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VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Coffey Elementary/Middle

Basic Property Information: COD 2-Coffey-19300 Lindsay

Short Name:	Coffey
Address:	19300 Lindsay Avenue, Detroit, Michigan 48235
Year Built:	1925
Additions Built:	1954
Outbuildings:	None
Year Vacated:	2010
Building Footprint:	175 feet x 260 feet
Square Footage:	48,916 sq. ft.
Number of Stories:	2
Building Height:	26 ft.
Current Ownership:	City of Detroit
City Council District:	2
SNF District:	NA

Structural Framing System:	■ Cast-in-Place Concrete ■ Precast Concrete ■ CMU ■ Structural Steel ■ Wood
Exterior Wall System:	■ Brick ■ Limestone ■ Cast stone
Window System(s):	■ Steel-framed ■ Glass block infill
Roofing System(s):	■ Built-Up Roof (assumed) ■ Gravel Surfaced ■ Internal Roof Drains

Assessment Summary

Assessment Date:	February 11, 2020
WJE Inspector(s):	Cheryl Early; Sarah Rush
Report Date:	October 26, 2020
Building Risk Index:	**81.07**

Cost Estimate

Base Rehabilitation Cost Estimate:	$1,313,500
Preparation for Rehabilitation Work:	$900,000
Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft):	$3,913,280
Sub-Total	$6,126,780
Contingency (25%):	$1,531,695
Sub-Total	$7,658,475
Overhead and Profit (15-18%):	$1,148,771
Sub-Total	$8,807,246
Escalation (6% for 2 years)	$528,434
Sub-Total	$9,335,681
Architectural and Engineering Design Services (20%):	$1,867,136
TOTAL COST ESTIMATE:	$11,202,817

ASSESSMENT METHODS

Visual Survey

As requested, Wiss, Janney, Elstner Associates, Inc. (WJE) performed a visual review of the building envelopes and structures to assess the viability of the buildings for reuse. WJE was joined by Mr. Andrew Wald of Interboro Partners and Ms. Jennifer Ross and Mr. Garrick Landsberg of City of Detroit Planning and Development Department. During the time on site, Mr. Wald gathered information pertinent to the general building site and layout of the main building, and Ms. Ross and Mr. Landsberg assessed the condition of the historic fabric of the buildings.

WJE performed a visual review of the building facade from grade, using binoculars as needed. Roof levels were inaccessible due to safety concerns pertaining to access ladder conditions. On the interior, WJE performed a walkthrough of accessible areas of each floor of the building, including areas of the basement that were not flooded. The non-masonry interior finishes are in a state of deterioration. Up-close examination of building elements and destructive inspection openings involving the removal of building finishes to review underlying conditions were generally not performed.

WJE's observations were documented with tablets and digital photography. WJE has shared our field data with Interboro Partners; City of Detroit Planning and Development representatives; and A.M. Higley Company, the cost estimator for this project. Each observed condition is documented in the field data and assessed as discussed under "Risk Characterization" below. A summary of the conditions observed is provided in the "Building Overview" section below.

Limitations of Assessment

Limited to four hours on site, WJE visually assessed the exposed portions of the building envelope and structure. Recognizing the limitations on visually detecting distress from afar and the limitations on detecting concealed internal distress, the assessment may not include all current conditions. As such, completion of this assessment is not an indication, certification, or representation that all deterioration or hazards have been observed or recorded, including underlying deterioration not evident from the building exterior or interior. Additionally, the conditions of the building elements discussed herein are exposed to further damage and deterioration due to the existing condition and unoccupied status of the property, and as such, WJE cannot state the conditions discussed herein will remain unaltered and as observed during the visual survey. However, we have performed these assessments in accordance with the requirements of applicable regulations and the applicable standard of care for architects or structural engineers performing such services.

WJE identified structural or building envelope issues that have significant impact on the viability of future reuse of the property. Items posing little risk such as regular maintenance items are not included in the assessment. The assessment was limited to within the walls of the building; on-grade walkways, access roads, parking lots, landscaping, play structures, or other site features were excluded from this assessment. The assessment, remediation, and identification of hazardous materials (e.g., asbestos, lead, etc.) or other environmental issues were also excluded. Based on WJE's past experience with building rehabilitation projects, WJE has assumed existing mechanical, electrical, plumbing, interior finishes, and other building

systems are anticipated be removed and replaced with future reuse of the building, and as such, were not included in WJE's assessment.

Document Review

WJE performed a cursory review of documentation provided by Interboro Partners to gain familiarity of the property. The documentation provided included:

- Site Plan (included with this report)
- Floor Plans (included with this report)
- Environmental Reports
- National Register of Historic Places Registration Form

Other documents, such as original construction drawings, specifications, or maintenance records, were not made available for our review.

Risk Characterization

WJE has categorized each significant area of distress, damage, or deterioration observed with a systematic methodology to provide an objective, quantitative characterization of its relative condition and associated risk, or its Condition Risk Index (CRI). The CRI is based on the primary building system affected by the condition and the condition's severity, prevalence, and the associated consequence of failure. A higher CRI score indicates that observed conditions embody relatively higher risk than conditions with a lower CRI. The CRI is the product of each of the rankings below multiplied and normalized to meet a maximum score of 100 per condition.

Specifically, the CRI assigns a numerical value to the following:

- System (Structural, Roofing, Facade, Other)
  Conditions affecting the structure are assigned a higher rating than those affecting the facade or roofing systems. Other includes items such as non-load bearing partition walls and exterior steps, and are assigned a lower rating.
- Building Performance Impact (Minor, Moderate, Advanced, Critical, Imminently Hazardous)

  This parameter addresses the severity of the impact of the observed condition on the performance of the affected building system. Imminently Hazardous is assigned the highest rating. For example, a crack in a concrete slab may be a minor distress, but a damaged prominent skylight is considered advanced distress. Imminently hazardous conditions are discussed immediately with Interboro Partners and the City of Detroit representatives.
- Size/Distribution (Isolated/Infrequent/Frequent/Widespread/Pervasive)

  In short, this parameter rates how large and/or frequent a condition is with respect to the entire affected building system/component. Pervasive is assigned the highest rating. Examples include: an isolated step crack in a masonry wall versus pervasive corrosion of metal floor decking throughout a building.

- Consequence of Failure (Low, Moderate, High)

  This parameter allows inspectors to exercise judgment regarding general risk to the public, considering the unoccupied status of the buildings. High is assigned a higher priority, and, for example, might be assigned to a condition whose failure would result in potential harm within the public right of way. Conditions rated with a high consequence of failure are discussed immediately with Interboro Partners and the City of Detroit representatives.

The CRI for each observed condition is summed to calculate a total Building Risk Index (BRI), as provided in this report. The reported BRI is therefore a numerical expression of the relative risk present at one property, as compared to other properties in the scope of this assessment.

Both the CRI and the BRI are expressions of WJE's professional opinion of the relative significance of an observed condition to other building conditions, and the collective relative risk of the structural and building enclosure elements of this property. Neither the CRI nor the BRI are an expression of actual risk or probability of occurrence of any event. The CRI for each condition is tabulated in WJE's electronic field notes. The BRI provides a numerical tool for the project team and the property owners to compare and make decisions about this property and the other properties included in this overall effort, in context with the cost estimate, market analysis and community input. Both the CRI and BRI are intended only for this assessment project. The numerical values do not have substantive meaning beyond the context of the Vacant Historic School Buildings Disposition Plan project.

Recommendations

Recommendations developed in the assessment are conceptual and are intended for budgetary and planning considerations. Recommendations are provided within the narrative below, and in the field data provided. It is not the intent or purpose of this report or the field data to direct a contractor to bid, or otherwise implement, the recommendations. Significant additional investigation by various professional disciplines is necessary to develop appropriate scopes of repair and rehabilitation efforts to enable the re-use of any facility included in this assessment.

Cost Estimating

The rehabilitation costs are opinions of probable construction cost and have been developed with the assistance of A.M. Higley Company, a contractor familiar with rehabilitation of historic buildings. The costs have been developed for evaluating the relative cost of repair of distressed conditions as well as establishment of order-of-magnitude repair budgets. They are based on national construction cost data, adjusted based on the local construction market, and our experience with similar past projects.

Understanding the rehabilitation cost may vary depending on type of future occupancy, this assessment assumes the building will be rehabilitated to a weathertight and "grey box" condition with unfinished walls, flooring and ceilings; no mechanical, electrical, plumbing or other building systems installed. The costs assume the rehabilitation work would occur in 2022 and are not inflated should the work occur in future years.

In addition to this "grey box" base rehabilitation cost, an allowance, based on percentage of costs and square footage of the building, is delineated for:

- Preparation for Rehabilitation Work

- Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft)
- Contingency (25%)
- Overhead and Profit (15-18%)
- Escalation (6% for 2 years)
- Architectural and Engineering Design Services (20%)

The preparation for rehabilitation work item includes mobilization, hazardous material abatement as well as salvaging for potential later duplication or re-installation pertinent historic interior finishes identified by the City. For the purposes of the cost estimating effort, all roofing replacement or repair work is recommended to be performed with like-kind materials; all windows are assumed to be replaced with new commercial window assemblies in lieu of restoration of existing elements, and any exterior doors are to be repaired or replaced in like-kind. Where like-kind materials may no longer be available, WJE will offer alternative materials for the cost estimating purpose. For rehabilitation design and construction efforts, further evaluation of each of these elements is recommended. All work is recommended to be performed as per the Secretary of Interior's Standards for The Treatment of Historic Properties.

The condition-based subdivision of repair recommendations used to develop the base cost estimate is not representative of how a repair program could be implemented to remediate building conditions. Moreover, the costs assume that all repairs would be remediated in the same rehabilitation project. Execution of separate repair projects, or phasing of the rehabilitation project, could result in increases in the total repair cost. Furthermore, the final scope of repair work and the actual repair costs may vary depending on underlying or concealed conditions that were not apparent during our limited assessment.

BUILDING OVERVIEW

Overall

The school was originally constructed in 1925 as a small, single-story four room building. A large two-story addition was reportedly constructed in 1954, creating the U-shaped footprint that is existing today.

The original 1925 building is located in the northwest corner of the current building layout. Its facade consists of multi-wythe brick masonry with reinforced cast stone accent units at entrances, window sills, and parapet copings. The windows are steel-framed and the original building entrance is wood framed. The low-slope roof was not accessed due to concerns with safe ladder access, but likely consists of an internally drained, bituminous built-up roofing system. The roof structure consists of wood plank roof sheathing and nominal dimension lumber joists. The joists are supported by steel framing spanning between steel columns. The floor is a concrete slab-on-ground with utility tunnels at the perimeter.

The 1956 building addition facade consists of brick masonry veneer over concrete masonry unit (CMU) backup with limestone sills and copings. Ribbon windows contain glass block infill with operable steel-framed windows within lower lites. The glass block infill and operable units sit within steel frames constructed of C-shaped and I-shaped members. The entrances consist of steel doors with multi-light aluminum transoms at some entrances. The low-slope roof at this building also likely consists of an internally drained, built-up roofing system or modified bitumen membrane roofing system. The structural system is representative of modern construction materials of the mid-1950s. The first-floor structure is a combination of cast-in-place concrete slab and precast concrete slab construction depending upon location. The roof and second-floor structures consist of long span metal deck formed concrete tee joist-slab construction to a concrete beam and column system. The ceiling above the second-floor corridor is a gypsum plank system supported on steel beams. The basement area is accessible except in three locations, where the basement rooms are flooded with an approximate four-foot depth of water.

In general, the building is in serviceable condition with many of the interior finishes intact. Replacement of the roofing and interior roof drains are critical elements to maintain the sound condition of the existing structure. Much of the observed masonry deterioration is concentrated at the limestone and cast stone accent elements and is a result of water infiltration into the wall assembly, corrosion and freeze/thaw damage. The steel windows within the original building portion can be restored. Within the building addition, it may be difficult to replace the missing glass block units in-kind within the existing steel frames without removal and disassembly of the steel window frames. Therefore, alternative infill materials or replacement of these window assemblies should be considered. Additional evaluation of the long span steel deck of the floor and roof structures of the addition is warranted to determine if the deck is acting compositely with the concrete or was intended to be both the formwork for the concrete and the finish ceiling surface.

Overall, observed distress in both the original building and addition is isolated and related to the water infiltration into the building. Further detail of the observed distress is provided below.

Facade

The facade is generally in good condition. Minor localized cracking of the brick masonry exterior walls was observed and is attributed to water infiltration and corrosion of embedded and attached steel elements.

Isolated cast stone and limestone coping and accent band units are eroded, cracked, or spalled and should be replaced. The brick masonry and cast stone at the library alcove of the original building portion have been previously repaired and are showing continued signs of distress due to corrosion of the embedded steel lintels and subsequent displacement. Rehabilitation should include repair of these elements to mitigate water infiltration into the wall assembly and building interior, and to mitigate further masonry distress.

Significant vertical cracking and localized displacement of the clay brick masonry was observed at the chimney stack. The distress is attributed to prolonged water penetration into the masonry and subsequent freeze-thaw damage, as well as potential deterioration resulting from thermal and moisture expansion of the inner wythes. Rehabilitation of the chimney should include crack stitching repairs with supplemental reinforcing (Helibar) followed by monitoring to determine if distress continues. The cap should be repaired with improved flashing to mitigate further water penetration and masonry distress. Consideration for demolition or partial demolition may be an economical solution depending on the future building use, historical impact, and the functionality need of the chimney.

The original steel window frames within the original building portion are generally in good condition with only minimal corrosion, cracked glass, sealant failure, and a few missing sashes. Based on our observed conditions, the frames can be salvaged and restored, and missing sashes and glass lites can be replaced in lieu of full window replacement. The wood framed entrance of the original building portion may be restored. The windows within the building addition largely consist of glass block infill with operable lites near the base of the wall openings that sit within a steel frame constructed of C-shaped channel members. The frames are generally in good condition with minimal corrosion or observed displacement; however, the glass block infill units are typically missing or cracked. Based on the as-built configuration of this assembly, it may be difficult to replace the glass block units in-kind within the steel frame without disassembly of the steel window frames and/or adjacent masonry; therefore, alternative infill materials or replacement of these window assemblies should be considered. The entrances may be restored or replaced in-kind.

Roofing

The low-slope roof levels were not accessed at the time of this assessment due to safety concerns with the roof access ladders. Where visible from grade, vertical roofing terminations are failed (open, displaced, non-adhered to substrates) and vegetation/organic growth was present on the surface of the roof. Significant signs of water infiltration were also observed at the interior, including damage to interior ceiling finishes. Observed deterioration within the copings and parapet masonry indicate bulk water infiltration into the wall assembly, likely due to deficiencies in the roof terminations and/or flashing. A majority of the water infiltration within the building interior was observed to be a result of failed roof drains and/or drain pipes. Rehabilitation of the building should include removal and replacement of the existing roof assemblies and replacement of the internal drains and drain pipe systems.

Structure

The original 1925 portion of the building is in serviceable condition with finishes primarily intact except for isolated locations near roof drains in the far west end and center of the north corridor wall. Water collecting near and infiltrating the building at these damaged roof drains has caused the wood roof

decking and rafters to be visibly saturated with fungal growth present. These areas of roof structure require reinforcement or replacement.

In the addition, the glazed tile and painted concrete masonry walls of the addition are primarily intact except for isolated locations where walls are damaged from vandalism or water infiltration. Round, cast-in-place concrete columns, some with the cardboard forms still in place, are located along both the exterior walls and interior corridor walls. The floor and roof structures consist of concrete tee joist-slab construction with long span steel deck forms[1]. The underside of the metal formwork is exposed, with perforated metal acoustic panels and fluorescent lighting located in alternating spaces between the joists. The steel deck form is present and perpendicular to the joists at the joist bearings, with a horizontal steel plate continuous and supporting the steel deck for the joist system. The steel deck observed at the joist bearing may potentially have served as the form for the concrete beams which span between the columns. The metal forms and acoustic panels are corroded throughout the building and are recommended to be cleaned, further assessed, and re-coated as appropriate. Structural repairs may be necessary if these elements are determined to be acting compositely with the concrete floor and roof framing systems.

The second-floor corridor ceiling is composed of gypsum planks spanning between structural steel members. The gypsum plank is exposed, visually saturated, cracked and eroded in several locations, deeming the attic and roof levels unsafe for access. Once saturated, gypsum planks are typically not salvageable, therefore the second-floor corridor ceiling is recommended to be replaced with a new attic floor structural system.

At the conservatory located on the south side of the building, the three steel columns along the south wall of the conservatory are displaced outward. The movement of the columns is related to masonry distress observed in this area related to removal of the adjacent windows. The columns can be replumbed in coordination with the masonry repairs in this area.

Limited basement level access was available during the assessment due to partial flooding of the lower levels of the basement spaces. At the intersection of the original building and the addition, near the center of the eastern wall of the original building, significant cracking and displacement of the CMU walls was observed. The walls appear to be partition walls (non-load bearing elements) and the cracking does not continue into the first-floor structure above but is related to cracking in the concrete slab-on-ground. Movement of these concrete masonry walls may be related to damaged sub-surface drainage systems, differential settlement of the addition relative to the original building, corrosion of embedded metal elements, or other contributing water or foundation concerns. Due to the fact that the walls appear to be non-load bearing, the distress does not indicate a significant structural concern; however, further evaluation is recommended due to the severity of the cracking.

The underside of the first-floor structure, as observed from the walkable basement spaces, is in excellent condition. Water droplets were observed on the underside of the precast plank located over earth floor

[1] Initial review of the 1950s era long span metal deck system indicates the decking is acting non-compositely with the concrete tee joist-slab, that the decking was used as a stay-in-place form for the cast-in-place concrete. However, a non-technical, marketing brochure from this era was noted to advertise the decking as a “composite” concrete floor system.

crawl spaces (below the first-floor classrooms). Increasing the amount of ventilation of the crawl space areas and conditioning the building will mitigate the water droplets.

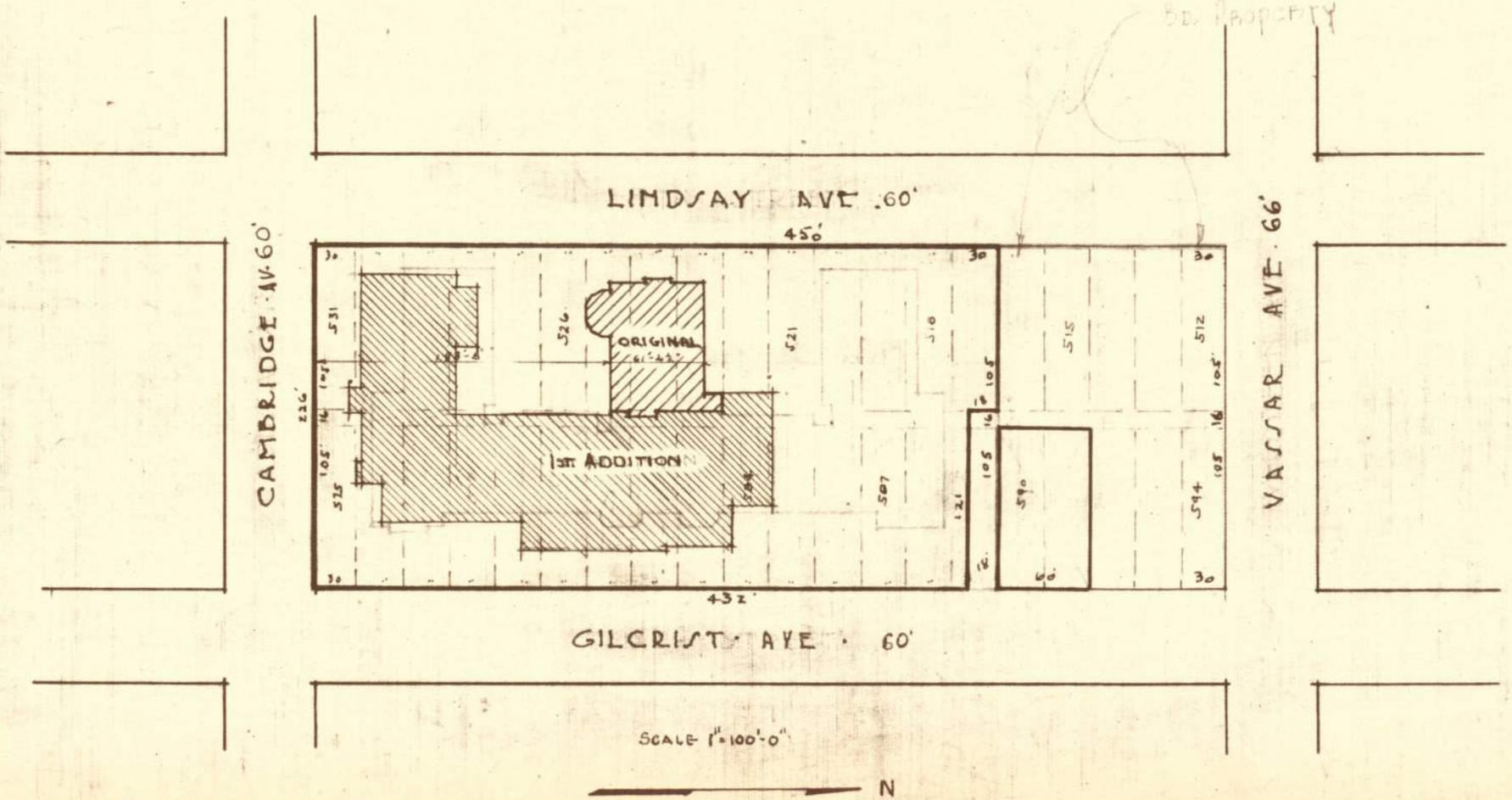
Miscellaneous

Some localized masonry infill areas and partition walls are damaged from vandalism during the removal of plumbing and heating elements. Repair of these partition walls is recommended as appropriate for potential new use of the spaces.

COFFEY SCHOOL

DEPARTMENT OF BUILDING & GROUNDS
BOARD of EDUCATION
DETROIT MICHIGAN

DRAWN	DATE	CHECKED	DATE	ADDITION	DATE
P.H.C. Revised	5-26-44	JHB		R.N.	7-14-55



COFFEY SCHOOL

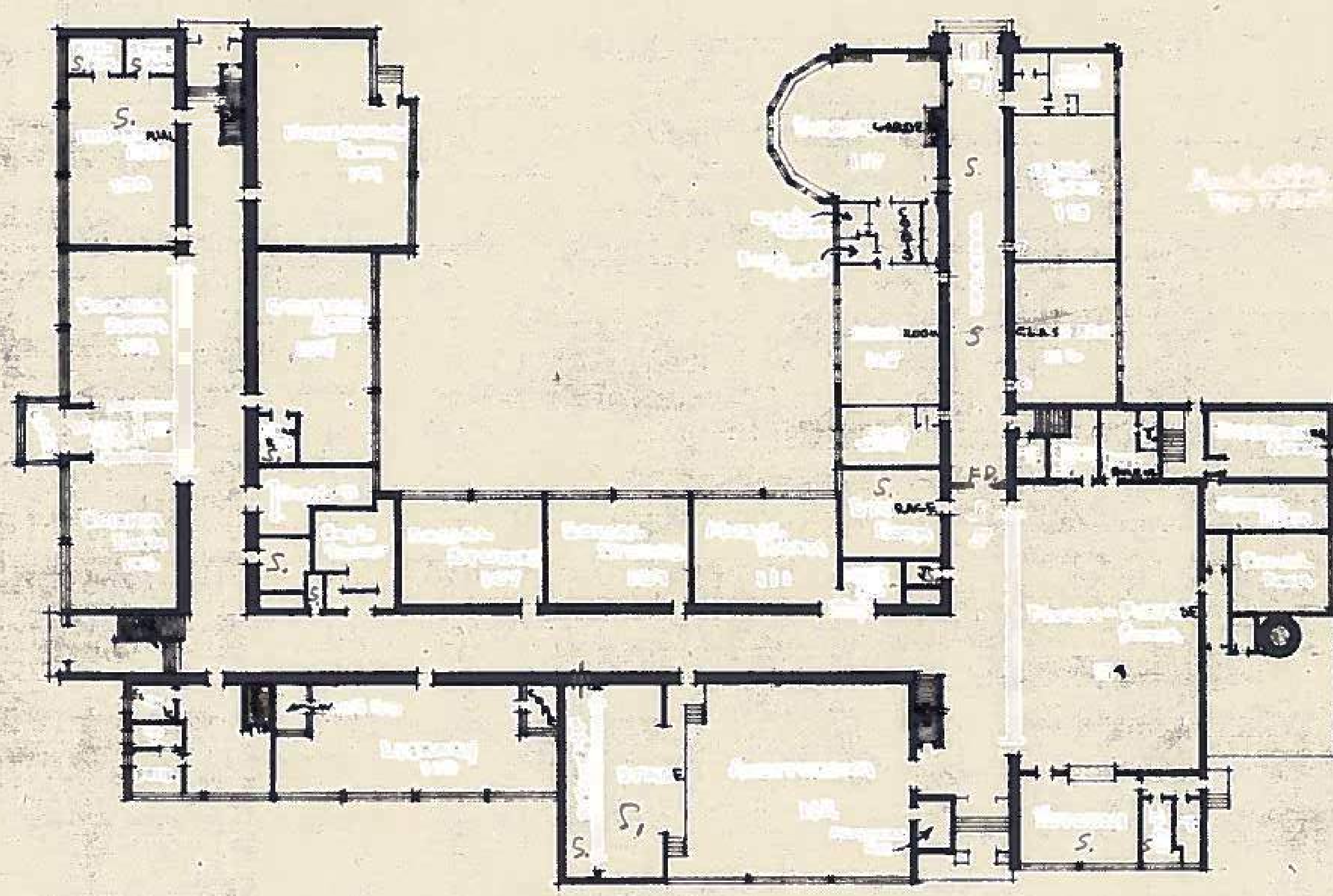
BOARD OF EDUCATION

BASEMENT PLAN

SCALE 1/32" = 1'-0"

COTTEY SCHOOL

BOARD OF EDUCATION



FIRST FLOOR PLAN

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