Wiss, Janney, Elstner Associates, Inc.
30700 Telegraph Road, Suite 3580
Bingham Farms, Michigan 48025
248.593.0900 tel
www.wje.com

VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Malcolm X Academy

Basic Property Information: COD 6-Malcom X-6311 W Chicago

Short Name:	Malcom X
Address:	6311 West Chicago Street Detroit, Michigan 48204
Year Built:	1925
Additions Built:	1930, later than1960
Outbuildings:	None
Year Vacated:	2006
Building Footprint:	200 feet x 108 feet
Square Footage:	31,995 sq. ft.
Number of Stories:	2
Building Height:	42 ft.

Current Ownership:	City of Detroit
City Council District:	6
SNF District:	NA

Structural Framing System:	■ Cast-in-Place Concrete ■ Brick ■ Structural Steel ■ Wood
Exterior Wall System:	■ Brick ■ CMU ■ Limestone
Window System(s):	■ Wood Framed ■ Aluminum
Roofing System(s):	■ Asphalt Shingles ■ Built-Up Roof (assumed) at low-sloped areas ■ Gravel Surfaced (assumed) ■ Internal Drains ■ Gutters and Downspouts

Assessment Summary

Assessment Date:	March 17, 2020
WJE Inspector(s):	Cheryl Early; Justin Barden
Report Date:	November 22, 2020
Building Risk Index:	**70.95**

Cost Estimate

Base Rehabilitation Cost Estimate:	$1,330,000
Preparation for Rehabilitation Work:	$900,000
Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft):	$2,559,600
Sub-Total	$4,789,600
Contingency (25%):	$1,197,400
Sub-Total	$5,987,000
Overhead and Profit (15-18%):	$898,050
Sub-Total	$6,885,050
Escalation (6% for 2 years)	$413,103
Sub-Total	$7,298,153
Architectural and Engineering Design Services (20%):	$1,459,630
TOTAL COST ESTIMATE:	$8,757,783

ASSESSMENT METHODS

Visual Survey

As requested, Wiss, Janney, Elstner Associates, Inc. (WJE) performed a visual review of the building envelope and structure to assess the viability of the building for reuse. WJE was joined by Mr. Andrew Wald of Interboro Partners and Ms. Jennifer Ross 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 building, and Ms. Ross assessed the condition of the historic fabric of the building.

WJE performed a visual review of the building facade from grade, using binoculars as needed. Roof levels were inaccessible due to safety concerns with the available ladder access. On the interior, WJE performed a walkthrough of accessible areas of each floor of the building. The interior finishes are in a state of deterioration in localized areas, exposing portions of the structural framing systems in these locations. 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 building is comprised of three building areas with varying facade and structural assemblies. The original two-story building was constructed in 1925 and is relatively symmetrical in plan with gabled roofs at the perimeter and a low slope roof extending between gabled portions. A two-story addition was added to the south in 1930 of similar construction. A single-story addition with a low-slope roof extends west of the north end of the original building, creating the current "L" shaped building footprint. The date of construction of the last addition is unknown but, based upon building materials and design detailing, is suspected to be after 1960.

The original 1925 and 1930 building addition facades are similar and generally consist of Flemish bond clay brick masonry and intermittent klinker bricks with clay brick backup. Limestone units accent the entrances, window sills, copings, and buttresses. At the later building addition, wood sheathing with a textured, painted finish covers clay brick masonry and concrete masonry (CMU) on the north and east facades, while the other facades consist of painted single wythe CMU and multi-wythe clay brick masonry.

In the original 1925 building and 1930 addition, wood framed windows were present with aluminum covers and replacement aluminum inserts, though the aluminum components are now largely missing due to vandals. In the more recent northwest addition, original single-pane aluminum windows are present. The entrances consist of conventional steel doors. The gabled roof areas are covered with asphalt shingle roofing with external gutters and downspouts. The low-slope roof areas were not accessed due to ladder limitations, but are internally drained, and likely consists of a gravel surfaced, built-up roof based on a review of aerial photographs.

The roof structures of the 1925 and 1930 construction are of wood plank decking spanning to steel purlins which are supported by steel beams or trusses. The steel beams and trusses are supported on the mass masonry perimeter walls and steel columns located within the central corridor walls. The conservatory space at the south end of the building consists of metal decking over structural steel beams. The second-floor structures of the original and 1930 construction are of reinforced concrete tee joist-slab systems. The first-floor structure over the basement level mechanical spaces is of both concrete flat slab and tee joist-slab systems, depending upon location. The addition construction after 1960 is of CMU bearing wall construction supporting steel beams and dimensional lumber rafters with wood decking. Wood sleepers atop the support rafters create the slope in the roof structure.

In general, the building is in repairable condition. On the facade, many of the previously repaired masonry spandrels are significantly distressed, requiring replacement, though only localized maintenance repairs are needed within the remaining cladding. The sloped, asphalt roof appears new, but the flashing elements at the valleys have been removed resulting in direct water infiltration into the building and localized distress to the roofing assembly and interior. The low-slope roof and internal drains require replacement, as do the windows and doors. Beyond the water damaged areas, the structure is in good condition with finishes mainly intact. Further detail of the observed distress is provided below.

Facade

The masonry walls are in good condition beyond the distressed spandrel areas located between the first and second floor windows. Corrosion of the steel window lintels was observed on the west facade, with some areas containing minor masonry distress and lintel displacement due to the development of pack rust. Repair of deteriorated mortar joints is needed in localized areas. Repairs should include repair of the steel lintels with improved flashing details, localized replacement of cracked masonry, and grinding and pointing cracked or debonded mortar.

Significant distress was observed within a majority of the brick masonry spandrels, including relatively large sections of brick that were missing or outwardly displaced relative to the remainder of the facade surface, and exposed areas of wood decay and steel lintel corrosion. These regions appear to have been previously repaired based on the exposed wood framing type, galvanized metal brick ties, and sheet metal caps. The distressed conditions are attributed to water infiltration, failure of the lateral support for the veneer units, and areas missing metal flashing which may have been damaged when the aluminum windows were removed. Repairs should include rebuilding the masonry at the building spandrels with an appropriate repair detail.

Timber headers over the main north and south entrances appear to support the brick masonry above. The wood was probed with an awl during our assessment, and was found to be sound with no notable areas of decay. Repairs should include painting these elements to mitigate weather exposure and decay.

The wood cladding on the most recent northwest addition is significantly deteriorated and should be removed. The exposed CMU and clay brick masonry walls should then be inspected and repaired as needed. The masonry walls may be left exposed and painted with an elastomeric coating for improved durability or, if desired, a new cladding system can be installed over the existing masonry.

The windows and frames within the original 1925 and 1930 building addition are generally missing or are significantly distressed, warranting replacement. The single-pane aluminum windows within the later, northwest building addition are in fair condition with minor localized areas of damaged framing elements and missing glass. These windows can be restored in-place, though replacement may be considered for improved thermal performance. Most of the exterior metal doors are welded shut, missing hardware, and are dented or contain corrosion. Rehabilitation of the building should include replacement of the window and exterior door assemblies, though some windows within the northwest addition may be repaired if desired.

Roofing

The roofing assemblies are in fair-to-poor condition. The sloped roof areas consist of newer asphalt shingles, flashing, and drainage elements; however, missing flashings, shingles, and sheathing were visible at valleys from ground level and aerial imagery. Isolated regions of the sheet metal flashing are also missing and displaced at the transition to the low-slope roof areas, and downspouts are generally missing. These damaged conditions are attributed to vandalism. The low-slope roof was not accessed at the time of this assessment due to safety concerns with the roof access. It is expected that the low-sloped roof and flashing elements are in poor condition based on the extent of water-related distress observed within the building interior. Rehabilitation of the building should include removal and replacement of the missing and damaged roof assembly concentrated at the peaks and valleys of the sloped roof, and removal and

replacement of the entire existing roof assembly at the low-sloped roof. Additionally, rehabilitation should include replacement of the drainage systems.

Structure

Except at the areas where water is entering the building due to missing roof deck boards and failed interior roof drains, the structure is in good condition. Fire damage in the boy's locker room on the second floor has affected only the finishes; no structural distress was observed.

The roofing damage has led to locations of missing roof decking at the transition edges of the gabled roof areas. The water infiltration has deteriorated the finishes below and the roof decking is decayed in areas adjacent to the missing decking. The supporting steel structure generally contains only surface corrosion. At one accessible location, at a valley of the gable roof structure, multiple steel beams and trusses are bearing on brick masonry that is displaced, cracked and wet. This area of the masonry is recommended to be repointed and displaced brick units reset. Assessment of the embedded structural steel elements is recommended during the masonry repair work. The structural steel is recommended to be cleaned and re-coated with a rust inhibiting paint and the wood roof planking is recommended to be replaced in the missing or decayed regions, in coordination with the roofing repairs.

The concrete floor tee joist-slab structures are generally in good condition. The slabs are cracked at localized areas and small stalactites are forming on the underside of the structure in isolated locations. At the bottom of the joists, primarily in the first floor corridor areas, minor corrosion staining and portions of corroded reinforcing steel are present. Cleaning of the stalactites, partial depth repairs of the concrete joists where the concrete has spalled, and full-depth concrete repairs or crack repair of the slabs are recommended. On the underside of the vaulted concrete slab of the basement level coal room at the west side of the building, corrosion staining is present and portions of the reinforcing steel are exposed. Partial depth concrete repairs are recommended for this area. A waterproofing membrane on the top surface may also mitigate additional water infiltration into the vaulted slab structure.

In the gymnasium, at the doorway to the western addition, the inner wythe of brick is significantly bulged on the south side of the opening. The steel lintel supporting this inner wythe of brick could collapse if the brick movement progresses. Temporary shoring of the lintel is recommended. As part of the building rehabilitation, rebuilding the brick with adequate ties to the other wythes of brick of the wall assembly is recommended. Exposing, cleaning, assessing and recoating the steel lintel during this work is also recommended.

At the conservatory at the south end of the building, the underside of the metal roof deck is corroded, most notably at the area of the roof drain. Replacement of this small area of roof deck may be the most economical solution. The supporting steel beams should be cleaned and coated with a corrosion inhibiting paint.

No structural distress was observed in the western addition.

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.

Many of the interior wall surfaces are cracked, especially at the north end of the original building. The cracking appears to be related to the water infiltration occurring and thermal or volumetric changes in the wall materials. Cracking within select walls, such as stairwell and interior classroom walls, may be related to the relative stiffness of the walls within the structural building frame system. Repairing of the plaster is recommended at minimum. These cracks may recur after rehabilitation and remain an ongoing maintenance item unless the underlying cause of the cracking is further assessed and mitigated.

The attic catwalk above the second-floor corridor consists of wood planks that are decayed and the supporting steel members are corroded. Consideration of replacing this catwalk with a new system to meet current code requirements is recommended.

PLOT PLAN
RUTHRUFF SCHOOL
DEPARTMENT OF BUILDING & GROUNDS
BOARD OF EDUCATION
CITY OF DETROIT
DRAWN BY MAR. 13/31

Scale 1" = 40'

N

STOEPEL AVE

ALLEY

ALLEY

ALLEY

BLVD. WEST

CHICAGO

205

87.96

131

12'

coal.

83

5' Fence

2y'

Lawn.

2' Fence

134'

Lawn.

2' Fence

SECOND UNIT 1930

FIRST UNIT 1925

Lawn.

Lawn.

419

0.99 ACRES

LIVERNOIS AVE

120'

RUTHRUFF SCHOOL

DEPT OF ARCHITECTURAL ENGINEERING

BOARD of EDUCATION

DETROIT MICHIGAN

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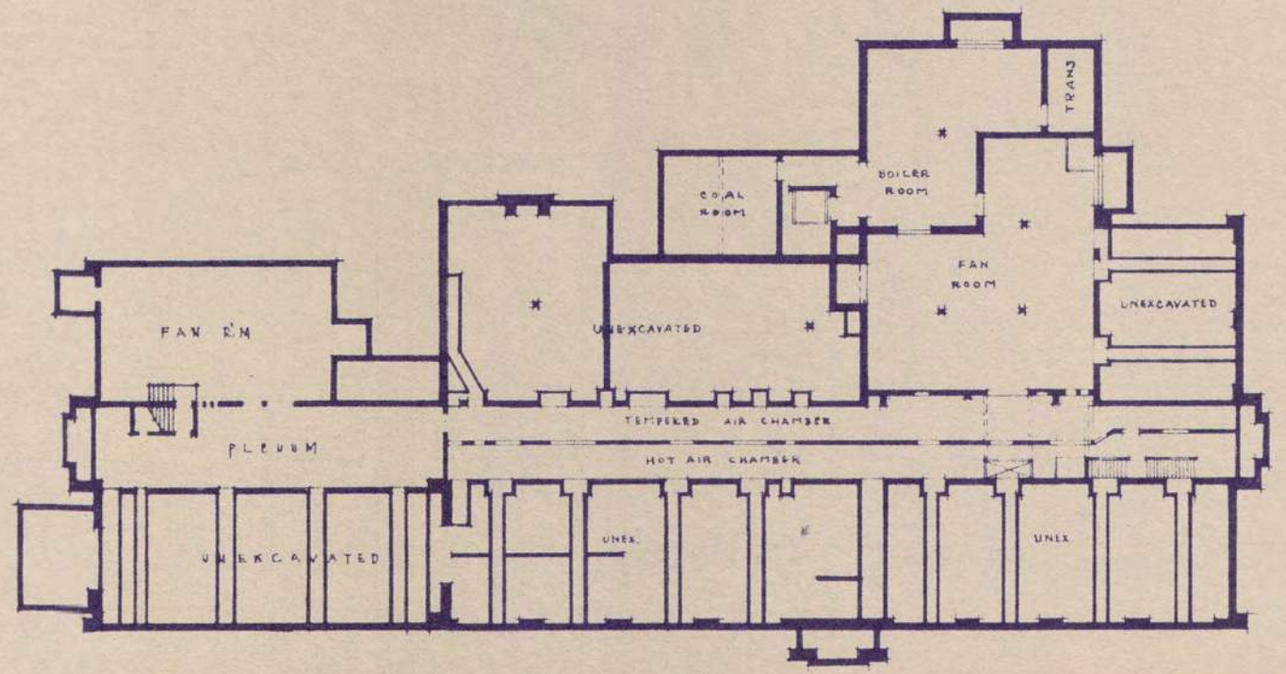

BASEMENT PLAN

SCALE $\frac{1}{32}$" = 1'-0"

RUTHRUFF SCHOOL

DEPT OF ARCHITECTURAL ENGINEERING

BOARD of EDUCATION

DETROIT MICHIGAN

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
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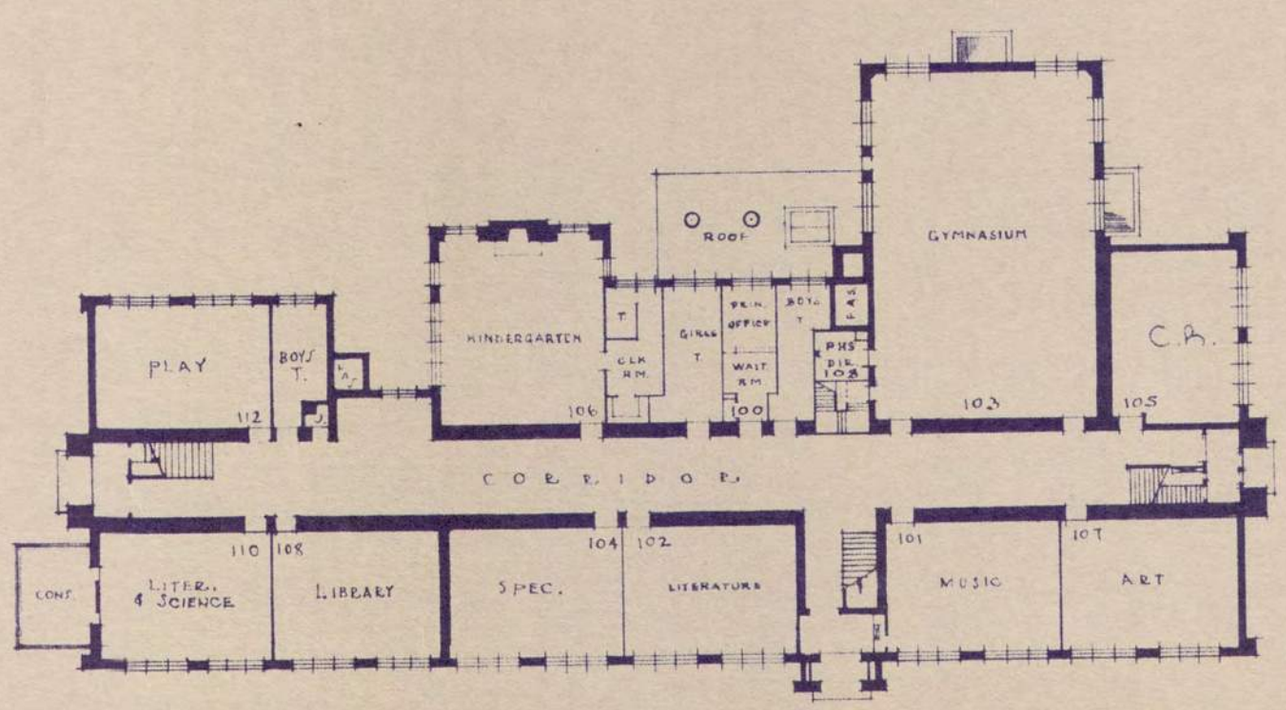

FIRST FLOOR PLAN

SCALE 1/32" = 1'-0"

RUTHRUFF SCHOOL

DEPT OF ARCHITECTURAL ENGINEERING
BOARD OF EDUCATION
DETROIT MICHIGAN

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
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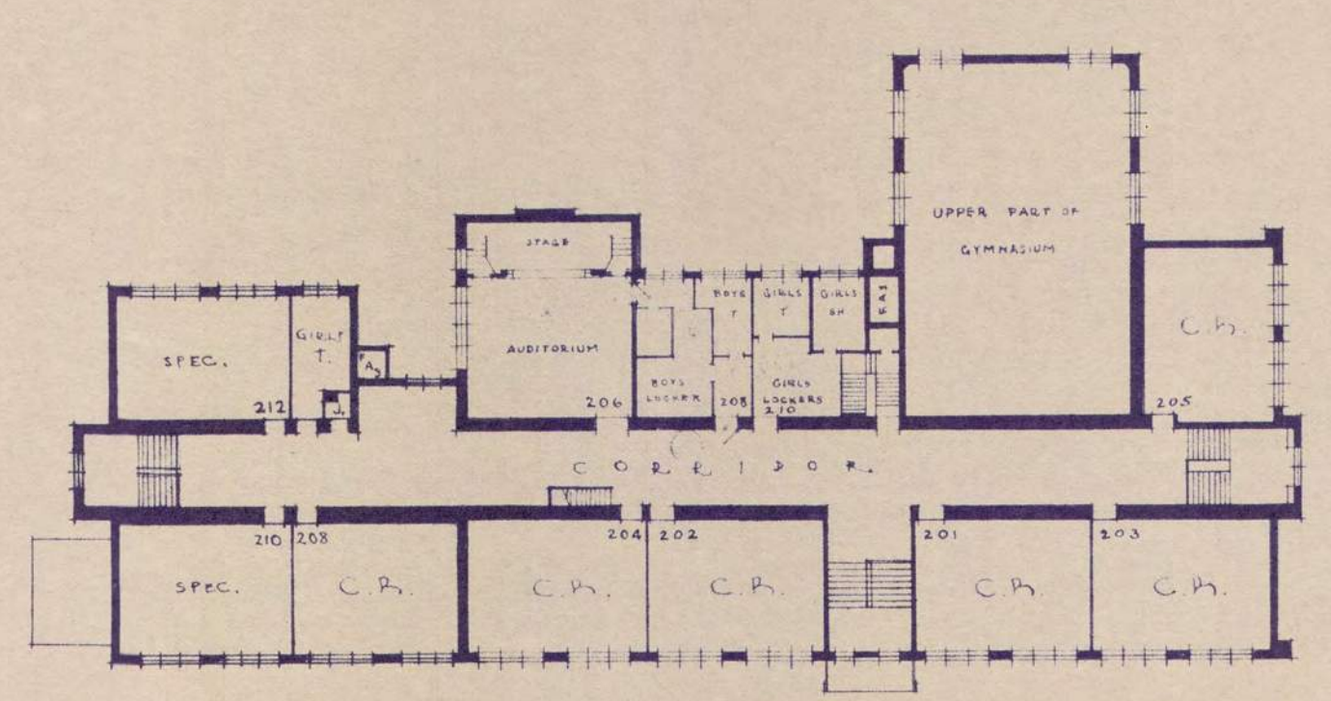

SECOND FLOOR PLAN

SCALE 1/32" = 1'-0"