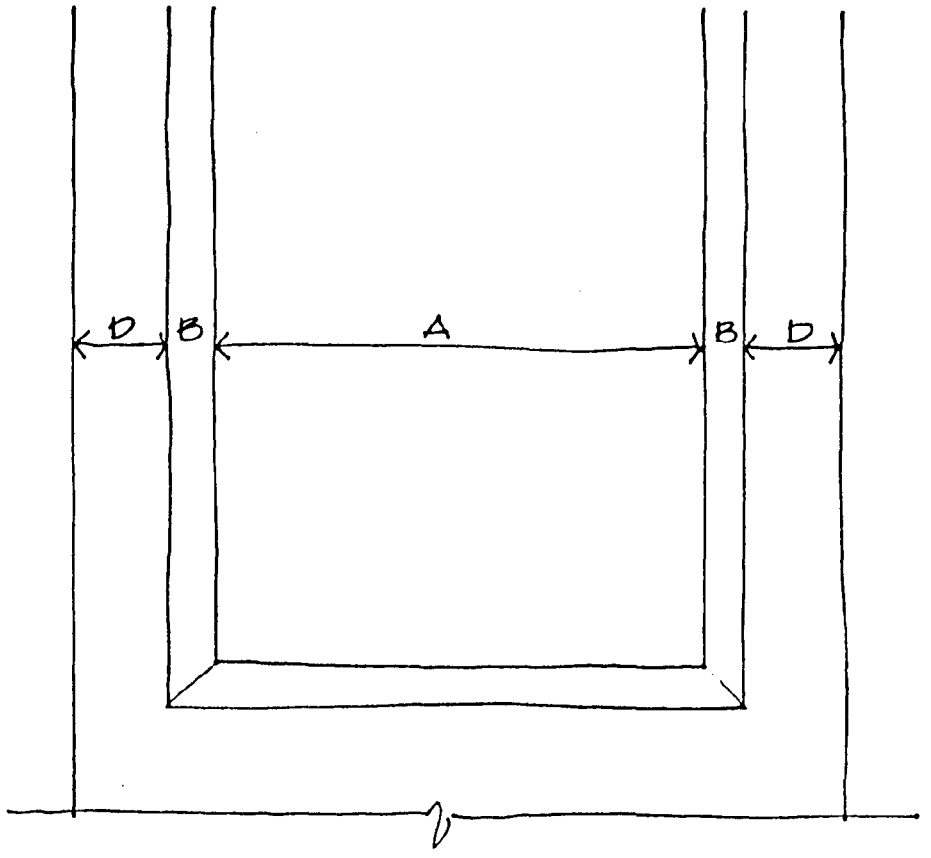


CENTRAL ENTRANCE LOBBY AND VESTIBULE, 10th Street

IRS Building, Paint Seriation



ELEVATION OF FRIEZE



PLAN OF SOFFIT, EMBELLISHED BEAM

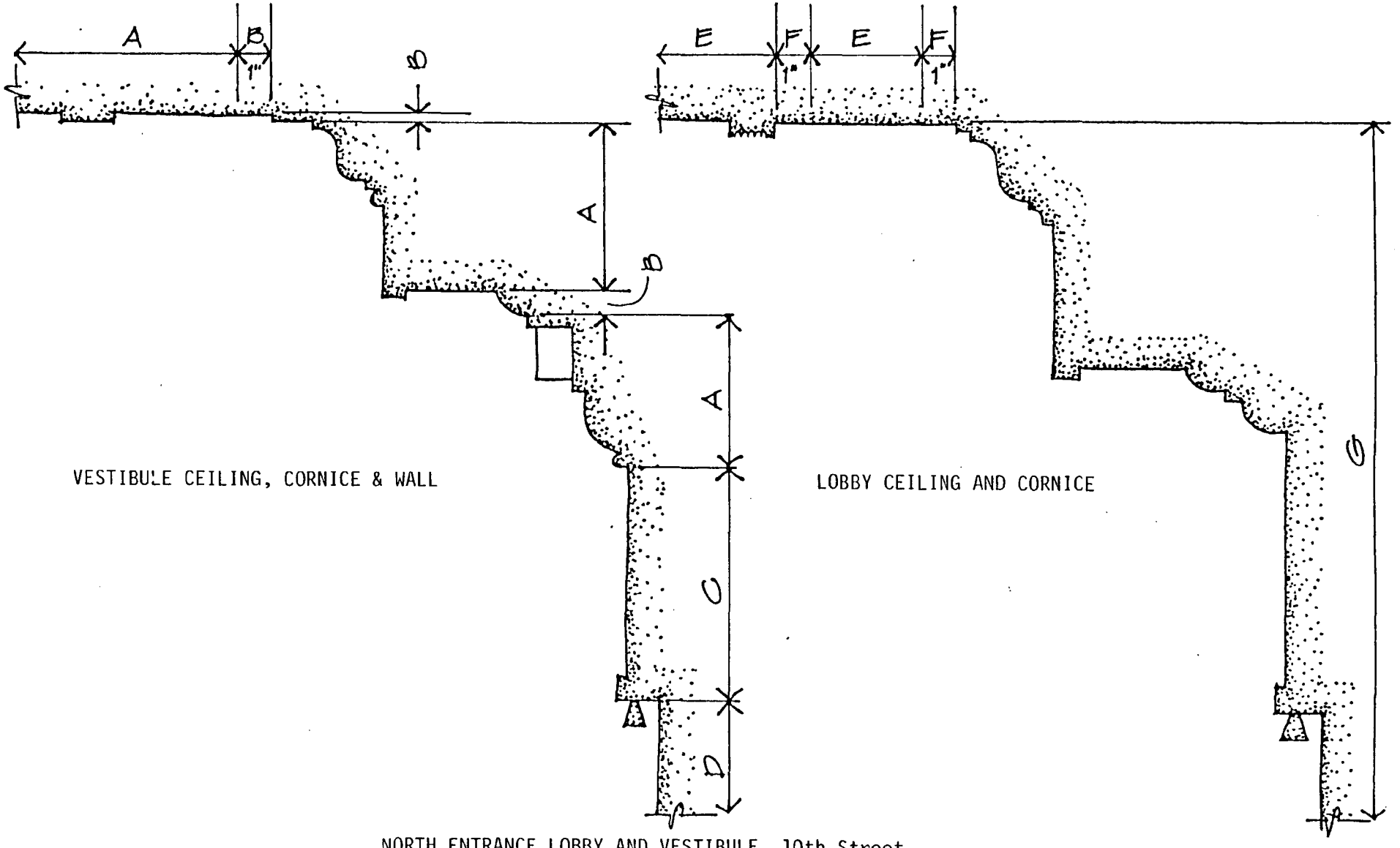
CENTRAL LOBBY AND VESTIBULE, 10th Street

IRS Building, Paint Seriation

(L) NORTH ENTRANCE LOBBY AND VESTIBULE, 10TH STREET

				* A	B	C	D	E	F	G
				plaster	plaster	plaster	plaster	plaster	plaster	plaster
				cream 10YR 8/2	cream 10YR 8/2 gold flake paint	cream 10YR 8/2 grey glaze	cream 10YR 9/4	cream 10YR 8/2 gold flake paint	cream 10YR 8/2	cream 10YR 8/2
				cream 2.5Y 8/2	cream 2.5Y 8/2	cream 2.5Y 8/2	green grey 5GY 7/1	cream 2.5Y 8/2	cream 2.5Y 8/2	cream 2.5Y 8/2
				cream 2.5Y 8/2	cream 2.5Y 8/2	cream 2.5Y 8/2	light grey N7.75	cream 2.5Y 8/2	cream 2.5Y 8/2	cream 2.5Y 8/2
							tan 10YR 8/2			
				white 5Y 9/2	white 5Y 9/2	white 5Y 9/2	white 5Y 9/2	white 5Y 9/2	white 5Y 9/2	white 5Y 9/2

* keyed to detail sketch



NORTH ENTRANCE LOBBY AND VESTIBULE, 10th Street

					BASE-BOARD	WINDOW SASH	CEILING	CORNICE	CEILING BRACKETS	PANELING
					marble	steel red prime	plaster	plaster	plaster	mahogany
						dark brown 5YR 3/4	cream 2.5Y 9/2	cream 2.5Y 9/2	cream 2.5Y 9/2	walnut stain varnish
						red brown 7.5R 3/2	cream 2.5Y 9/2	cream 2.5Y 9/2	cream 2.5Y 9/2	
						green 5GY 5/4	cream 10YR 9/3	cream 10YR 9/3	cream 10YR 9/3	
					black	dark brown 7.5YR 2/4				

(M) TYPICAL CORRIDORS AND ELEVATOR LOBBIES

100 CORRIDOR WALLS TYPICAL	200 CORRIDOR WALLS TYPICAL	400 CORRIDOR WALLS TYPICAL	ELEVATOR LOBBY WALLS TYPICAL
plaster	plaster	plaster	plaster
cream 2.5Y 9/4	cream 2.5Y 9/4	cream 2.5Y 9/4	cream 2.5Y 9/4
grey 2.5Y 7/2	grey 2.5Y 7/2	grey 2.5Y 7/2	grey 2.5Y 7/2
cream 10YR 9/4	cream 10YR 9/4	cream 10YR 9/4	cream 10YR 9/4
cream 10YR 8/4	cream 10YR 8/4	cream 10YR 8/4	cream 10YR 8/4
light grey 10Y 7/1	light grey 10Y 7/1	light grey 10Y 7/1	light grey 10Y 7/1
grey 10YR 8/1	grey 10YR 8/1	grey 10YR 8/1	grey 10YR 8/1
tan 10YR 7/2	tan 10YR 7/2	tan 10YR 7/2	tan 10YR 7/2
cream 5Y 8.5/2	cream 5Y 8.5/2	cream 5Y 8.5/2	cream 5Y 8.5/2
* green 2.5G 8/6	* orange 10YR 8/6	* yellow 5Y 8.5/6	* blue green 10G 8/4

* color varies with specific location

(N) TYPICAL STAIRWELL

				STAIR BALUSTERS & NEWEL	STAIR HANDRAIL	BASE-BOARD	DOOR FRAMES AND DOORS	WINDOW SASH & FRAMES	WALLS
				steel	steel	steel	steel	steel red prime	plaster
							cream base 2.5Y 8/2		
				Cream 2.5Y 8/2	black N0.75	black N0.75	walnut graining	cream 2.5Y 8/2	Cream 2.5Y 8/2
				cream 10YR 9/2	grey 10YR 6/1			cream 10YR 9/2	light grey 10YR 8/1
								green grey 10Y 7/2	
					black N0.75	black N0.75		yellow 2.5Y 9/4	cream 2.5Y 8/2
								grey 5Y 6/1	grey 10YR 8/2
								light grey 5Y 8/1	cream 10YR 8/2
				light green 5GY 8/2				green grey 10Y 8/2	white 10Y 9/1
				cream 5Y 9/2	black N0.75	black N0.75	cream 5Y 9/2	cream 5Y 9/2	cream 5Y 9/2

(O) TYPICAL OFFICE WINDOW FRAMES AND SASH

									WINDOW FRAMES AND SASH	
									steel red prime	
									tan 2.5Y 7/2	
									grey 5Y 7/1	
									green grey 5GY 7/1	
									green 5BG 6/4	
									grey 5Y 8/1	
									tan 5YR 8/1	
									yellow 2.5Y 8/2	
									white N9.5	
									blue 7.5B 8/4	

varies with location

C. Recommendations for Repainting

It is recommended that the following paint colors and finishes be used in repainting the IRS Building. These colors and finishes will reproduce the original and most significant decorative scheme used at the building.

Building Element	Color	Munsell Code	Finish
1. Exterior			
--Steel window frames, sash and doors	tan	2.5Y 8/2	glossy
--Courtyard spandrel frames	tan	2.5Y 8/2	glossy
--Driveway doors, gates, and window grilles	gray	2.5Y 5/2	glossy
--Areaway grates	gray	N.5	glossy
--Courtyard balcony railings	dark gray	10B 3/1	glossy
2. Interior - Main Lobby			
--Original decorative painting remains exposed.			
3. Interior - Main Lobby Corridors and Vestibule			
--Ceiling and cornice	cream with stippled glaze	2.5Y 8.5/2	glazed (glossy)
--Cornice leaf molding	gold flake over cream base w/glaze	5Y 9/1	glazed (glossy)
--First and second floor walls	cream with stippled glaze	2.5Y 8.5/2	glazed (glossy)
--Second floor window frames and sash	gold flake with glaze	--	glazed (glossy)
--Second floor metal door frames and doors	walnut graining	original finish remains exposed	
--Second floor wood doors	walnut stain	--	varnished (glossy)

Building Element	Color	Munsell Code	Finish
4. Interior - 12th Street Circle Vestibule and Lobby			
--Vestibule ceiling	white with gold banding	5Y 9/1	flat
--Vestibule cornice	white with gold on moldings	5Y 9/1	flat
--Lobby ceiling	white	5Y 9/1	flat
--Lobby cornice	white with gold on moldings	5Y 9/1	flat
--Window frames and sash	tan	2.5Y 8/2	glossy
5. Interior - Central Entrance, 10th Street			
--Vestibule ceiling	cream with gold banding	2.5Y 8.5/2	flat
--Vestibule cornice	cream with gold on moldings	2.5Y 8.5/2	flat
--Lobby ceiling	cream with gold banding	2.5Y 8.5/2	flat
--Lobby cornice	cream with gold banding and gray marbling glaze	2.5Y 8.5/2 N8.5	flat & glaze
6. North Entrance, 10th Street (Extension)			
--Vestibule ceiling	cream with gold banding	10YR 8/2	flat
--Vestibule cornice	cream with gold banding and gray marbling glaze	10YR 8/2	flat & glaze
--Vestibule walls	cream	10YR 9/4	flat
--Lobby ceiling	cream with gold banding	10YR 8/2	flat
--Lobby cornice	cream	10YR 8/2	flat

Building Element	Color	Munsell Code	Finish
7. Hearing Rooms			
--Ceiling and cornice	cream	2.5Y 9/2	flat
--Window sash and frames	brown	5YR 3/4	glossy
8. Office Corridors and Elevator Lobbies			
--Walls	cream	2.5Y 9/4	flat
--Door frames	walnut graining	--	varnish
--Doors	walnut stain	--	varnish
9. Stairwells			
--Walls	cream	2.5Y 8/2	flat
--Window sash and frames	cream	2.5Y 8/2	glossy
--Stair newel and balusters	cream	2.5Y 8/2	glossy
--Stair handrail	black	N0.75	glossy
--Doors and door frames	walnut graining	--	varnish
--Baseboard	black	N0.75	glossy
10. Windows			
--Frames and sash	tan	2.5Y 7/2	glossy

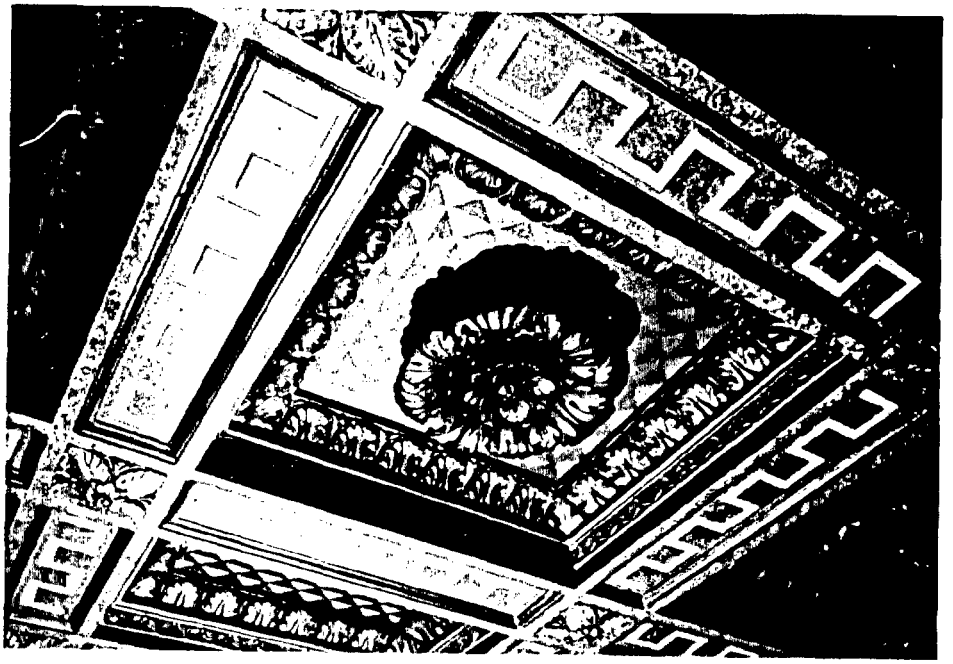


Fig. 169.
Ceiling of Constitution Avenue Lobby showing the original and existing decorative scheme. The plaster rosettes, covered with copper-gold metallic paint, are centered in a field of gold and blue triangular patterned stencilling.

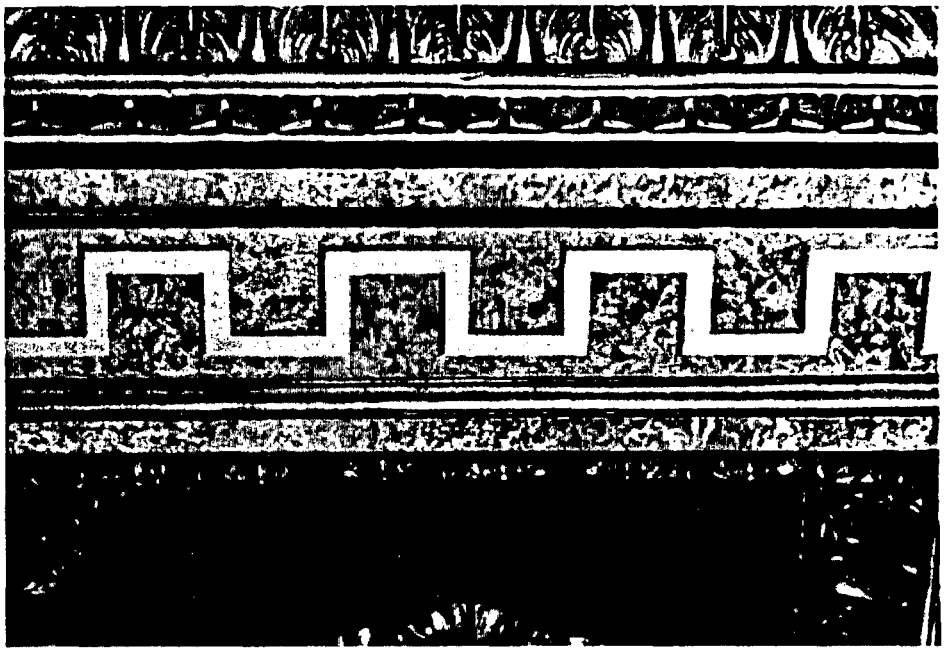


Fig. 170.
Detail of decorative stone pattern on sides and soffit panels of embellished ceiling beams (see above) in Constitution Avenue Lobby.

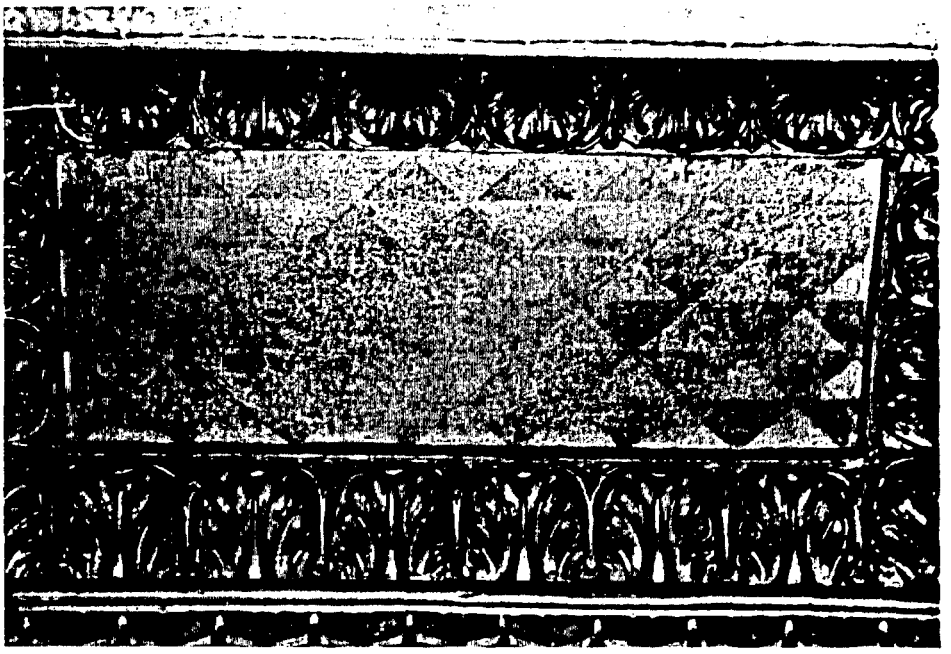


Fig. 171.
Detail of Constitution Avenue Lobby ceiling.

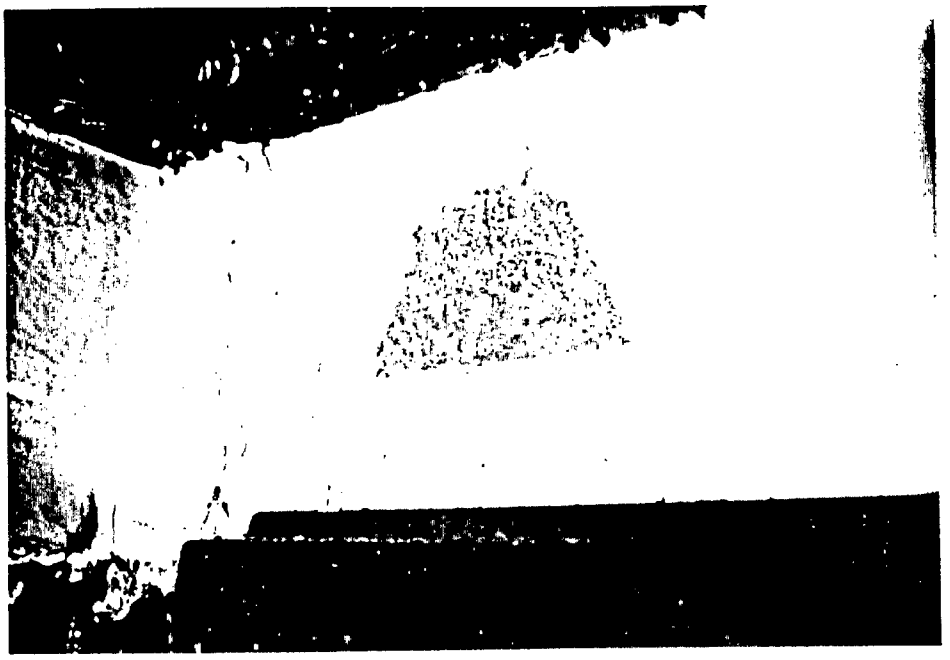


Fig. 172
Decorative painting in first and second floor corridors adjoining Constitution Avenue Lobby. The walls, cornice and ceiling were painted with a light cream base coat with ochre glazing in a stippled pattern to imitate stone.

Fig. 173
Original elevator cab.

A. BRICKWORK

PART 1: GENERAL

1-1 DESCRIPTION: Work in this section includes:

A. Raking out deteriorated mortar and repointing brick joints within the courtyards and on the end walls.

B. Restoring brick border paving in Service Court.

C. Cleaning and painting brick end walls of Extension.

1-2 QUALITY ASSURANCE:

A. Standards: Brick Institute of America: "Technical Notes on Brick Construction," Portland Cement: ASTM C150-74; Hydrated Lime for Masonry Purposes: ASTM C207-74, and manufacturers printed recommendations for product delivery, storage and installation.

B. Material Samples: Submit a 5" long sample of the pointing mortar and a sample of each type of brick to the Contracting Officer for color and material approval.

C. Sample Raking and Pointing: Prior to work initiation, rake out and point a 4' square sample area, the exact location as selected by the Contracting Officer. Additional samples will be prepared at no additional cost to the Government until the quality of work is acceptable to the Contracting Officer. The approved area will be marked and left undisturbed and will serve as standard for the entire job.

D. Test Reports: Submit independent laboratory test reports for each of the existing paving brick and proposed replacement brick. Carefully remove existing brick from a location designated by the Contracting Officer. Test report will include:

1. Compressive strength

2. 24-hour cold water absorption

3. 5-hour boil absorption

4. Saturation coefficient

5. Initial rate of absorption

1-3 COLD WEATHER PROTECTION: No brick work will be performed when the air temperature is 40 degrees and falling or when brick surface temperature is 40 degrees or below as measured with a surface temperature thermometer.

A. Portland cement: Type I, ASTM C150, white or gray as necessary to achieve specified mortar color.

B. Hydrated Masons Lime: ASTM C207.

C. Aggregate: Clean, sharp sand that is free of loam, silt, soluable salts and vegetable matter. Aggregate shall conform to the following size gradations:

Sieve Size	Percent Passing
No. 4	100
No. 8	99
No. 16	90
No. 30	66
No. 50	27
No. 100	16

Choose the color of the aggregate (light to medium brown) so that the color of a mixed, cured mortar sample color matches Munsell standard: 10YR 8/2, light yellowish grey. Use no pigments or coloring agents.

D. Water: Clean and free of oils, acids, alkalis and organic matter.

2-2 MIX PROPORTIONS

A. Portland Cement: 1 part by volume.

B. Lime: 1 part by volume.

C. Aggregate: 5 parts by volume.

D. Water: To form a workable consistency.

2-3 MIXING PROCEDURES

A. Measure materials by volume or equivalent weight.

B. Do not measure by shovel. Use known measure.

C. Mix ingredients in clean mechanical batcher for 3-5 minutes.

D. Let mortar sit 20 minutes prior to use to allow for initial shrinkage. Place mortar in final position within two hours of mixing. Do not temper or use partially hardened material.

2-4 BRICK: New brick to match existing original red and buff paving bricks in all particulars. Laboratory test results for existing brick will serve as minimum standard. (Portion of paving is visible immediately inside iron driveway gates.) Red brick measures 8-3/4" x 3-1/4", buff brick measures 8-5/8" x 3-3/8", as manufactured by O. W. Ketcham, Inc., Philadelphia, PA (215/563-7672).

2-5 PAINT

A. Primer: a clear alkali-resistant soya alkyd binder type sealer such as Masonry Conditioner type A5V2 manufactured by Sherwin Williams.

B. Finish coat: a flat exterior acrylic latex paint such as Pro-Mar (Series B36W100) manufactured by Sherwin Williams.

PART 3: EXECUTION

3-1 JOINT RAKING

A. Rake out brick joints by hand with chisel and mallet.

B. Rake joints to a depth of 3/4" minimum. In all cases rake back to remove weathered surfaces and expose sound mortar.

C. Remove all mortar from the surface of the brick within the joint so that new mortar bonds to brick and not to old mortar.

D. Do not spall the face of the brick or widen the joints. More than one 1/2" spall per square foot of masonry or widening the joints will be unacceptable. The contractor will replace all damaged brick at no additional cost to the government. In addition, all raking will cease until tools, workmen and methodology are corrected to the satisfaction of the Contracting Officer.

E. Brush, vacuum or flush joints to remove all dirt and loose debris.

3-2 JOINT REPOINTING

A. Repoint brick joints.

B. Wet brick 24 hours prior to pointing and again immediately before.

C. Pack joints with mortar leaving no voids.

D. Recess the surface of the pointing slightly. Do not allow mortar to extend over the edges of the brick.

E. As soon as mortar has taken its initial set, tool joints flush with the adjoining bricks and stipple the joints lightly with a soft fiber bristle brush.

F. Keep joints damp (80-90% RH) for 72 hours or until mortar is cured by mist spraying. Frequency will depend upon air temperature, relative humidity and exposure.

G. Protect adjacent areas from mortar drippings. Clean up promptly to avoid staining. Clean up only with water and fiber bristle brushes.

3-3 BRICK PAVING

A. Remove all existing driveway material (inside of the driveway gate but not including the garage ramp) down to waterproofing layer above concrete decking. Repair waterproofing as needed.

B. Replicate original brick and unit block concrete paving design as illustrated on Sheets A5 and 220 of the 1928 construction documents for the Bureau of Internal Revenue, Washington, DC and as visible near iron gate as noted.

3-4 PAINTING

A. Remove all loose and peeling paint from the brick surfaces by scraping, sanding or brushing with stiff bristle brush.

B. Prime all areas with primer.

C. Apply two coats of paint by brush, roller or spray following manufacturer's recommendations. Apply material evently without runs, sags, or other defects. Work each coat into the material being coated at an average rate of coverage recommended. Cover surfaces completely to provide uniform color and appearance.

B. STONE REPAIR AND REPOINTING

PART 1: GENERAL

1-1 DESCRIPTION: Work in this section includes:

A. Raking out and repointing the joints in the exterior limestone surfaces. The joints of all major horizontal surfaces such as string courses, window sills, balustrades, balconies, cornices and coping will be caulked with waterproof joint sealant. All other joints will be repointed with mortar.

B. Raking out and repointing the joints in the exterior granite surfaces including the base course, curbing and driveway retaining wall with mortar.

C. Raking out and repointing the joints in the exterior granite steps and platforms with sealant and mortar.

D. Cleaning out and filling holes around birdproofing system.

E. Reattachment of spalled stone at column base, east end of Constitution Avenue.

1-2 QUALITY ASSURANCE

A. Standards: Indiana Limestone Institute Handbook; Aggregate for Masonry Mortars, ASTM C144-70; Portland Cement: ASTM C150-74 and manufacturers printed recommendations for product use and installation.

B. Certificates: Prior to delivery, submit certificates attesting compliance with applicable specifications for grades, types, classes.

C. Sample Raking: Prior to raking out all areas, cut back joints at a location selected by the Contracting Officer using the methods specified. Additional sample areas will be prepared at no additional cost to the government until the quality of the work is acceptable to the Contracting Officer. The approved area will be marked and left undisturbed and will serve as standard for the entie job. Point this sample area only when directed by the Contracting Officer.

D. Sample Pointing and Repair: Repoint joints and patch stone using materials and methods specified in locations selected by the Contracting Officer. Additonal sample areas will be prepared at no additional cost to the Government until the quality of the work is acceptable to the Contracting Officer. The approved area will be marked and left undisturbed and will serve as standard for the the entire job.

E. Submit 5" square samples of pointing and repair mortars for color and material approval prior to preparation of sample painting panel.

1-3 COLD WEATHER PROTECTION: No stone work will be performed when the air temperature is 40 degrees F and falling or when stone surface temperature is 40 degrees F or below as measured with a surface temperature thermometer.

PART 2: MATERIALS

2-1 JOINT SEALANT: Dow Corning 790 or 795 silicone sealant, natural stone color, or approved equal.

2-2 BACKING ROD: Polyethylene foam backing rod: "Ethafoam" SB brand backer rod, or approved equal.

2-3 LIMESTONE MORTAR

A. Portland cement: Type I, ASTM C150, grey and/or white as appropriate to achieve specified final mortar color.

B. Hydrated masons lime: ASTM C207

C. Aggregate: Clean sharp sand free of loam, silt, soluable salts and organic matter. Aggregate shall conform to the following size gradations:

Sieve Size	Percent Passing
No. 4	100
No. 8	100
No. 16	97
No. 30	76
No. 50	17
No. 100	6
No. 200	0

Choose the color of the aggregate (light to medium brown) so that the mixed mortar sample color after drying matches Munsell standard: 10YR 8/1, light yellowish grey. Use no pigments or coloring agents.

D. Water: Clean and free of oils, acids, alkalis and organic matter.

2-4 GRANITE MORTAR

A. Portland cement: Type I, ASTM C150, grey and/or white as appropriate to achieve specified final mortar color.

B. Hydrated masons lime: ASTM C207.

C. Aggregate: Clean sharp sand free of loam, silt, soluable salts and vegetable matter. Aggregate shall conform to the following size gradations:

Sieve Size	Percent Passing
No. 4	100
No. 8	97
No. 16	85
No. 30	65
No. 50	28
No. 100	13
No. 200	2

Choose the color of the aggregate (light to medium brown) so that the mixed mortar sample color after drying matches Munsell Standard 10YR 7.5/2, light yellowish gray. Use no pigments or coloring agents.

D. Water: Clean and free of oil, acid, alkalis and organic matter.

2-7 MIXES

A. Proportions for limestone pointing and patching:

1. Portland cement: 1 part by volume

2. Lime: 2 parts by volume

3. Aggregate: 6 parts by volume

4. Water: to form a workable consistency

B. Proportions for granite pointing:

1. Portland cement: 1 part by volume

2. Lime: 1 part by volume

3. Aggregate: 5 parts by volume

4. Water: to form a workable consistency

C. Mixing Procedures:

1. Measure materials by volume or equivalent weight.

2. Do not measure by shovel. Use known measure.

3. Mix ingredients in clean mechanical batcher for 3-5 minutes.

D. Let mortar sit for 20 minutes prior to use to allow for initial shrinkage. Use mortar within 1-1/2 hours of initial mixing. Do not retemper or use partially hardened material.

2-8 ADHESIVE: Two part polyester resin with 15-30 minute cure time at 70 degrees F such as Akemi Limestone Super, Knife grade, limestone in color.

PART 3: EXECUTION

3-1 REPOINTING AND CRACK FILLING:

A. Rake out all stone joints in designated areas by hand using a chisel 1/4" or less in width. Clean all mortar from surfaces within the joint or crack so that the new pointing mortar bonds to the stone, not to the old mortar. Do not chip or spall edges of the stone. More than 1/2" chip per square yard will be unacceptable. If work is found unacceptable, all raking will cease without additional cost to the Government until deficiences in tools, workmen or methodologies have been corrected to the Contracting Officer's satisfaction.

B. Joint depth to be equal to joint width but no less than 1/4". In all cases rake back to expose sound mortar.

C. Brush, vacuum or flush joints to remove all dirt and loose debris.

D. Reduce initial absorption of the stone by thoroughly wetting with clean water just prior to repointing.

E. Pack joints with the mortar leaving no voids. Place mortar in layers not exceeding 1/2" in depth. Apply succeeding layers only after preceding layer has taken initial set.

F. Use clean tools and equipment free from hardened or partially set mortar.

G. Clean excess mortar from stone and joints, removing splashed mortar and droppings immediately.

H. Do not temper or use mortar which has partially set, is caked or is lumpy.

I. Joints:

1. Recess horizontal and vertical face joints just slightly behind face of stone. Do not allow mortar to extend over the edges of the face of the stone.

2. Stipple surface of joint lightly with soft bristle brush to match texture of the stone.

K. Curing: Keep joints damp (90% RH) for at least 72 hours or until surface is cured by mist spray; frequency depending upon air temperature, relative humidity and exposure.

3-2 CAULKING ON HORIZONTAL SURFACES

A. Clean out joint as described in Section 3-1, A through C.

B. Accurately place top of backing rod in the stone joints at a depth equal to 1/2 the width of the joint.

C. Fill joint completely with sealant. Tool joint level with stone surface within 10 minutes of placing. Do not allow sealant to extend over the edges of the face of the stone.

D. Clean all sealant from face of the stone immediately.

3-3 CAULKING/POINTING FOR STEPS AND PLATFORMS

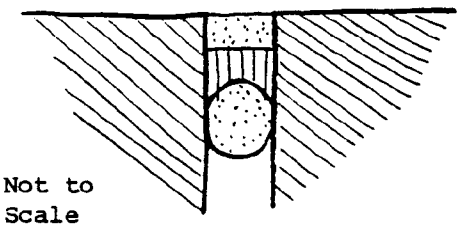
A. Clean out joint as described in Section 3-1, A through C.

B. Accurately place top of backing rod in stone joints at a depth equal to one-half the width of the joint plus 1/2".

C. Seal joint with sealant. Sealant depth to equal one-half the width of the joint.

D. Allow sealant to surface cure 1 hour before placing mortar.

E. Fill remaining joint depth with mortar, no less than 1/2". Tool flush with surrounding stone.



Not to Scale

MORTAR: same as pointing mortar no less than 1/2" deep
SEALANT: Dow-Corning 790, depth equal to 1/2 joint width.
BACKING ROD: size to joint, polyethylene backing rod.

3-4 FILLING HOLES FROM BIRDPROOFING SYSTEM

A. Disconnect electrical birdproofing system and carefully remove all wires, bolts and insulators. Brush, vacuum or flush any remaining debris from the crack and holes in the stone.

B. Fill bottom of hole with backing rod to within a depth of one-half of the hole diameter from the surface. Fill remainder of hole with sealant.

3-5 REATTACHMENT OF SPALLED STONE

A. Gently pry off spalled section of the column base. Do not break the edges of the stone at the crack.

B. Clean the interior surfaces of both the fragment and the building stone of loose debris and grease by brushing with stiff fiber bristle brush.

C. Coat building stone surfaces with Akemi adhesive completely filling all voids and covering all surfaces. Set stone within 15 minutes of application of adhesive while it is still tacky. Secure

stone fragment in place against movement until adhesive has cured. Immediately clean residual adhesive from edges. Wet stone and fill any chipped areas and edges of joint with pointing mortar. Do not featheredge. Remove excess mortar immediately. Stipple mortar fill lightly to match texture of stone.

3-6 CLEANING

A. At the time of repairing, patching, and pointing the stone, immediately remove mortar, grout and sealants from the face of masonry.

B. Use only tools and equipment which are clean and free of hardened or partially hardened material.

C. Clean stone only with fiber bristle brushes and water. Use no acids, detergents, or other cleaning agents.

C. DORMER AND MARQUEE COPPER

PART 1: GENERAL

1-1 Repair copper sheathing on platform marquee in Service Court.

1-2 Clean copper sheathing on platform marquee in Service Court and dormer windows.

PART 2: MATERIALS

2-1 COPPER: 20 ounce, soft grade copper sheets.

2-2 SCREWS AND WASHERS: Round head copper screws, 1-1/4" with 1/2" copper washers.

2-3 SOLDER: ASTM Specification B-32 Composition 50% tin and 50% lead, flux to be rosin, muriatic acid neutralized with zinc.

2-4 METAL CLEANER: Suitable cleaners are:

A. "Hell-cat" multi-purpose cleaner (Calgon Corporation, 8775 Cloud Leap Court, Columbia, Md.), 50% solution in water.

B. Formula 77 multi-purpose cleaner-degreaser (Industrial Chemical Division, Leo Silfen, Inc., 525 Fourth Avenue, Mt. Vernon, New York 10550), 3-4% solution in water.

2-5 INHIBITOR/CLEANER: 1% Benzotriazole solution in warm water (40 g Benzotriazole per gallon) as manufactured by Fisher Scientific Company, Silver Spring, Md., or equal.

PART 3: EXECUTION

3-1 REPAIR

A. Preparation: Erect staging to provide easy access to the damaged areas in the soffit of the marquee.

B. Prepare damaged area for patch by cutting away all irregular protruding edges. Remove all projecting nailheads from the wood substrate.

C. Cut copper on-site, sizing to individual areas to be repaired. Copper repairs are to continue the plain paneled design and are to be formed to these profiles on-site.

D. Attach pieces which can be overlapped by adjacent materials with copper screws and washers.

E. Spot solder overlapping pieces of copper.

3-2 CLEANING

A. Preparation: Erect staging both under and above the marquee and around roof dormers to provide easy access and stable support for work on all the copper surfaces.

B. Remove oil and grease from copper with metal cleaner using soft cloths. Gently scrub heavily soiled areas with a natural bristle brush, do not bear down hard on the copper material. Rinse thoroughly with clear water and dry with a clean cloth. Copper should be cleaned to its natural green patina color.

C. Wipe the surface several times with a clean soft cloth soaked with inhibitor/cleaner. At least two applications should be made. Repeat if any dirt is left on the cloth.

D. IRON AND STEEL REPAIR AND PAINTING

PART 1: GENERAL

1-1 DESCRIPTION: Work in this section includes:

A. Fabricate new cast iron grates for areaways on street and Extension courtyard elevations, and window and door grilles in the driveway.

B. Weld and fill cracked and open elements of cast iron spandrel frames and railings in courtyards.

C. Clean and paint exterior iron elements.

D. Remove paint build-up on steel windows.

E. Clean and paint steel doors and railings in service court.

F. Caulk all joints between metal elements and masonry.

1-2 PREPARATION

A. Enclosed dry grit blasting work areas with temporary scaffolding or framework sufficient to support tarpaulin enclosure to prevent escape of abrasive. Shield adjacent masonry and glass with a temporary covering of cardboard or fiberboard held in place with heavy-duty strapping tape or wood bracing.

B. Determine surfaces to which paint is to be applied are even, smooth, sound, clean, dry and free from defects affecting proper application. Correct or report defective surfaces to Contracting Officer.

C. All painting should be executed in a temperature range of 50-85 degrees F, at a relative humidity below 60%. Do not apply paint on surface in direct sunlight or in spaces where dust is being generated which would speck the finish.

PART 2: MATERIALS

2-1 METAL FILLER: Steel filled two part epoxy metal filler, putty grade such as Devcon "Plastic Steel A" or equal.

2-2 DRY GRIT BLASTING: Fine grit No. 16 at 80-100 psi.

2-3 PAINT FOR METAL: Brand, as listed below or approved equal. Paint products shall be fresh and well ground; shall not settle readily, cake or thicken in the container; shall be broken up readily, with a paddle to a smooth consistency and shall have easy application properties. Other painting materials such as linseed oil, turpentine, mineral spirits, and miscellaneous thickeners, shall be of the highest quality of an approved manufacturer.

A. Primer

1.	Lead Chromate Gray No. 360	Apex Color Works, Inc. Newark, New Jersey
2.	Tnemec Gray 1009	Tnemac Company Kansas City, Missouri
3.	Chessman-Elliot 250 Blue Lead	Chessman-Elliot Company Brooklyn, New York

B. Base and Finish:

Alkyd Resin semi-gloss	Benjamin Moore, Sherwin Williams or Martin Senour

C. Colors

1. Prime: As above. Make each coat clearly different in color.

2. Base: Clearly different color from primer or finish.

3. Finish: To be as follows:

		Color	Munsell Code	Finish
a.	Steel window frames, sash and doors	tan	2.5Y 8/2	glossy
b.	Courtyard spandrel frames	tan	2.5Y 8/2	glossy
c.	Driveway doors, gates and window grilles	gray	2.5Y 5/2	glossy
d.	Areaway grates	gray	N.5	glossy
e.	Courtyard balcony railings	dk gray	10B 3/1	glossy

D. Dry Film Thickness

1. Primer: 2 mils.

2. Base and Finish Coats: 2 mils. each

2-4 BACKER ROD: Polyethelene compressible rod 50% larger in diameter than joint.

2-5 SEALANT: Polysulfide sealant, light gray in color.

2-6 CAST IRON

A. Option No. 1: Ferrite iron with more than 17% carbon.

B. Option No. 2: Casting alloy of aluminum, heat treated. Quench and age castings.

2-7 CASTINGS: Patterns for castings shall be permanent. The modeling of patterns must be crisp, true to detail and uniform in execution. All details of cast ornamentation must be plainly brought out by hand finishing. Where ornaments are made in parts, the joints must be brazed and designed so as to cause no break in the ornamentation. All burrs and sharp edges must be removed.

PART 3: EXECUTION

3-1 GENERAL

A. Apply paint material evenly without runs, sags or other defects. Work each coat onto the material being coated at an average rate of coverage recommended. Cover surfaces completely to provide uniform color and appearance with a minimum of dry film thickness of 2 mils. Make edges of paint adjoining other materials of colors sharp and clean, and without overlaps.

B. Drying Time: Minimum time as recommended. Do not apply succeeding coats until the undercoat is thoroughly dry.

C. Cleanup: Remove all paint where it has spilled or spattered. Do not drip any paint on stone. Chemical cleaning of masonry surfaces shall not be permitted.

3-2 CAST-IRON AREAWAY GRILLES

A. Remove modern grille units from areaways along street elevations and entire grating from areaways in the Extension courtyard. Replace with replicas of original design following detail drawings on Sheet E-202 of the 1934 construction documents for the Extension of the IRS Building, Washington, DC and match to the existing areaway grilles along the Constitution Avenue facade.

B. Grilles and frames to be fabricated in cast-iron and painted.

3-3 IRON WINDOW AND DOOR GRILLES

A. Fabricate four iron door and transom grilles and two window grilles for the masonry openings on the driveway, following drawings in the 1934 construction documents for the IRS Building and match to the existing grilles on the windows, doors and transoms in the 10th Street arcade.

B. Grilles to be fabricated in cast-iron or cast-aluminum and painted.

3-4 REPAIR: IRON SPANDREL FRAMES AND RAILINGS

A. Spot clean areas which have split or cracked with dry grit blasting (fine grit no. 16 at 80-100 psi). Protect surrounding masonry, wood windows and glass from damage.

B. Preheat area carefully to prepare it for welding.

C. Gouge out crack with air arc gouging tool to sound metal.

D. Without attempting to close cracks or splits, fill (fuse) with weld metal using nickel iron electrodes.

E. Grind down weld to match adjacent contours.

3-5 IRON CLEANING AND PAINTING

A. Remove paint and scale from iron surfaces.

1. Remove individual units of areaway grilles from frames.

2. Clean by dry grit blasting. Level of cleaning to be "Commercial Blast."

B. Prime metal within 8 hours of cleaning.

C. Seal all open joints between metal elements and masonry with backer rods and sealant. Joint shall be concave with smooth finish, except for the joint between the lower edge of the marble spandrel panel and its frame which shall be beveled to promote water run-off.

D. Fill all holes, depressions and cracks with metal filler. Follow closely the manufacturer's recommendations. Sand down to conform with surrounding contours.

E. Brush apply two finish coats of paint.

F. Replace areaway grilles in their frames.

3-6 STEEL WINDOW CLEANING AND PAINTING

A. Remove paint to bare metal from the surface of the jambs between the sash stops and all the joints between the sash and frames, on the interior and exterior. The sash are to be restored to full operation.

B. Paint removal may be done by dry grit blasting, scraping or sanding.

C. Remove all caulking between metal and masonry.

D. Clean off dirt and grease and abrade remainder of the sash, frames, steel doors and railings with either dry grit blasting or wire brushing. Remove residual grit from all surfaces by air blasting.

E. Seal all open joints between metal elements and masonry with backer rods and sealant. Joint shall be concave with smooth finish.

F. Paint to match color as specified.

E. CLAY ROOFING TILES

PART 1: GENERAL

1-1 DESCRIPTION: Work on this section includes:

A. Replacing cracked, broken, loose and missing clay mission tiles occuring throughout the sloped clay tile roof areas.

B. Replacing deteriorated battens, as needed.

PART 2: MATERIALS

2-1 TILE: Two-piece, straight barrel mission tile, 18" long, top fixtures and eave closures as manufactured by the Ludowici-Celadon Company, Chicago, Illinois, colors selected to match the existing variation of reds, browns, purples and buffs.

2-2 NAILS

A. Tile: Copper, standard 11 gauge roofing nail, 1".

B. Batten: Copper, sufficient length to penetrate decking 3/4".

2-3 MORTAR: 1 part Portland cement to 4 parts sand pigmented to match red clay tile.

2-4 SEALANT: Silicone based sealant, ASTM D1002 or ASTM E42.

2-5 ANCHOR STRIPS: 20 oz. copper, 1" wide by 8" long.

2-6 WOOD PRESERVATIVE: 0.3% by weight solution of tributylin oxide in mineral spirits such as Osmose Wood Preserving Stain, No. 601 Clear.

2-7 BATTENS: Clear Heartpine, pressure-treated, 1" x 4". All cuts site treated with preservative.

PART 3: EXECUTION

3-1 PREPARATION: Install temporary walkways to protect existing sound tiles. Using a slate ripper to cut nails, carefully remove all cracked, broken or loose tiles and all protruding nails. Carefully remove tiles in areas where wood battens and flashing need to be replaced. Do not damage the sound tile, but label and store for reuse.

3-2 REPLACEMENT OF BATTENS: Remove all deteriorated battens and replace with new strips 12" on center. Fasten with nails.

3-3 INSTALLATION OF SALVAGE AND NEW TILES

A. In areas requiring a large amount of replacement, nail pans in the exact center between battens, then install the cover tiles

working from the lower right hand corner of the replacement area. Fill the voids at the eaves with eave closures. Ridge tile should be laid last, cemented with sealant as well as nailed. A dab of sealant should be placed over the nail and the following cover seated onto it. Finish ridges with top fixtures, nailed and cemented.

B. In areas where tiles must be inserted under existing tiles, nail a copper anchor strip to the deck or battens just above the head lock of the tile below the removed tile. Carefully place a small amount of sealant on the deck or batten under the tile above the one removed, and slip a new tile into place. Bend copper strip over the butt of the new tile to hold it in place while the sealant hardens.

F. SLATE

PART 1: SCOPE OF WORK

1-1 DESCRIPTION

A. Replace cracked, broken, loose or missing slate shingles throughout the lower and upper slate roof areas on the 12th Street pavilion and circle.

B. Remove the first course of shingles above the copper ridge cap on the mansard roof. Reinstall after repair of the ridge cap.

1-2 RELATED WORK SPECIFIED ELSEWHERE: For copper ridge cap repair, see Section H, Ridge Copper.

PART 2: MATERIALS

2-1 SLATE SHINGLES: Black, unfading, clear roofing slate shingles from the Structural Slate Company, Pen Argyle, Pa. or equal, selected to match the existing shingles in all particulars, Commercial Standard thickness (3/16" slate) with 7" exposure.

2-2 NAILS: Copper wire slating nail, 1-1/4" long (3d).

2-3 SLATE HOOKS: Copper slate hooks suitable for driving into the roof insulation/sheathing material.

PART 3: EXECUTION

3-1 PREPARATION

A. Install temporary walkways to protect existing sound slates and other roofing materials.

B. Using slate ripper to cut nails, carefully remove all cracked, broken or loose slates. Also remove the first course of slates above the copper ridge flashing, taking care not to break them, label and store carefully in a sheltered location. Remove all protruding nails.

3-2 SLATE SHINGLE INSTALLATION

A. In areas requiring a large amount of replacement, nail slate in horizontal courses with exposure and headlap to match the existing adjacent course. Each course shall break joints with the preceding one by exactly half the width of the slate. Nail each slate with two nails. Nails shall not be driven so far as to put strain on the slate.

B. In areas where shingles must be inserted under existing shingles, including the course of slate above the copper ridge cap, provide slate hooks and slide slate into place.

G. PROMENADE TILE

PART 1: GENERAL

1-1 DESCRIPTION: Replace all vinyl tile with clay promenade tile on third floor balconies along Constitution Avenue, 10th Street and 12th Street pavillion and circle elevations.

1-2 QUALITY ASSURANCE: ANSI A108.1-1976 Quarry Tile Installation.

1-3 WORKMANSHIP:

A. Use all products in strict accordance with manufacturer's recommendations.

B. Proportion all mixes in strict accordance with latest ANSI standard specifications.

1-4 COLD WEATHER PROTECTION: No work will be performed when the air temperature is 40 degrees F and falling or when material surface temperature is 40 degrees F, or below as measured with a surface temperature thermometer.

PART 2: MATERIALS

2-1 TILES: Red quarry tile, 6" x 9" x 1" or 3/4", average water absorption below 1/2%, as manufactured by Ludowici-Celadon Company, Chicago, Illinois.

2-2 MORTAR: 1 part Portland cement (ASTM C150, Type I) to 5 parts damp sand (ASTM C144).

2-3 STONE: Crushed stone (maximum size 1/2"), washed and cleaned of all impurities.

2-4 CLOTH: Burlap or cheesecloth.

2-5 GROUT: Latex-Portland cement grout, a mixture of Portland cement, sand and special latex additive. Complete installation and material instructions are in ANSI A108.5 and ANSI A118.4, medium gray in color.

2-6 JOINT SEALANT: Dow Corning 790 or 795, silicone sealant or approved equal, color to match grout when dry.

2-7 BACKER ROD: Polyethylene foam backing rod, "Ethafoam" SB or approved equal.

2-8 REINFORCING MESH: Welded wire mesh, 2" x 2", 16/16, conforming to ANSI A50.3.

PART 3: EXECUTION

3-1 PREPARATION: Remove existing vinyl tiles and other materials

down to waterproof membrane. Report any defects in waterproof membrane, flashing or drains to Contracting Officer. Entire balcony sub-surface is to be completely sealed with an uninterrupted waterproof surface sloping towards the drains. Deck drains must be of the two-level type to allow water to flow into them at the level of the waterproof membrane and at the level of the top of the promenade tile.

3-2 UNDERLAYMENT:

A. Lay a 1" deep bed of stone on top of the waterproof membrane. Surround deck drains with broken pieces of quarry tile to prevent stones from blocking weep holes.

B. Cover stone layer with cloth.

3-3 MORTAR BED:

A. Determine locations of all expansion joints, as outlined below. Align expansion joints with tile grout joints whenever possible. Where this is not possible, place expansion joints so as to minimize the use of pieces less than 1/2 tile in size.

B. Install removable wood strips, 3/4" in width, where tile work abutts vertical surfaces and at 12' plus or minus intervals along the length of each balcony. These boards should not extend below the bottom of the mortar bed.

C. Pour 1" deep (minimum) mortar bed with integral continuous reinforcing mesh. Slope mortar beds towards drains at 1/4" per foot slope (minimum). Pour only as many 12' plus or minus sections at one time as can be grouted and tiled once the mortar bed has become "plastic."

3-4 TILE:

A. Apply grout, following manufacturer's directions while the mortar bed is "plastic" and lay tiles with uniform 3/4" joints all around. Do not allow grout to run into expansion joints or into joints abutting drains.

B. All tiles requiring trimming must be cut with a power saw or grinder to produce straight edges without spalls or chips.

3-5 CLEANING:

A. Clean tile surfaces as thoroughly as possible with water upon completion of grouting.

B. Cover completed tile work and cure for fourteen days, following manufacturer's recommendations. After this period has elapsed, allow tiles to dry thoroughly before exposing them to any water.

C. Remove all grout haze, observing manufacturer's recommendations as to use of cleaners.

D. Rinse the work thoroughly with clean water before and after using cleaners.

3-6 EXPANSION JOINTS:

A. Clean expansion joints of all grout, mortar and other debris.

B. Tile edges abutting expansion joints must be clean and dry. Sanding or grinding these edges is recommended to obtain optimum sealant bond. Priming these tile edges is mandatory when recommended by sealant manufacturer. Care must be taken to keep primer off tile face.

C. Install backer rods in all expansion joints so that the top of the rod is placed at a depth of one-half the joint width.

D. Install sealant according to manufacturer's recommendations, in all expansion joints and around all drains.

E. Clean tiles of all excess sealant, following manufacturer's recommendations.

F. Protect all completed sections of tile work until all adjoining repair work has been completed.

H. RIDGE COPPER

PART 1: SCOPE OF WORK

1-1 Repair or replace the decorative copper ridge cap at the top of the slate mansard roof.

PART 2: MATERIALS

2-1 COPPER: 20 oz. cold-rolled copper sheets.

2-2 SCREWS: No. 12 1-1/4" round head copper screws with copper washers 1/16" thick by 3/4" in diameter.

2-3 SOLDER: ASTM Specification B32 Composition 50% tin and 50% lead. Flux to be rosin, muriatic acid neutralized with zinc.

2-4 ELASTIC WATERPROOFING MEMBRANE: Abrasion-resistant, elastic and strong moisture curing polyurethane not modified by any bitumens, such as E.P. Elastic Waterproofing, manufactured by the Robson Corp., Box 67, Oxford, Md. (301/226-5468). All elastic waterproofing on exposed copperwork shall be "copper green" in color as approved by the Architect.

2-5 MEMBRANE FLASHING: Polyvinyl chloride resin, permanently flexible, 62 mils. thick such as Wascoflex.

2-6 ADHESIVE: Synthetic rubber resin base such as Wascoflex Adhesive.

PART 3: EXECUTION

3-1 REPAIR TO COPPER RIDGE CAP

A. Option 1: Replace all decorative copper ridge cap on mansard with new copper, approximately 250 lineal feet.

1. Fabricate new cap of 20 oz. rolled copper, matching the existing pieces in all particulars.

2. Flash blocking, battens and sheathing with membrane flashing. Extend 4" onto roof sheathing. Secure with adhesive.

3. Install new units over the existing wood blocking. Fasten with copper screws into the wood blocking and sheathing. Lap and solder joints.

B. Option 2: Replace all decorative copper ridge cap on mansard with moulded polyurethane.

1. Fabricate new cap of high density polyurethane, using existing trim to construct molds. Color to match existing oxidized copper.

2. Flash blocking, battens and sheathing with membrane flashing. Extend 4" onto roof sheathing. Secure with adhesive.

3. Install new cap fastening with copper screws into wood blocking, battens and sheathing.

C. Option 3: Repair existing copper ridge cap on mansard.

1. Remove all ridge cap sections. Carefully record and label according to original locations.

2. Replace all deteriorated wood blocking and battens uncovered during repairs.

3. Flash blocking, battens and sheathing with membrane flashing. Extend 4" onto roof sheathing. Secure with adhesive.

4. Examine copper for cracks, tears or holes. Repair damage by soldering and fabric patching.

5. Clean following manufacturer's recommendations for surface preparation.

6. Reattach ridge cap using copper screws and washers inserted in existing holes.

7. Protect adjacent roofing materials during subsequent coating operations.

8. Apply urethane primer by brush at a rate of 250 square feet/ gallon. Allow to dry.

9. Apply a continuous base coat of membrane waterproofing at a rate of 100 square feet/gallon to a 12 mil. thickness. Allow to dry.

10. Apply finish coat of elastic waterproofing membrane to a cured thickness of 12-15 mils., at a rate of 100 square feet/ gallon..

11. Clean off any coating material spilled onto slates or adjacent roofing materials immediately.

I. BRONZE

PART 1: SCOPE OF WORK

1-1 BRONZE FINISHES

A. Clean and oil statuary bronze finishes on entrance door frames, transoms and sash, bronze grilles and light fixtures.

B. Clean and lacquer polished bronze entrance doors and hardware.

C. Clean bronze lettering set in limestone at entrances.

1-2 BRONZE CASTINGS

A. Window grilles for Constitution Avenue.

B. Entrance door hardware.

PART 2: MATERIALS

2-1 METAL CLEANER: Suitable cleaners are:

A. Marine Type Metal Polish Formula 90 (Industrial Chemical Division, Leo Silfen, Inc., 525 Fourth Avenue, Mt. Vernon, New York 10550).

B. McIntyre Metal Cleaner (McIntyre Metal Maintenance, 1615 South Broadway, Los Angeles 15, California).

2-2 STANDARD SOLVENT

A. A mixture of 75% toluene, 24% acetone, and 1% butyl acetate. (Available from chemical supply firms.)

B. As an alternate, solvents normally used for thinning nitrocellulose lacquers, such as DuPont lacquer solvent No. 3661-S (for use in mid-temperature, 50-80 degrees F.)

2-3 INHIBITOR/CLEANER: 1% Benzotriazole solution in warm water (40 grams Benzotriazole/gallon).

2-4 LACQUER REMOVER: Methylene chloride flush-away type remover such as: S-26 manufactured by Enthone Corporation, New Haven, Connecticut or equal.

2-5 MILD SOAP: Ivory or a mild detergent with pH of approximately 8.0.

2-6 CLEAR COATING: Acrylic lacquer such as Incralac, manufactured by Stanley Chemical, East Berlin, Connecticut and containing acrylic ester resins dissolved in toluene with benzotriazole as corrosion inhibitor.

2-7 OIL: Lemon Grass Oil, Native E.I. with a high grade distillate paraffin oil of c. 100 second viscosity, with a flash point above 350 degrees F containing napthenes but free of cracked stock such as kerosene, mixed 5 oz. Lemon Grass Oil per gallon of paraffin oil. Lemon Grass Oil, Native E.I. manufactured by Magnus, Mabee and Reynard, Inc., 16 Desbrosses Street, New York, NY 10013. Paraffin Oil, Topaz B. manufactured by the Atlantic Refining Company.

2-8 ABRASIVE: Silicon carbide abrasive pads such as "Scotch-Brite" manufactured by the 3M Company; or standard commercially available pumice stone; or stainless steel wool. Do not use steel wool, which may promote discoloration of the bronze.

2-9 BRONZE: Cast bronze fabricated from statuary bronze alloy, highly polished with no pitting of the surface. Castings and finish as in 2-2, 2-4 Lighting Fixtures.

2-10 OXIDIZING AGENT: Aluminum chloride or liquid sulphur.

2-11 CLOTH: Clean cotton waste.

PART 3: EXECUTION

3-1 CLEAN AND OIL STATUARY BRONZE SURFACES

A. Preparation: Protect all masonry surfaces immediately adjacent to or below the area to be cleaned by covering with polyethylene sheeting.

B. Wash the surface with mild soap and a soft cloth rubbing with the grain of the metal. The surface is intended to be darkened brown in color. Clean surface dirt and grease only, DO NOT rub to bright metal. Rinse thoroughly with clear water.

C. Remove all stains, oxides, sulfides or corrosion products with abrasive and standard solvent. Refinish areas of bright metal work with oxidizing agent, matching to the existing cleaned statuary finish.

D. Remove cleaning residue with two applications of a standard solvent using a soft cloth. Apply oil to surface, rubbing with a soft clean cloth, followed by a brisk rubbing with a second clean soft cloth to remove all excess oil. On irregular, molded surfaces, a soft fiber brush may be used as an applicator.

3-2 LIGHTING FIXTURES

A. Preparation: Erect a stable working platform which will allow easy access to all elements of the light fixture and its hangers. Support fixture so that no additional pressure will be placed on its hangers during the cleaning operation.

B. Remove all glass elements which are not permanently attached to the fixture and clean with a mild soap. Rinse and dry thoroughly. Store in a protected location.

C. Clean glass elements which cannot be safely removed inside and out. Using a small nozzle, carefully vacuum dirt from the inside of the fixture and wash the glass with a mild soap, rinse thoroughly with clear water and dry with a clean soft cloth.

D. Wash, clean and oil all the bronze elements of the fixture as described in Section 3-1: B, C, D and E. A small soft fiber brush or toothbrush and a pointed orange stick may be useful in cleaning the small details of the fixture.

E. Reinstall glass elements. Wipe off any oil film from the glass elements by buffing with a soft cloth.

3-3 DOORS AND HARDWARE - POLISHED BRONZE

A. Remove old lacquer using lacquer remover applied with a cotton cloth wiped along the grain of the metal.

B. Allow the remover to stand on the lacquer for several minutes then remove by wiping with a cotton cloth or by flushing with water. Several applications of the stripper may be necessary in order to remove all traces of the lacquer from the metal.

C. Fill holes from earlier hardware with brass headless set screws of sufficient diameter to fill hole with a tight fit, flush with the door surface.

D. Follow the stripping operation with an application of metal cleaner on a soft cloth, rubbing along the grain of the metal.

E. Persistent stains or badly corroded areas may be cleaned using an abrasive and standard solvent.

F. All cleaner residue should be removed prior to the application of the clear protective coating by washing the metal surface at least twice with a standard solvent. This should be followed by a final wipe with the inhibitor/cleaner.

G. Clear coating is to be applied within 4 hours of cleaning. It is not to be applied in inclement weather or when the relative humidity exceeds 60%. The clear coating should be sprayed on using conventional spray equipment. The first coat is a mist coat. Allow at least 30 minutes drying time then follow with a wet coat. Continue to allow 30 minutes drying time between each. Follow with four more wet coats. Final drying time will be 48 hours before the doors can be touched or used.

3-4 BRONZE LETTERING: Use common abrasive pencil style typewriter eraser to clean and polish bronze letters.

3-5 WINDOW GRILLES

A. Fabricate four bronze window grilles and frames for small windows flanking the Constitution Avenue entrance openings.

B. Follow drawing on Sheet No. 217, "Exterior and Interior Details" in the 1928 construction documents for the Bureau of Internal Revenue, Washington, D.C.

C. Bronze to have hand finished medium statuary bronze finish to match the cleaned and oiled finish of entrance door frames and transom.

D. Oil as described in Section 3-1: D and E.

E. Install grilles and frames utilizing existing holes in the limestone. Fasteners to be bronze screws set in lead plugs.

3-6 ENTRANCE DOOR HARDWARE.

A. Replace modern panic exit mechanism with replicas of original bronze handles and push bars; two sets for the exterior doors at the 12th Street Circle entrance; one set each for the exterior doors at the north 10th Street entrance and the two 10th Street arcade entrances; and eleven push bars for each of the remaining exterior doors.

B. Take castings from the original sets which exists on the interior entrance doors.

C. Bronze to have finish to match the cleaned and lacquered finish on the entrance doors.

J. PLASTER REPAIR

PART 1: GENERAL

1-1 DESCRIPTION: Work in this section to include:

A. Repair of small sections of plaster ceiling and cornice damaged by water leakage in the Constitution Avenue Lobby.

B. Repair of plaster ceiling and cornice after removal of dropped ceilings in the Hearing Rooms.

C. Repair of plaster walls as needed throughout the building.

1-2 CRAFTSMANSHIP: Plaster repairs shall be done by a plasterer regularly engaged in this type of work.

1-3 WORKING CONDITIONS: Protect all materials adjacent to work area.

PART 2: MATERIALS

2-1 KEENE'S CEMENT

A. ASTM C61, hard finish, 100 lbs. of Keene's cement to not more than 25 lbs. of dry hydrated lime.

B. When mixing Keene's cement, the water shall be put into the mixer first, then the lime and finally the Keene's cement.

2-2 ACOUSTICAL PLASTER: Federal specification SS-A-111, gypsum plaster commercially available and designated for sound absorption. Samples of plaster indicating visual characteristics of material after it has been applied, dried and painted should match existing acoustical plaster ceiling in the Hearing Rooms.

2-3 WATER: Clean, fresh, potable and free of oil, acids, alkalis and organic matter injurious to plaster.

2-4 BASECOAT: Gypsum ready-mix plaster, ASTM C28, with hair or fiber.

PART 3: EXECUTION

3-1 REPAIR PLASTER CORNICES, WALLS AND FLAT CEILINGS

A. Carefully remove all soft, broken or loose plaster back to masonry, lath and to solid adjacent plastering, making clear and sharp edges, bevel inward. Sweep masonry and laths clean and, pre-wet surfaces and apply basecoat. Roughen base coat to create key for finish coats.

B. Keene's cement finish shall be applied over a partially dry basecoat or over a thoroughly dry basecoat which has been evenly

wetted by brushing. The finish shall be allowed to dry a few minutes and then shall be well troweled with water to a smooth finish, free from blemishes and irregularities and flush with surrounding work. Troweling shall continue until the finish sets. The thickness of finish coat shall be from 1/16 to 1/8 inch.

C. Neatly repair any damaged plaster cornices to exact profiles, true with adjoining work, keying the new work to the sound work in place.

3-2 REPAIR ACOUSTICAL PLASTER

A. Prepare damaged area as described in Section 3-1, A.

B. Apply two coats of acoustical plaster over basecoat to a thickness of 1/2". Spray or hand trowel as indicated by manufacturer's instructions and the approved sample.

3-3 CURING: Protect plaster repair areas against too rapid drying, based on manufacturer's instructions.

3-4 PAINTING

A. Plaster on lath may not be painted until one month after it is installed if the room temperature is kept above 50 degrees F and the relative humidity is kept below 70%.

B. Plaster on solid masonry backing may not be painted until two months after it is installed with the same restrictions as for the plaster on lath.

K. INTERIOR STONE REPAIR AND CLEANING

PART 1: GENERAL

1-1 DESCRIPTION: Work in this section includes:

A. Clean and polish all interior stone surfaces including floors, corridor floor borders, baseboards, wall surfaces and door surrounds.

B. Reattach loose and replace broken or missing marble plinth blocks at the base of door architraves in the office corridors and in the Hearing Rooms.

C. Fill holes and cracks in marble and Mankato stone wall surfaces caused by the removal of directory boards, telephones, etc.

1-2 QUALITY ASSURANCE

A. Standards ANSI A 118.1 Specifications for Dry-Set Portland Cement Mortar.

B. Certificates: Prior to delivery of any interior marble, submit certificates from stone supplier attesting compliance with applicable specifications for grades, types, classes.

C. Samples: Submit 6" square samples of each type of proposed replacement stone to the Contracting Officer for approval of color and texture. Sample shall be finished same as noted on drawings.

PART 2: MATERIALS

2-1 CLEANING SOLUTION: 1 oz. soft soap (such as Ivory liquid), 1 qt. distilled warm water (potable and non-staining), 1 oz. household ammonia.

2-2 POLISH/SEALER: Fullers Silicone Sealer Polish, MIA Protective Spray, Dresmarble or approved equal.

2-3 MARBLE

A. Existing: Reuse all existing marble which is in sound condition. If broken and all pieces are available, reattach pieces in their original locations.

B. New: Match existing marble in all particulars such as Tennessee Marble supplied by Georgia Marble Co., Tate, Ga. and Vermont Marble supplied by Vermont Marble Co., Proctor, Vt.

2-4 DRY-SET MORTAR: ANSI A118.1 such as TCA 763, White (or Tile-Mate 710) supplied by the Upco Company, Cleveland, Ohio.

2-5 CRACK AND HOLE FILLER: Polyester resin adhesive which can be tinted to match the surrounding stone such as Akemi Transparent

Knifegrade, Buff Knifegrade or Travertine Spackle or approved equal.

PART 3: EXECUTION

3-1 CLEANING

A. Apply cleaning solution with a clean rag, sponge or machine, taking care not to splash or wipe any of the solution onto adjoining bronze surfaces.

B. Rinse with fresh, clear water to remove all traces of soap.

C. Wipe with chamois, clean mop or squeegee to promote drying.

3-2 REATTACHMENT/REPLACEMENT

A. Carefully remove loose and broken plinth blocks. Clean old mortar off the back surface of the reusable marble and the wall surfaces.

B. Use plinth as model for cutting replacement plinth blocks.

C. Set existing and replacement plinths in dry-set mortar following manufacturer's instructions. Do not extend mortar beyond edge of patch area. Clean any excess mortar from the edges and face of the marble immediately.

D. Repair any damage to adjoining plaster areas using Keene's cement tooled to match existing original surface.

3-3 REPAIR

A. Fill all holes and cracks larger than 1/8" with polyester resin adhesive.

B. Match the dry color of the filler to the color of the immediate surrounding clean stone, using the manufacturer's recommended materials.

C. Smooth surface of patch level with surrounding stone. Do not allow filler to extend over the surface of the surrounding stone--remove all excess immediately.

3-4 POLISH/SEALER: After all repair, replacement and cleaning apply polish/sealer following manufacturer's instructions.

L. GILDED LETTERING

PART 1: GENERAL

1-1 DESCRIPTION: All room numbers and titles on doors opening from lobbies or public corridors shall be lettered in gold leaf, outlined in black. Lettering size and type shall match existing on transom panels in stairwells.

PART 2: MATERIALS

2-1 SIZE: Quick or japan gold size.

2-2 PAINT: Lampblack ground in japan, mixed with quick size.

2-3 GILDING: XX gold leaf.

2-4 TOOLS: Gilder's tip; agate, flint or hematite burnisher.

PART 3: EXECUTION

3-1 Paint background of lettering with two coats black paint. Rub surface smooth with 00 or 000 steel wool.

3-2 Apply size to area to be gilded and wait until tacky--approximately one hour. If leaf is applied while size is too wet, gold will be "drowned" and burnish will be killed. If size is too dry, leaf will not adhere.

3-3 Remove gold leaf from its book, place under a strong piece of cardboard and cut with a fingernail or gilder's knife to the approximate size of the letter to be covered.

3-4 Starting with letters in the upper left-hand corner, lay gold leaf on sized surface with gilder's tip, making sure all surfaces are well covered. Press down lightly with clean cotton wad. Brush off excess gold with fingertips or cotton.

3-5 If patching is required, cover surface with diluted sizing and add a new leaf as above.

3-6 Allow sizing to dry overnight before trimming and burnishing gold leaf.

3-7 To burnish, rub gilded surface with a burnisher, first using gentle circular motions and then hard, firm strokes in one direction.

M. INTERIOR PAINT AND FINISHES

PART 1: GENERAL

1-1 DESCRIPTION: Work in this section includes:

A. Clean and refinishing wood paneling.

B. Paint removal from wood doors and marble baseboards.

C. Painting all interior painted surfaces.

1-2 JOB CONDITIONS

A. Determine surfaces to which painting and other finishes are to be applied are even, smooth, sound, clean, dry and free from defects affecting proper application. Correct or report defective surfaces to Contracting Officer.

B. All painting shall be executed at a temperature between 50-85 degrees F at a relative humidity below 60%. Do not apply paint on surfaces in direct sunlight. Do not apply finishes in spaces where dust is being generated which would speck the finish.

PART 2: MATERIALS

2-1 SOLVENT: Mineral spirits, turpentine or denatured alcohol.

2-2 STEEL WOOL: Grade 000 steel wool.

2-3 VARNISH: Oil varnish with satin finish such as "Beauty-Lox" manufactured by Sherwin Williams.

2-4 PAINT

A. Wall Surfaces - Base and Finish: Semi-gloss or flat interior latex such as that manufactured by Benjamin Moore, Sherwin Williams or Martin Senour Company.

B. Trim Surfaces - Base and Finish: Alkyd resin gloss or semi-gloss interior enamel.

C. Colors: Colors shall match standards listed in Section IX, Paint Analysis.

PART 3: EXECUTION

3-1 CLEANING AND REFINISHING MAHOGANY WOOD PANELING, EIGHT HEARING ROOMS

A. Preparation

1. Make sure work area is well ventilated and wear protective clothing and rubber gloves. Do not allow smoking in the work area. Place a fire extinguisher for Class B fires at entrances for emergency use.

2. Always rub along the grain of the wood.

3. Change cloths as often as necessary to be effective in cleaning.

B. Cleaning

1. Wet steel wool with solvent and rub over the paneling to remove varnish build-up and smooth out alligatored surface. Replace soiled steel wool frequently and continue the wiping process until a smooth, evenly colored surface is achieved. Use no water on wood surface under any circumstances.

2. Work only one 4' by 4' area at a time. Work area should be within a comfortable arms reach.

3. This process is to remove the varnish build-up only. If solvent affects the stained color of the wood, discontinue use and use an alternative solvent.

4. Allow surface to dry thoroughly; no less than 24 hours.

C. Fill scratches and gouges with shellac burn-in sticks matching the color to the wood stain.

D. Refinishing

1. Apply full wet coat of varnish. Allow to dry completely.

2. Sand out roughness with 6/0 opencoat abrasive paper. Dust off thoroughly with air jet or vacuum.

3. Apply final full wet coat of varnish. Follow manufacturer's instructions for obtaining final satin finish.

3-2 PAINT REMOVAL

A. Doors on office corridors:

1. Remove all paint layers from the corridor side of the doors using either chemical paint remover and bristle brushes or hot air guns or hot plates and scrapers. Do not dip doors with glazing into vats of chemical paint remover. Paint removal techniques should not remove the stain on the wood nor cause the wood grain to raise. Wood should be cleaned of paint and have a smooth even surface.

2. Wet steel wool with solvent and rub over the wood surfaces to remove residue of paint remover. Replace soiled steel wool frequently and continue the wiping process until a smooth, evenly colored surface is achieved.

3. Allow surface to dry thoroughly; no less than 24 hours.

4. Continue refinishing process as described in Section 3-1, C through D-3, above.

3-3 PAINTING

A. Remove all dirt and loosely bonded paint by hand scraping or sanding. Clean surfaces with commercial detergent, rinse thoroughly and dry.

B. Apply one to two coats of paint as needed to provide thorough coverage. Apply material evenly without runs, sags, or other defects. Work each coat into the material being coated at an average rate of coverage recommended. Cover surfaces completely to provide uniform color and appearance with a minimum dry film thickness of 2 mils. Make edges of paint adjoining other materials or colors sharp and clean, and without overlaps.

C. Do not paint over seriation areas marked with plastic tags and indicated on floor plans in Section IX, Paint Analysis.

N. LIGHTING FIXTURES

PART 1: GENERAL

1-1 SCOPE OF WORK: Replacement of exterior and interior lighting fixtures in the areas designated for restoration as follows:

A. Exterior entrance openings and 10th Street arcade.

B. 12th Street Circle arcade.

C. Driveway ramp in Service Court.

D. Main Lobby

E. 10th and 12th Street lobbies

F. Minor vestibules

G. Hearing Rooms

1-2 SHOP DRAWINGS: All fixtures are to be reproduced from original construction documents and existing fixtures as indicated under each fixture type. Fabricators shall be furnished with clear, clean, full-size drawings, reproduced from the original drawings or from film negatives of the microfilm or from existing fixtures when available. Xeroxed copies of the microfilm do not provide acceptable quality. Lighting fixture fabricators shall furnish copies of shop drawings for the approval of the Contracting Officer.

PART 2: MATERIALS

2-1 METALS: All exposed parts of fixtures are to be of the materials as specified.

A. Bronze: Cast bronze items fabricated from statuary bronze alloy, and highly polished, with no pitting of the surface.

B. Chromium Steel: Chromium may be plated on aluminum, copper, bronze or iron, but the surface must be a layer of pure chromium, bright and tarnish free 0.0001 to 0.0002 inches thick.

C. Wrought Iron: Iron work with less than 0.1% carbon to be hand forged.

D. Cast Iron: Ferrite iron with more than 17% carbon.

E. Cast Aluminum: Casting alloy of aluminum, heat treated, cast in permanent molds, quench and age castings.

1. If the contractor desires to use alloys in lieu of those herein specified, the composition of the same, together with

finished samples of the metals must be submitted to the Contracting Officer. All interior supporting stems of the fixtures shall be bronze.

2. Slip and seating rings shall be solid, turned metal. They shall be threaded as indicated, or secured with No. 8-32 brass screws as shown.

2-2 CASTINGS: Patterns for castings shall be iron. The modeling of patterns must be crisp, true to detail and uniform in execution. All details of cast ornamentation must be plainly brought out by hand finishing. Where ornaments are made in parts, the joints must be brazed and designed so as to cause no break in the ornamentation. All burrs and sharp edges must be removed from wire ways.

2-3 WIRING

A. Wiring for new fixtures shall utilize existing conduits where possible. Any damage to decorative plaster ceiling, cornice or pilasters shall be repaired to match existing.

B. Wiring shall conform to the National Electrical Code. Exposed wiring shall have a silk or rayon outer braid of color to match the fixture finish; the wire to be woven in the chain of the most inconspicuous manner.

2-4 FINISH:

A. The finish of the bronze fixtures shall be hand finished statuary bronze, unless otherwise specified. It shall be produced by polishing to a bright bronze color and then oxidizing to a dark color.

B. The iron fixture shall be painted black.

2-5 GLASSWARE: All glassware must be free from flaws of any kind, and conform to individual specifications given for each fixture type.

PART 3: EXECUTION

3-1 EXTERIOR ENTRANCE OPENINGS AND 10TH ARCADE, ORIGINAL GLOBES

A. Remove modern box fixtures where they have been added to circular bronze fixtures and replace 15 glass globes; three for the Constitution Avenue elevation, and 12 for the 10th Street elevation including the arcade.

B. Follow drawings for fixture for the B Street Entrances in 1928 construction documents, Sheet No. 217 for the Bureau of Internal Revenue, Washington, DC and match the shape and glass of the existing globes on the soffit lights on the 12th Street minor entrances.

C. Globes shall be installed in the existing bronze soffit fixtures.

3-2 12TH STREET, CIRCLE ARCADE, 1935 GLOBE FIXTURES

A. Replace existing hanging lanterns with ten round globe fixtures. Following drawings for "12th Street Arcade Fixture" in 1935 construction documents, Sheet E-218 for the Extension to the Internal Revenue Service Building, Washington, DC.

B. Bronze to have a hand finished medium statuary bronze to match clean finish of lantern in driveway.

C. Glass globes to be of ground glass or a plastic substitute to match the color and translucence of the glass when the fixture is both off and illuminated.

3-3 DRIVEWAY RAMP IN SERVICE COURT, LANTERN

A. Fabricate one lantern for the post at the top of the driveway ramp, following drawings for fixture "M" in 1928 construction documents, Sheet 245, for the Bureau of Internal Revenue.

B. Fabrication: Due to the extreme exposure and scarcity of craftsmen to produce a cast and wrought iron fixture, Option 2 would be advisable.

1. Option 1: Fabricate lantern of cast and wrought iron as indicated on drawings.

2. Option 2: Fabricate lantern of cast aluminum and paint black in imitation of iron.

C. Glass to be opaque or of a plastic substitute to match the color and translucence of opaque glass.

3-4 MAIN LOBBY, 10TH STREET LOBBY IN THE EXTENSION, LANTERNS

A. Replace existing modern fixtures with 23 six-light lanterns; 19 for the Main Lobby (first and second floors) and stairhalls, and four for the 10th Street Lobby in the Extension.

B. Follow drawings for the fixture type "H" in 1928 construction documents, Sheet No. 245, for the Bureau of Internal Revenue, Washington, DC and match with the existing lanterns in the outer lobby of the main entrance.

C. Bronze to have hand finished medium statuary bronze finish to match the clean finish of the existing lanterns in the outer lobby of the main entrance.

D. Glazing to be plate glass polished on both sides.

E. Lanterns to be installed in the center of each ceiling bay

as indicated on 1928 and 1935 conduit and wiring diagrams. Hanging level of fixtures indicated on drawings.

3-5 10TH STREET AND 12TH STREET CIRCLE LOBBIES, LANTERNS

A. Replace existing modern fixtures with 9 six-light lanterns; 6 for the central lobby on 10th Street, and 3 for the 12th Street Circle lobby.

B. Follow drawings for the fixture type "I" in 1928 construction documents, Sheet No. 245, for the Bureau of Internal Revenue, Washington, DC.

C. Bronze to have a hand finished medium statuary bronze finish to match the clean finish of the existing lanterns in the outer lobby of the main entrance.

D. Glazing to be plate glass, polished both sides.

E. Lanterns to be installed in the center of each ceiling bay as indicated on 1928 conduit and wiring diagrams. Hanging level of fixtures indicated on drawings.

3-6 MAIN LOBBY, FIRST FLOOR STAIR HALLS, CEILING FIXTURES

A. Replace existing modern fixtures with 2 five-light ceiling fixtures; one for each first floor stairhall, following drawings for fixture type "E" in 1928 construction documents, Sheet No. 245 for the Bureau of Internal Revenue, Washington, DC.

B. Bronze to have a hand finished medium statuary bronze finish to match the clean finish of the existing lanterns in the outer lobby of the main entrance.

C. Bulbs to be spherical with opaque glass.

D. Ceiling fixtures to be installed in the center of the ceiling as indicated on 1928 conduit and wiring diagram.

3-7 MAIN LOBBY, GLASS SHADES FOR THE TORCHIERES

A. Replace the bronzed aluminum shades with eight glass shades, one for each torchiere.

B. Follow drawings for the "Details of the B Street Lobby" in 1928 construction documents, Sheet No. 223, for the Bureau of the Internal Revenue, Washington, DC.

C. Shades to be of dull finished white opal glass with an upper band and etched in a wave pattern.

3-8 10TH STREET LOBBY (THE EXTENSION), AND UPPER FLOOR LOBBIES FOR ELEVATOR BANK 1-4

A. Replace the modern fixtures with 54 two-light lanterns, one in the 10th Street vestibule, and nine each in the upper floor lobbies for elevator bank 1-4.

B. Follow drawings for the "Typical Corridor Fixture" in 1935 construction documents, Sheet E-218 for the Extension to the Internal Revenue Building, Washington, DC, and match with the existing lanterns in the vestibules of the central 10th Street and the 12th Street Circle lobbies.

C. Bronze to have a hand finished medium statuary bronze finish to match the clean finish of the existing vestibule lanterns mentioned above.

D. Glazing to be alabaster etched glass bowls to match the existing vestibule lanterns.

E. Lanterns to be installed in the center of the ceiling bays as indicated on the 1935 conduit and wiring diagrams. Hanging level of the fixtures indicated on drawings.

3-9 MINOR VESTIBULES, CEILING FIXTURES

A. Replace the modern fixtures in the minor vestibules with three round globe ceiling fixtures, one in each vestibule, following drawings for the fixture type "J" in 1928 construction documents, Sheet No. 245, for the Bureau of Internal Revenue, Washington, DC.

B. Bronze to have a hand finished medium statuary bronze finish to match the clean finish of the existing lanterns in the outer lobby of the main entrance.

C. Glazing to be opal glass globe, 7 inches in diameter.

D. Fixtures to be installed in the center of each vestibule ceiling.

3-10 HEARING ROOMS, CHANDELIERS

A. Remove dropped ceilings and ductwork and install 36 five-light chandeliers in the eight Hearing Rooms.

B. Follow drawings for the fixture type "F" in 1928 construction documents, Sheet No. 245, for the Bureau of Internal Revenue.

C. Bronze to have hand finished medium statuary bronze finish to match the clean finish of the existing lanterns in the outer lobby of the main entrance.

D. Glazing to be alabaster glass to match the glass used on the lanterns in the vestibule of the central 10th Street lobby.

E. Chandeliers to be installed in the center of each bay as indicated on 1928 conduit and wiring diagrams. Hanging level of the fixtures indicated on drawings.

O. INTERIOR LEADERS

PART 1: GENERAL

1-1 DESCRIPTION: Remove all existing leader stacks in the 12th Street Circle arcade walls and replace with new cast iron leader stacks.

1-2 QUALITY ASSURANCE: After completing installation of the drainage system, flush and inspect the completed piping to the satisfaction of the Contracting Officer.

PART 2: MATERIALS

2-1 GUTTER DRAINS: To have cast iron body, a clamping ring and cast iron removable combined dome strainer and sediment cup, such as Josam No. 22070, 4" diameter. The copper gutter lining shall be worked neatly around the drain and made fast by means of the clamping ring. Drains are to be securely connected to the cast iron leader stacks by means of lead pipes of same diameter as the stack, weighing not less than 8 lbs. per square foot.

2-2 CLEAN OUTS: To be installed at the foot of each leader stack, placed in Y-branch fittings. Clean outs shall be of the same nominal size as the pipe, with brass trap screw and brass plug with raised nut caulked into hub of pipe.

2-3 PIPING: 4" diameter service weight cast iron with cast brass drainage fitting.

2-4 CAULKED JOINTS: Firmly packed joints with picked tarred oakum and secured with molten lead. At least 12 oz. of soft lead shall be used for each inch in diameter of the pipe used. Lead to be run in one pouring and caulked gas and water tight.

2-5 PIPE SUPPORTS AND HANGERS: All vertical stacks shall be supported by means of approved galvanized wrought iron hangers, at least two supports to each floor. All horizontal parts of the system shall be supported at intervals of not over 10' apart by means of heavy adjustable wrought iron hangers suspended by clamps from the lower flanges of first floor steel supporting members.

PART 3: EXECUTION

3-1 LEADER REMOVAL

A. Remove the 4" clay tile furring and plaster closing the fronts of the leader stack chases in the stone and brick walls.

B. Remove all existing leader stacks from the seventh floor promenade to the points outside the building (approximately 3 feet outside the building line) at which the leader stacks empty into concrete catch basins. The Contractor shall remove all parts of the leader house stacks and drain lines to be replaced by the new lines as are exposed or can be removed without breaking up floors, walls or by doing excavation.

P. BIRD DETERRENT SYSTEM

PART 1: GENERAL

1-1 DESCRIPTION: Install needle strip type bird repellent on horizontal projecting surfaces such as parapet coping, balustrades, string courses, corona and architrave moldings of cornices, column capital moldings and lintels on all street elevations as shown on detail sketches.

1-2 CONDITIONS: Do not use adhesive on wet or damp surfaces or when temperatures are above 120 degrees F or below 45 degrees F.

PART 2: MATERIALS

2-1 NEEDLE STRIP: 3-3/4" wide x 3-1/2" high stainless steel strips with 120 needle-sharp points per foot, such as L53 Nixalite Bird Control System for Pigeons and Large Birds, manufactured by the Nixalite Company of Moline, Illinois.

2-2 ANCHORS: RB clip with nylon anchors and stainless steel nails, recommended for use on masonry and manufactured by the Nixalite Company.

2-3 ADHESIVE: Cartridge adhesive as manufactured by the Nixalite Company.

PART 3: EXECUTION

3-1 Remove all bird excretion deposits, grease and dirt from the application area. Application must take place after masonry cleaning operations are completed, but may be scheduled for work while staging is in place.

3-2 Mark on mounting surface where holes for nylon anchors are to be drilled at ends and intersections of strips, in locations shown on attached detail drawings.

3-3 Drill 5/16" diameter holes, 1" deep.

3-4 Insert nylon anchors in holes and insert stainless steel nails with RB clips with nylon anchors as shown in manufacturer's literature. Drive flush with hammer.

3-5 Apply a 1/2" bead of adhesive directly to the surface where the base bar will be positioned, as indicated on the attached detail drawings. Apply adhesive to the underside of the Nixalite base bar. Do not apply more than 8" of adhesive at one time.

3-6 Firmly press bar of Nixalite into center of adhesive with a slight sliding motion. Slip ends and intersections of bar into RB clips.

Q. GUTTERS AND FLASHING

PART 1: GENERAL

1-1 DESCRIPTION: Work of this section includes repair or replacement of all damaged or deteriorated gutters and flashing.

1-2 QUALITY ASSURANCE: Employ only qualified sheet metal workers to fabricate and install gutters and flashing.

1-3 SUBMITTALS

A. Submit nails, cleats, screws and washers proposed for use to the Contracting Officer for approval.

B. Submit full-scale or large scale drawings of existing flashings and gutters. Take field measurements from actual flashings and gutters removed from the existing roofs.

1-4 JOB CONDITIONS: Maintain the weathertightness of the roof during flashing.

1-5 INSPECTION: Inspect the conditions under which the work is to be carried out. Inspect the condition of battens, sheathing, and blocking, to which flashing and gutters will be attached. Report any unsatisfactory conditions to the Contracting Officer.

PART 2: MATERIALS

2-1 COPPER: 24 oz. cold-rolled copper sheets.

2-2 SCREWS: No. 12 1-1/4" round head copper screws with copper washers 1/16" thick by 3/4" in diameter.

2-3 SOLDER: ASTM Specification B32 Composition 50% tin and 50% lead. Flux to be rosin, muriatic acid neutralized with zinc.

2-4 FELT UNDERLAYMENT AND ROSIN SIZED PAPER

A. At all gutters, valleys and eave flashings, provide a layer of asphalt-saturated building felt under copper sheets. Felts shall meet ASTM D226, 15 pound type.

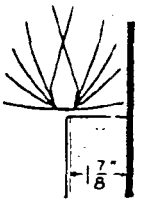
B. Over felt underlayment, provide layer of rosin sized paper meeting Federal Specification UU-P-147b.

2-5 LEAD WEDGES: Soft lead wedges as necessary for securing base and counterflashing.

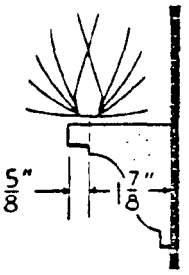
2-6 NAILS: Large head hard copper wire nails for nailing cleats and flashings, 12 gauge, 1 inch long.

Rows of Nixalite Required on Various Widths of Ledges

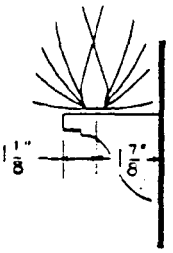
1" Ledge



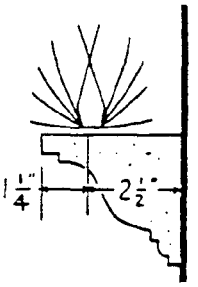
2" Ledge



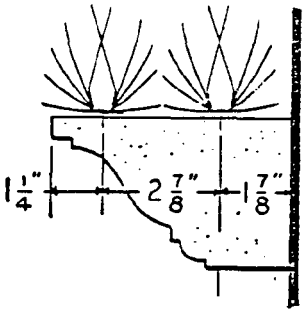
2½" Ledge



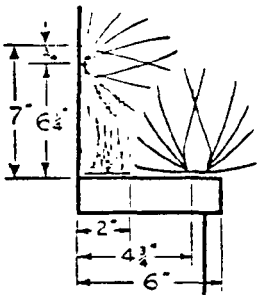
3" Ledge



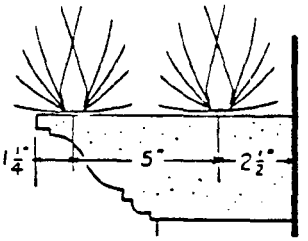
3¾" Ledge



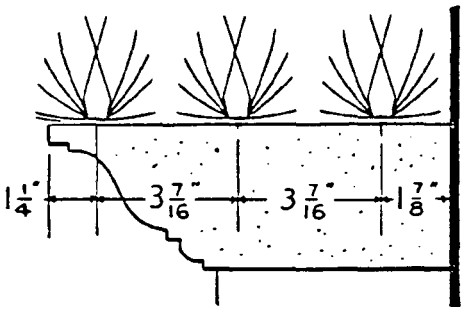
6" Ledge



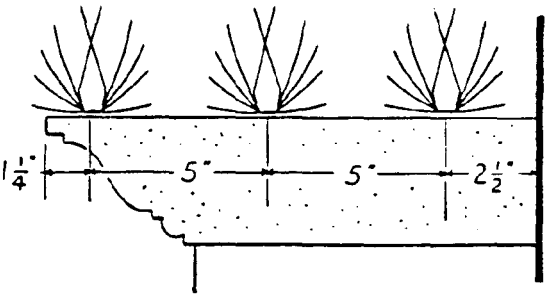
6" Ledge



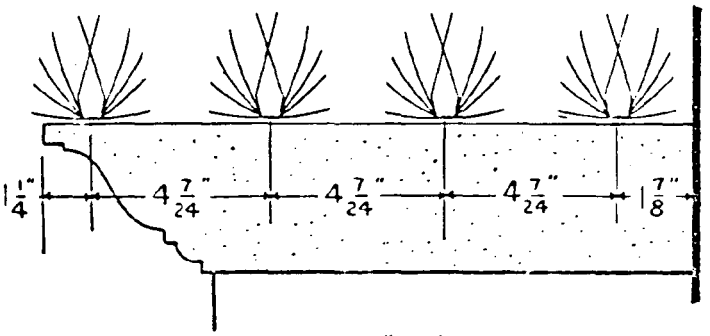
8¾" Ledge



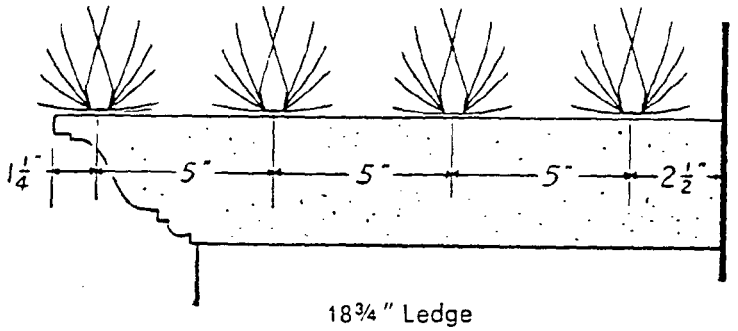
10" Ledge



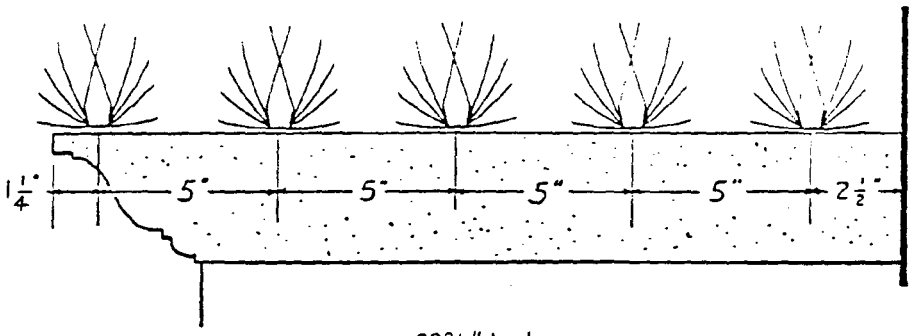
13¾" Ledge



16" Ledge



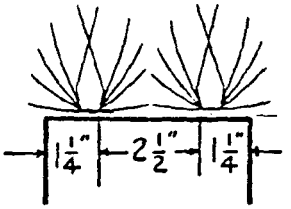
18¾" Ledge



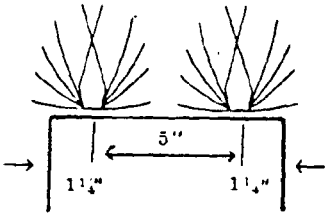
23¾" Ledge

Rows Required on Ledges Exposed on Both Sides

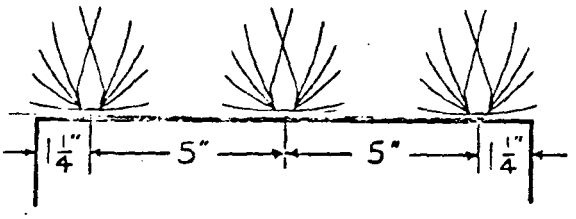
3¾" Ledge



5" Ledge



7½" Ledge



12½" Ledge

Novelite Company of America

2-7 CLEATS: 2" wide by 3" long, 20 oz. copper. Secure one end with two copper or brass nails and fold back over nail heads. Lock free end of cleat into seam or folded edge of copper sheet.

PART 3: EXECUTION

3-1 REPAIR FLASHING

A. Option No. 1: Replace all flashing on third floor balcony perimeters with new copper.

1. Fabricate new flashing of 24 oz. rolled copper, matching the existing in all particulars.

2. Cut mortar in joints in stone balustrade to receive flashings.

3. Install flashings into reglets with lead wedges.

B. Option No. 2: Repair existing copper flashing.

1. Carefully remove flashing at balcony perimeter.

2. Examine all copper flashing for cracks, tears or holes. Repair all damage by soldering.

3. Cut mortar in joints on stone balustrade to receive flashings.

4. Install copper flashing into reglets in original locations using lead wedges.

3-2 REPLACEMENT OF BASE AND COUNTERFLASHINGS

A. Furnish fabricated base flashings of 20 oz. rolled copper matching existing in all particulars.

B. Cut mortar in joints in stone or brickwork to receive counterflashings.

C. Install counterflashings into reglets with lead wedges.

3-4 REPLACEMENT OF VALLEY AND/OR FLASHING

A. Remove slate and tile and store for reuse.

B. Carefully remove flashing covering valleys and vents.

C. Replace vent flashing with a flashing sleeve and copper cap. Cap should extend at least 2" inside vent. Lap and solder flashing sleeve to base flashing. Extend base flashing under tiles along top and side edges at least 6" and turn up edge 1/2". Fasten with at least two cleats per side, 12" on centers. Extend lower edge of base flashing at least 4" over tiles.

D. After new roofing felt and paper is in place, line all valleys with copper. Sheets should be at least 24" wide at all roof intersections, maximum 8' sections. Turn over edges 1/4" and fasten with cleats 12" on center. Lap joints 4". Do not solder.

XI
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BIBLIOGRAPHY

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APPENDIX A

INVENTORY OF CONTRACTORS AND MAJOR SUPPLIERS

1926-1930

General Contractor: James Baird Company, Inc., Washington, D.C.

Bookshelves: Jamestown Metal Equipment Company, Jamestown, N.Y.

Bronze: General Bronze Corporation, Long Island City, N.Y.

Bronze; Misc.: Smythe and Company, Washington, D.C.

Dampproofing: Hydroseal Waterproof Company.

Demolition Contractor: Signey L. Hechinger, Washington, D.C.

Directory Boards: Cincinnati Manufacturing Company, Cincinnati, Ohio.

Drinking Fountains: Albert Pick-Barth Company.

Electrical Contractor: Howard P. Foley Company, Washington, D.C.

Elevators: Otis Elevator Company.

Elevator Cabs: Robert Mitchell Manufacturing Company.

Fans, wall hung: Russell and Stoll Manufacturers.

Fire Alarm and Watchman's System: Holtzer-Cabot Manufacturing Company.

Foundations: F. W. Mark Construction Company, Philadelphia, Pa.

Foundation Piles: Raymond Concrete Pile Company.

Furnishings, Hearing Rooms: Thomason and Company, Norfolk, Va.

Glass: Pittsburgh Plate Glass Company, Washington, D.C.

Granite: J. D. Sargent Granite Company, Mt. Airy, North Carolina

Heating: Riggs Distler and Company, Baltimore, Maryland

Hollow Metal Work: Dahlstrom Metallic Door Company, Jamestown, N.Y.

Iron, Ornamental: Wisconsin Ornamental Iron and Bronze Company, Milwaukee, Wisconsin.

Kitchen Equipment: Albert Pick-Barth Company.

Lighting: Ivanhoe Division of Miller Company, Meridan, Conn.

Lighting Installation: Electrical Contracting Company, Washington, D.C.

Lighting Fixtures, Special: Beardslee Chandelier Manufacturing Company and the Reading Chandelier Works, Reading, Pa.

Limestone: Indiana Limestone Company, Bedford, Indiana

Marble, Exterior: Gray Knox Marble Company and Georgia Marble Company, Knoxville, Tennessee

Marble, Interior: Andres Marble Company, Milwaukee, Wisconsin.

Mastic Flooring: "Masticomp," Hachmeister-Lind Company, Pittsburgh, Pa.

Metal Office Partitions: E. F. Hauserman Company, Cleveland, Ohio

Painting: Edward W. Minte Company, Washington, D.C.

Painting, Interior Walls: Alliance Construction Company, New York, N.Y.

Plaster, Decorative: A. W. Lee, Washington, D.C.

Plumbing: W. G. Cornell Company, New York, N.Y.

Pneumatic Tube System: Lamson Company, Syracuse, N.Y.

Quarry Tile: Standard Art Marble and Tile Company.

Radiators: American Radiator Company

Roofing Tile: Ludowici-Celadon Company, Chicago, Illinois

Slate Shingles: Structural Slate Company, Pen Argyle, Pa.

Steel Construction: James H. Elkins, Birmingham, Alabama

Steel Fabricator: McClintic-Marshall Construction Company, Pottstown, Pa.

Structural Steel: Bethlehem Steel Company, Pa.

Stone Setting, Exterior: Indiana Limestone Company, Bedford, Ind.

Tile, Terrazzo and Slate: American Mosaic Company, Washington, D.C.

Windows, Metal: Campbell Metal Window Corporation, Baltimore, Md.

Windows, Sixth Floor Vent: Lord and Burnham

Woodwork: Robert Mitchell Manufacturing Company

Vaults: York Safe and Lock Company, York, Pa.

1935 - The Extension

General Contractor: John McShain and Company, Philadelphia, Pa.

Bronze: Cincinnati Manufacturing Company, Cincinnati, Ohio

Elevators: Otis Elevator Company

Flooring: N. Snellenburg and Company

Flooring, Marble and Terrazzo: Standard Art, Marble and Tile Company.

Glass: Pittsburgh Plate Glass Company, Washington, D.C.

Lighting: Curtis Lighting, Inc.

Marble, Interior: Tennessee Marble, Inc.

Roof Drains and Sheet Metal Work: J. Edward Linck Sheet Metal Works

Roofing Tile: Mifflin Hood Company.

Stone Setting Contractor: Detroit Stone Erecting Company

Toilet Partitions: Sany Metal Products Company

Toilet Tiles: U.S. Quarry Tile Company

Wrought Iron: Lehigh Iron Works, Lehigh, Pennsylvania

THE LIGHTNESS (REFLECTANCE) OF STONE IN THE STONE INDUSTRY

by Erhard M. Winkler*

Abstract

The increasing manipulation of stone by cleaning and the application of preservatives creates the need for a more precise method to measure the degree of discoloring of a stone surface quickly and simply both in the field and in the laboratory. The small color chips of the Rock or Soil Color Charts are insufficient. Of the three Munsell color attributes, hue, value and chroma, the value or reflectance is easiest to measure. This can be done with precision with a through-the-lens photographic light meter of a single-lens reflex camera. Calibration against ambient light conditions is done with a Kodak Test Card, with 20 per cent absolute light reflectance on the gray side and 90 per cent on the white side. With the help of a graph charting the lens opening versus the reflectance, the reflectance of a stone surface with different surface finishes can be readily quantified. Using this method, one can measure the differences between natural, weathered and chemically treated stone. One can also use the method to measure the albedo of the stone for suitability as a solar absorption panel.

Introduction

The visible discoloration of stone masonry by cleaning and treatment with chemicals has attracted the attention of earth scientists, chemists and preservation architects. Vague visual field identification of color is possible with the help of the Munsell Color Chart which provides for comparison with color chips measuring 16 x 12 mm each in size. The results are rather subjective, however, as different people have obtained different readings. The presence of moisture, surface finish and chemical treatment tend to darken or lighten stone rather than to change the color or hue. Therefore, this study is limited to a quick and easy method which enables the color-conscious stone producer and consumer to determine the lightness or darkness of stone quantitatively with tools which are available to many people.

Munsell Colour System:

Munsell's original Atlas of the Munsell Color System (1915) presents color with three attributes: the hue or color, the chroma or color saturation, and the value or neutral lightness or darkness. All three color attributes were combined by Munsell into the color fan (1947) which is composed of the neutral

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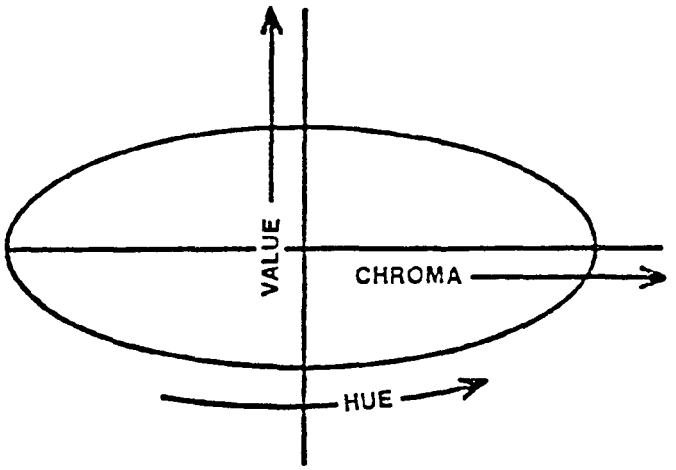

Fig. 1 Scheme of three-dimensional arrangement of color components.

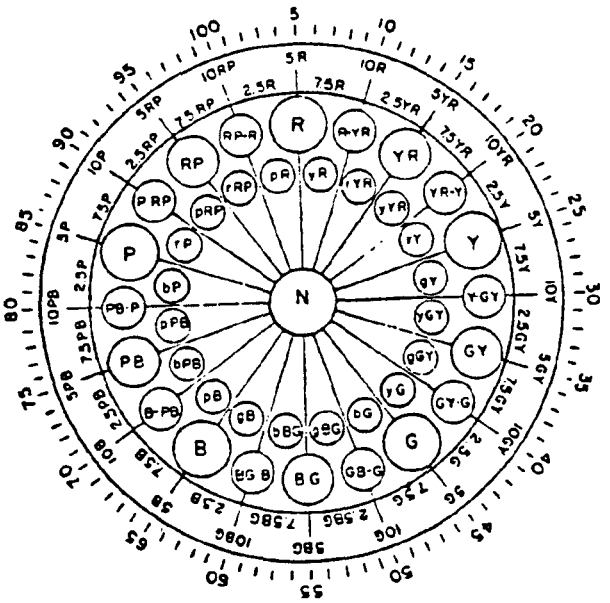

Fig. 2 Presentation of the Hue, the ground-plan to Fig. 1. Symbols standard hue notation, and 100 hue circuit. Abbreviations are: N..neutral; R..red; Y..yellow; G..green; B..blue; P..purple. Source: Nimeroff (1968).

gray axis, the hues radiating from the center like the spokes of a wheel with the color increasing outward (Fig. 1).

The hue notation, the color, indicates the relation of the sample to a visually equally spaced scale of 100 hues. There are 10 major hues, five principal and five intermediate within this scale. The hues are identified by initials indicating the central member of the group: red R, yellow-red YR, yellow Y, green-yellow GY, green G, blue-green BG, blue B, purple-blue PB, purple P, and red-purple RP. The hues in each group are identified by the numbers 1 to 10. The most purplish of the red hues, 1 on the scale of 100, is designated as 1 R, the most yellowish as 10 R, and the central hue as 5 R. The hue 10 R can also be expressed as 10; 5 Y as 25, and so forth -- if a notation of the hue as a number is needed (Fig. 2).

Chroma indicates the degree of departure of a given hue from the neutral gray axis of the same value; it is the strength or saturation of color from neutral gray, written /0 to /14, or further for maximum color saturation.

Value, or lightness, makes up the neutral gray axis of the color wheel, ranging from black, number 1, to white at the top of the axis, 10. A visual value can be approximated with the help of the neutral gray chips of the Rock or Soil Color Chart with 10 intervals. The color parameters can now be expressed with figures semi-quantitatively as: hue, value / chroma (H, V/C). The color "medium red" should serve as an example for presentation with the three color attributes, 5 R 5.5/6; this means that 5 R is located in the middle of the red hue, 5.5 is the lightness of the Munsell value near the middle between light and dark, and 6 as the degree of the Munsell chroma, or the color saturation, which is about in the middle of the saturation scale. Kelly and Judd (1976) presented and summarized the Munsell color system with color plates and a dictionary of terms.

Visual Determination of Color:

A visual comparison of the approximate color of a stone surface can be achieved with the help of 248 color chips of the Munsell Soil Color Chart (1950). Ten leaves that represent 10 common hues are bound into a ring booklet. This system was developed with the U.S. Department of Agriculture by Nickerson (1941). Geologists have used the much smaller Rock Color Chart (1948) with only 112 chips. The Munsell system permits a numerical expression of the value and the chroma. Any change of one or both of these attributes as the result of cleaning or chemical treatment could be expressed as the difference of the number stops. The small size of the color chips, only 16 x 22 mm, does not permit an accurate visual determination of color. I have experienced a discrepancy of nearly two Munsell steps using the neutral gray values of the Soil Color Chart, as compared to tests using 20 x 26 cm sheets. Despite the inaccuracy of comparing color attributes by individual color perception, attempts were made to plot color attributes against the presence of mineral pigments in rocks and soils. Folk (1976) attempted to quantify the presence of hydrated ferric hydroxide, brownish limonite, against dehydrated red hematite. Hurst (1977) combined all three color notations into a single

Table I: Munsell Values versus Light Reflectance:

Munsell Value:	Reflectance, % MgO:	Reflectance, %, absolute:
10	102.56	
9	78.66	77.4
8	59.10	59.6
7	43.06	43.1
6	30.05	30.7
5	19.77	20.1
4	12.00	11.8
3	6.55	6.5
2	3.13	2.8
1	1.21	
Kodak Neutral Test Card:		
Grey Side: 18% (published)	19.8	19.2
White Side: 90% (published)	85.0	85.6

Reflectance, MgO: data from Nimeroff (1968).

Reflectance, absolute: data measured by this author.

number. Value and chroma are expressed with the numerical ratio value/chroma (V/C). This figure is multiplied by the hue, as Munsell's 100 hue circuit runs clockwise from 0 or 100 (Fig. 2). H x V/C, the complete color notation, is expected to have a linear relationship on a log-log plot, provided that the hue remains constant. Hurst plotted the red hue of hematite against the percentage of hematite present. A similar, but separate curve plots a different hue, the ochre. Both plots form a slight curve; the points scatter due to the subjective character of the visual readings; thus a constant hue is required to obtain a uniform plot. A combination of all three parameters into a single figure should not be attempted. Kender (1976) set up a computer program for the analysis of natural scenes for the purpose of remote sensing, based on the three Munsell color parameters. The subjective color perception, however, made a true quantification impossible. Precise measurements of color require costly and often bulky instruments, impractical for use in the field.

Measurement of Reflectance (Value):

The value, reflectance or lightness of a surface appears to be the only attribute of color which can be measured rather accurately as light reflectance with a simple reflectometer. Light reflection is often given as the albedo, which is the fraction of incident light reflected by a surface or a body; a reflectance of 20 per cent would correspond to an albedo of 0.2. Nimeroff (1968) gives the reflectance for the 10 Munsell values relative to MgO in percentage terms. I measured the absolute reflectance with a Zeiss Elrepho Reflectometer at the National Bureau of Standards. The data are summarized in Table I.

The light reflected off a surface can be measured precisely in the field with a photographic light meter. I plotted light meter readings against the absolute reflectance of diffuse light off a surface using the standard commercial Kodak Test Card for calibration against ambient light (Fig. 3). Most light meters are adjusted to the exposure index of the film, the lens opening and the film speed expressed as ASA. The relationship of the reflectance of diffuse light to the lens opening is double logarithmic and can be expressed with the equation:

$$\text{Exposure difference in F-stops} = \frac{X}{\sqrt[2]{\text{known F-stop}}}$$

whereby X is the unknown interval between two known F-stops. The equation was discussed by Vaughn (1976) and is used for the plot, lens opening versus the absolute reflectance of the Munsell Value Gray Cards, 20 x 25 cm, with a matte surface finish. The absolute reflectance of the Munsell neutral gray value cards was measured with a Zeiss Elrepho reflectometer and plotted on the graph of Figure 3. The photographic reflectance tests were performed in a Macbeth Examolite daylight chamber, type EXB-222 which can supply "daylight"

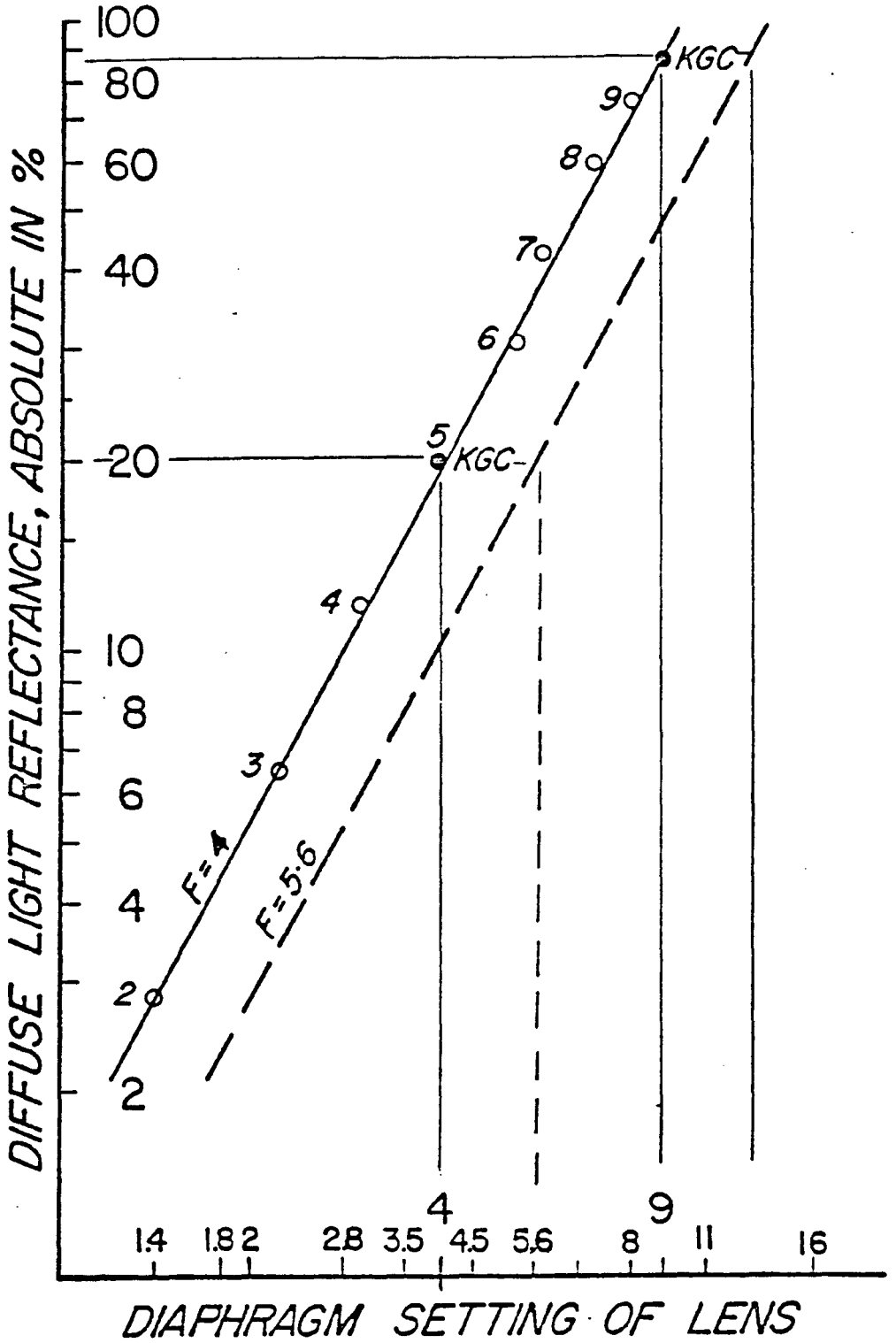

Fig. 3 Log-log plot of diaphragm settings of camera lens versus absolute diffuse light reflectance. Circles with italic numbers position Munsell grey cards; KGC marks the position of the Kodak Grey Test Card. Solid line marks lens opening - Reflectance Relationship at F = 4; dashed line at F = 5.6.

at 7400°K and tungsten at 2700°K in an enclosed box. Measurements in natural sunlight at noon and in open shade supplemented the laboratory tests; a partly cloudy sky with rapidly changing ambient light conditions and reflectance values made consistent readings difficult. Most modern single-lens reflex cameras enable the user to measure diffuse reflected light through the photographic lens either averaging the field of view, center-weighting the view, or spot metering; the spot of light measurement is usually visible in the view finder. A spot meter should be preferred where a limited area, e.g. a single stone block, should be measured. Hand-held light meters can also be used provided that these can cover a limited area.

The field procedure of the reflectance measurements is as follows: Set up the gray side of the Kodak Test Card side by side and parallel with the surface to be measured; maintain the same angle to the sun for both the card and the specimen. Set the lens opening to F=4 (or F=5.6 if the surface of unknown reflectance is much darker than the gray side of the card with 20% reflectance). Adjust the ASA knob and/or the exposure speed of the camera till the needle of the exposure meter visible through the view finder points to the zero mark. Quickly move the camera over to the stone surface and take a reading. Adjust the lens opening from the original F=4 stop setting till the needle points again to the zero marker. The new lens opening corresponds to the reflectance in reference to the gray side of the Kodak Test Card. Plot the new F-stop value onto the graph of Figure 3 against the reflectance.

The F-stop readings can be readily converted to the reflectance, fully adjusted for ambient light from the plot. A contrasting difference of reflectance of the adjacent area can influence the readings. Mounting the exposure meter or the camera onto a tripod steadies the readings. The precise setting of the lens openings is difficult with lenses equipped with click-stops at full or half stop intervals. When interpolation on the graph is necessary, the shrinkage scale should be considered. Spotmeter readings of very coarse grained stone surfaces, e.g. conglomerates or coarse-grained granites, become inaccurate unless at least five readings are averaged for different spots whereby the lens is purposely brought out-of-focus. Stone surfaces with different reflectance should be measured with a telephoto lens which can concentrate onto a very small area of a stone surface.

The log-log character of the plot permits good accuracy below a 60% reflectance; a minor difference of the lightness can be readily plotted. In general, the human eye is as sensitive to lightness as is the exposure meter. All tests were performed with a Canon Ftb Camera with a through-the-lens spotmeter, a 60 mm focal length Mamya/Secor F-2.8 Macro lens and a 85 mm Schact Travenar F-2.8 lens. The same lenses were also used with a Pentax Spotmatic camera with a through-the-lens averaging light meter.

Application of Reflectance to the Stone Industry:

1. Chemically Treated Stone: Many chemicals for water-proofing or hardening of stone masonry tend to discolor the stone surface. The degree of darkening can be readily expressed by the change of the light reflection. With the

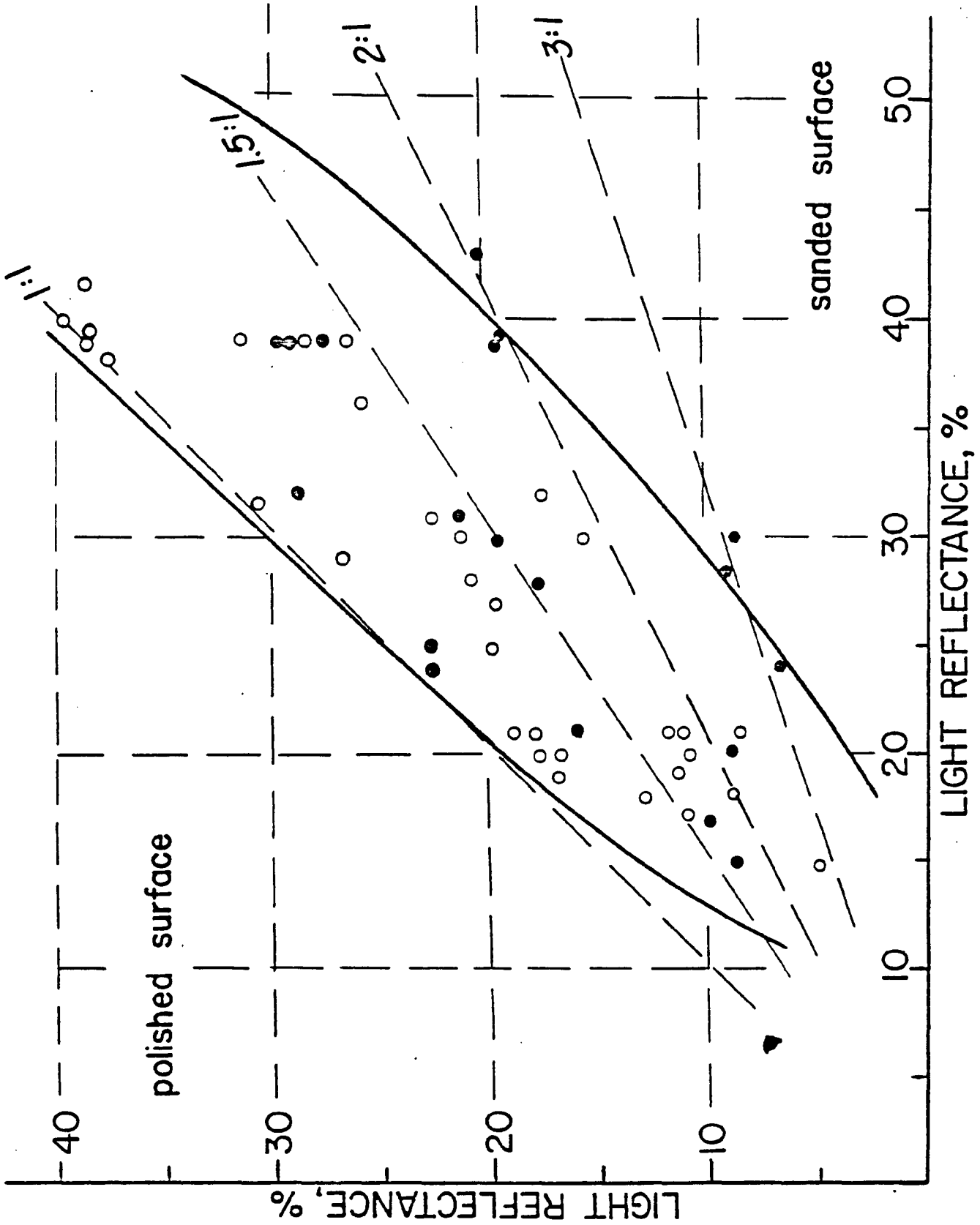

Fig. 4 Plot of light reflectance: sanded versus polished stone surfaces. Reflectance ratios are marked with dashed lines. Most dates should be expected to lie within the thick curved lines.

possibility of quantification of reflectance data, specifications may be readily established for allowable maxima of change. A five percent decrease of reflectance was observed on Indiana limestone upon water-proofing with Hydrosite Hycon SX; the change was barely noticeable to the naked eye. Rohm and Haas' Acryloid A-21 treatment of the same limestone caused a distinct darkening of the surface, which measured a 15 percent decrease of reflectance.

2. Surface Finish: Dark stone varieties tend to decrease the reflectance much more than does light colored stone. Wetting of an unpolished stone surface tends to darken the stone temporarily. Figure 4 compares reflectance values of polished versus sanded stone surfaces: a clear linear trend marked with a solid line crosses lines of equal ratios of unpolished to polished stone. The figures scatter strongly; sanded surfaces darken fast from adhering dust and grime while these wash off readily from polished surfaces. The preliminary study included graveyard stones and museum display specimens. The line of the mean ratio gives the stone manufacturer and architect an approximation of the degree of darkening when a stone surface is polished. Dark stone varieties darken much more when polished than do light colored stones.

3. Change of Reflectance by Cleaning: The difference of reflectance between cleaned and uncleaned masonry gives information about the intensity of soiling and the degree of cleaning. Many stones retain a buff "patina" after cleaning by mild cleaning methods; this retains the appearance of antiquity of a monument. The process of progressive darkening of masonry over time may be recorded as the reflectance and plotted on a graph as reflectance versus time.

4. Heat Absorption Panels: A dark stone surface behind a panel of plate glass can be effectively used as an attractive solar heat collector. The heat generated behind the glass panel is strongly influenced by the darkness, albedo, reflectance of the stone surface. Though no field data are yet available for stone as heat collectors, this writer believes that dark stone panels will play an important role for passive solar heating systems in the near future.

Conclusion

The reflectance, darkness or value, is the easiest of the three color attributes of the Munsell color system to measure with accuracy. The simple method of reflectance measurement with the help of the photographic exposure meter of a single-lens reflex camera is discussed and applied to the needs of the stone industry, with the goal to set standards where needed.

Acknowledgements

Controlled exposure experiments and reflectance measurement were performed at the National Bureau of Standards, Division of Building Research in Washington, D.C. in summer 1976; there valuable suggestions were given to me

by Dr. Gerald Sleater. Thanks are also due to the Committee C-18, Natural Stone, Sub-Committee C-18.05, Colors and Coatings, of the American Society for Testing and Materials, for a study of reflectance measurements with different cameras and lenses for possible adoption as an ASTM Method. The work was supported in part by the National Park Service, administered through the National Bureau of Standards and directed by Dr. James R. Clifford.

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APPENDIX C

SPECIFICATION

FOR

DECORATIONS AND DECORATIVE PAINTING

IN

BUREAU OF INTERNAL REVENUE BUILDING

WASHINGTON,

D.C.*

*From The National Archives, Record Group 121, General Correspondence, 1910-39 (Entry 31) (Box 1343), Suitland, Maryland.

EARNET PHILLIPS COMPANY, 101 PARK AVE., N. Y.

December 28, 1931.

SCOPE OF WORK:

The work included under this specification shall provide for all materials, labor and appliances necessary to do all decorative painting and ornamental painting on all plaster surfaces in the spaces as listed below:

ITEM #1. Lobby on Circle:

1st Floor Entrance Vestibule & Elevator Lobbies

2nd, 3rd, 4th, 5th & 6th Floors - Elevator Lobbies

Plans A-5 to A-10 inclusive.

Details #228- 229.

ITEM #2. Lobby on 12th Street:

1st Floor - Vestibule & Elevator Lobby

2nd, 3rd, 4th, 5th 6th & 7th Floor - Elevator Lobbies

Plans A-5 to A-11 inclusive & B-5 to B-11 inclusive.

Detail #224.

ITEM #3. Lobby on 10th Street:

1st Floor - Vestibule & Elevator Lobby

2nd, 3rd, 4th, 5th 6th & 7th Floors- Elevator Lobbies

Plans C-5 to C-11 inclusive

Details #225-226.

BARNET PHILLIPS COMPANY, 101 PARK AVE., N.Y.

December 28, 1931.

ITEM #4 Lobby on B Street:

1st Floor - Vestibule & Alcoves
Main Lobby & Lobby Corridors

2nd, 3rd, 4th
5th, 6th &
7th Floors- Elevator Lobbies
Stair Halls -1st to 2nd Floors.
Plans B-5 to B-11 inclusive
D-5 to D-11 "

Details #221, 222, 223 & 224.

COLOR SCALE DRAWINGS AND CARTOONS FOR ORNAMENTAL PAINTING:

The decorative painter is to prepare necessary scale drawings in color showing disposition of ornamentation and color scheme proposed, as may be directed by the architects.

COLOR SAMPLES:

The decorative painter shall prepare at the building on plaster surfaces, complete color samples of all painted surfaces for the various rooms. These samples shall be of sufficient size as directed by the architects to give a comprehensive idea of the treatment proposed and shall be changed or altered until approved by the architects. The approved samples shall then be carried out for the completion of the room.

EXECUTION OF WORK:

The decorative painter is required to fully inform himself of the conditions relating to the construction and labor under which the work is now being performed at the building, and he must employ such methods and means in the carrying out of this work as will not cause any interruption or interference with any other contractor.

BARNET PHILLIPS COMPANY, 101 PARK AVE., N.Y.

TIME TO COMPLETE:

The decorative painter is to familiarize himself with the construction schedule for the work under contract and is to program and complete the work coincident therewith, He is to submit for the architect's approval a schedule for the performance of his work.

PAYMENT:

Partial payments will be made monthly in accordance with Article 16 of the Standard Government Form of Contract for Construction. Estimates will take into consideration the material delivered on the site and preparatory work done. After fifty per cent of the work has been completed, the remaining partial payments will be made in full as long as satisfactory progress is being made.

In amplification of Article 16 of the Standard Government form of Contract for Construction, the decorative painter shall be solely responsible for the care and protection of materials or work upon which partial payments have been made and for the replacement of any such materials or work which may be removed, damaged or destroyed, and he shall not be released from his obligation to supply satisfactory material or work or to replace any which upon subsequent or final inspection may be found not to meet the contract requirements in all respects.

December 28, 1931.

SCAFFOLDING, LADDERS & PROTECTION:

The decorative painter shall furnish his own scaffolding, trusses, ladders, planking, etc., for the execution of his work. The scaffolding shall meet with the standard approved by the liability insurance underwriters.

Necessary protection by means of drop cloths, building paper and other protection shall be provided by this contractor when working in conjunction with other finished work.

DAMAGE TO WORK:

Any work damaged through the negligence of the decorative painter shall be made good at his own expense and repaired or replaced through such medium as may be directed by the architects and the sum of such damage deducted from the amount of this contract.

REMOVAL OF SURPLUS MATERIAL AND RUBBISH:

All surplus paper, paints, canvas, brushes, etc., shall be removed daily, and the decorative painter shall hold himself liable for damage or loss due to negligence on his part.

LIABILITY INSURANCE:

The decorative painter shall carry ample fire liability insurance while this work is in progress at the building to fully cover and protect the Government and others from all loss both in the form of personal and property damage.

BARNET PHILLIPS COMPANY, 101 PARK AVE., N. Y.

December 28, 1931.

CONTRACT DRAWINGS:

Spaces included in this specification, which are to have decorative painting are indicated on prints of the superstructure contract drawings. These drawings are on file in the office of the architects.

MODIFICATIONS IN SPECIFICATION:

It is optional with the architects in the final development of these rooms, to make such changes as they may deem necessary for their successful development. It is their intention, however, to make no changes which would effect the cost of the execution of this work to the decorative painter or owner.

DETAIL OF DEVELOPMENT:

PAINTED OR DECORATED FINISHES

Where the following types of finishes are specified, they shall be executed in the manner as noted below. The architects, however, reserve the right to substitute at their discretion, changes in these finishes, or to substitute one finish for another in the final execution of the work, provided, however, it entails no additional cost to the decorative painter or owner.

It is understood that necessary dryers, varnish and other ingredients may be added to the various coats, due to the condition of the surfaces to be painted and final effect to be obtained, and also the proportion of these mixtures to be detrmined in like manner.

All water color or distemper color shall be dry and mixed with water, lime water or paste. Unless other-

wise specified, all painted decoration shall be in oil.

"A" - Painted & stippled finish:

(1) Prepare with one coat of pure oil, lead and small quantity of turpentine.

(2) One coat of lead, oil and turpentine.

(3) One coat of half lead and half zinc, oil and turpentine.

(4) One coat of all zinc and turpentine, and small quantity of oil if any; this coat shall be stippled.

"C" - Textural glaze finish:

One coat of glaze color, mottled with paper or cloth.

"DD"- Glaze color in tow tones applied with coarse or fine sponge according to the textural effect desired.

"J" - Gold:

Surfaces to receive two coats of lead and oil color, to be sized with approved oil size and covered with approved metal leaf. This surface to be treated with pitric acid where required and shellaced; then to be treated with turpentine glaze wiped, stippled or treated with paper.

"K" - Decorative ornamental painting in color, or color and gold:

To be made to conform to the approved design and color cartoons. This work shall be laid in by hand from pounce, and be outlined, shaded and blended by hand to give desired effect.

"N" - Final over-glaze:

Where over-glaze is specified, this glaze is to be either of oil or water, and is to cover all painted or decorated surfaces, and is to be wiped after applied on such surfaces as may be determined.

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1st Floor

LOBBY ON CIRCLE

Plaster frieze & entablature:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in two tones of marble.

Entablature:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in two tones of marble.

"J" - Gold - on ornament as indicated.

"N" - Over-glaze in texture.

Cornice:

To be finished same as entablature with lighter transitional tones.

Plaster ceiling:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in lighter tones and walls.

"J" - Gold - Bandings around ceiling.

2nd, 3rd, 4th, 5th & 6th Floors:

LOBBY ON CIRCLE

All plaster wall surfaces:

"A" - Painted & stippled.

"C" - Textural glaze finish in marble tones.

Plain frieze & entablature:

"A" - Painted & stippled.

"C" - Textural glaze finish in two tones of marble.

2nd,3rd,4th,5th & 6th Floors - Continued

LOBBY ON CIRCLE

Cornice:

"A" - Painted & stippled.

"C" - Textural glaze finish in transitional tones.

"J" - Gold - in ornament.

"N" - Final over-glaze.

Ceiling panels & beam soffits:

"A" - Painted and stippled.

"C" - Textural glaze finish in lighter tone of marble.

"J" - Gold - Bandings around ceiling panels.

1st Floor

LOBBY ON 12th STREET

Plaster walls:

"A" - Painted & stippled finish.

"C" - Textural glaze finish, in tones of marble.

Plaster entablature:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in transitional tones.

"J" - Gold - in ornament.

Plain plaster frieze:

"A" -Painted & stippled finish.

"C" -Textural glaze finish in tone of entablature.

Cornice:

"A" -Painted & stippled finish.

"C" -Textural glaze finish,transitional tone.

"J" -Gold on certain members.

"N" -Final over glaze.

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1st Floor -

LOBBY ON 12th ST. - Continued

Ceiling panels & beam soffits:

"A" - Painted & stippled finish.

"C" - Textural glaze in lighter tone than wall.

"J" - Gold - bandings around panels.

2nd, 3rd, 4th, 5th ,6th & 7th FLOORS

LOBBY ON 12th ST.

Walls:

"A" - Painted & stippled finish.

"C" -Textural glaze finish in marble tones.

Plain frieze & entablature:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in marble tones.

Cornice:

"A" - Painted & stippled finish.

"C" - Textural glaze finish.

"J" -Gold - on certain members.

"N"-Final over-glaze.

Ceiling panel:

"A"- Painted & stippled finish.

"C"- Textural glaze finish in lighter tone than walls.

"J"- Gold banding, textural glazed.

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1st Floor

LOBBY ON B STREET

Vestibule & Alcoves:- Plaster cornices

"A" - Painted & stippled finish.

"C" - Textural glaze finish in tones of marble.

"J" - Gold - certain members; textural glazed.

"N" - Final over- glaze.

Plaster ceiling:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in tones of marble.

MAIN LOBBY

Plaster cornice:

"A" - Painted & stippled finish.

"DD" - Glaze color in two tones, according to texture desired.

Main coffered ceiling:

"J" - Gold
"DD" - Glaze color in two tones, except on bandings between coffers.

Bandings between coffers:

"K" - Decorative ornamental painting to be laid on over prepared gold surfaces, to be made to conform to approved design and color cartoons.

"N" - Final over-glaze.

Corridors around Main Lobby:

Plaster cornice:

"A" - Painted & stippled finish.

"C" - Textural glaze finish.

"J" - Gold.

"N" - Final over-glaze.

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Corridors around Main Lobby- Continued

Plaster ceiling panels & beam soffits:

"A" - Painted & stippled.

"C" - Textural glaze finish in light tones of marble.

1st Floor

LOBBY ON 10th ST.

Ceiling panels & beam soffits:

"A" - Painted & stippled finish.

"C" - Textural glaze in lighter tone than wall.

"J" - Gold - bandings around panels.

2nd, 3rd, 4th, 5th, 6th & 7th Floors

LOBBY on 10th ST.

Walls:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in marble tones.

Plain frieze & entablature:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in marble tones.

Cornice:

"A" - Painted & stippled finish.

"C" - Textural glaze finish.

"J" - Gold - on certain members.

"N" - Final over-glaze.

Ceiling panel:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in lighter tone than walls.

"J" - Gold banding, textural glazed.

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STAIRWAYS - 1st to 2nd Floors

All plaster wall surfaces, panelled soffit and string pieces:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in marble tones.

Plaster cornice:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in intermediate marble tones.

Plaster ceiling:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in lighter marble tones.

2nd Floor

LOBBY CORRIDORS

All plaster wall & ceiling surfaces:

"A" - Painted & stippled.

"C" - Textural glaze finish in tones of marble.

All surfaces to receive an additional coat of colorless water proof varnish.

3rd, 4th, 5th, 6th & 7th Floors

ELEVATOR LOBBIES

Plaster wall surfaces:

"A" - Painted & stippled.

"C" - Textural glaze finish in marble tones.

Plain frieze & entablature:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in marble tones.

3rd,4th,5th,6th & 7th Floors

ELEVATOR LOBBIES- Continued

Plaster cornice:

"A" - Painted & stippled finish.

"C" - Textural glaze finish.

"J" - Gold - on certain members.

Ceiling panels & beam soffits:

"A" - Painted & stippled finish.

"C" - Textural glaze finish in lighter tones of marble.

"J" - Gold - banding around panels.