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VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Courville Elementary School

Basic Property Information: COD 3-Courville-18040 St Aubin

Short Name:	Courville
Address:	18040 Saint Aubin Street Detroit, Michigan 48234
Year Built:	1922
Additions Built:	1926, 1929
Outbuildings:	None
Year Vacated:	2007
Building Footprint:	200 feet x 345 feet
Square Footage:	83,403 sq. ft.
Number of Stories:	2
Building Height:	41 ft.

Current Ownership:	City of Detroit
City Council District:	3
SNF District:	NA

Structural Framing System:	■ Cast-in-Place Concrete ■ Brick Masonry ■ Structural Steel ■ Wood
Exterior Wall System:	■ Brick ■ Stone
Window System(s):	■ Wood ■ Metal framed
Roofing System(s):	■ Asphalt Shingle ■ Built-up Roof

Assessment Summary

Assessment Date:	June 16, 2020
WJE Inspector(s):	Cheryl Early; Meredith Crouch
Report Date:	November 20, 2020
Building Risk Index:	**50.13**

Cost Estimate

Base Rehabilitation Cost Estimate:	$1,460,000
Preparation for Rehabilitation Work:	$900,000
Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft):	$6,672,240
Sub-Total	$9,032,240
Contingency (25%):	$2,258,060
Sub-Total	$11,290,300
Overhead and Profit (15-18%):	$1,129,030
Sub-Total	$12,419,330
Escalation (6% for 2 years)	$745,159
Sub-Total	$13,164,489
Architectural and Engineering Design Services (20%):	$2,632,897
TOTAL COST ESTIMATE:	$15,797,387

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 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 building, and Ms. Ross and Mr. Landsberg assessed the condition of the historic fabric of the building.

WJE performed a visual review of the building envelope from grade, using binoculars as needed. Roof levels were inaccessible due to a missing ladder at the access hatch. On the interior, WJE performed a walkthrough of accessible areas of each floor of the building. The basement level is flooded, and thus, was not accessed. The structure is minimally exposed due to the relatively good condition of the floor, wall and ceiling finishes. 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 1921 as a two-story building with a generally rectangular footprint. An addition was constructed to the north and to the east of the original building in 1926, with the east portion being relatively small in footprint. Four years later, in 1930, a second addition was constructed east of the northern addition creating the general "U" shaped footprint of the current building with a central courtyard space between the northern additions. Both the 1926 and 1930 additions are of similar construction as the original building.

The facade generally consists of buff-colored clay brick masonry in English bond with a brick or clay tile masonry substrate. The parapets of the low-slope roof areas are crenellated. Arched limestone units accent the entrances and select first floor windows, while additional limestone units are present at the sills, copings, and ornamental horizontal bands near grade and the roof level. The windows are ganged together to create larger window areas, and generally align vertically between the first and second floors. Aluminum replacement windows have been set in the original wood frames, and aluminum caps cover the wood frames on the exterior. The building entrances generally consist of conventional steel doors.

The roof layout generally consists of steep-sloped roof surfaces at the perimeter of the building and low-sloped areas extending between the steep-sloped surfaces. The steep-sloped roofing assembly consists of asphalt shingles draining to gutters along the roof perimeter with downspouts located periodically throughout all facades. The low-slope roofing areas are internally drained and appear to consist of a smooth surface, built-up roof (BUR) assembly with an aluminumized roof coating. Dormers are present on the west facade.

The structure consists of a steel frame with perimeter brick masonry walls and interior steel columns embedded within the central corridor walls. The ornate decoration of the exterior masonry is mimicked on the interior of the building in the larger assembly areas. The sloped roof areas consist of wood plank decking spanning between steel framing members. The second-floor structure is a concrete tee joist-slab system spanning between the exterior masonry walls and a beam and column assembly located within the central corridor walls. The roof structures of the larger assembly spaces consist of concrete slabs supported on concrete beams, or concrete encased steel beams, which span between masonry walls which define the space.

In general, the building is in serviceable condition with the majority of observed distress resulting from water infiltration due to damaged and deteriorated steep-slope roof assemblies and failed drainage elements. Flashing elements and downspouts have been vandalized within these sloped roof areas, and the asphalt shingles are significantly deteriorated, exposing decayed wood roof decking below. Addressing these damaged or missing roofing elements is essential to mitigate additional distress to the building. The majority of observed masonry deterioration, including efflorescence, freeze-thaw damage, and corrosion of embedded steel support elements, is attributed to water infiltration into the wall assembly and subsequent efflorescence, freeze-thaw damage, and corrosion of embedded steel support elements. The window assemblies exhibit significant distress due to damage from vandalism and deterioration from prolonged exposure to the elements with deferred maintenance, warranting replacement. The structure is in good condition; interior finishes are primarily intact and, where exposed,

the structural elements exhibit only minor distress. Further detail of the observed distress is provided below.

Facade

The facade is generally in fair condition. The observed masonry distress is largely attributed to prolonged water penetration into the wall assembly, and subsequent cyclical freeze-thaw damage. Localized cracking and displacement of the brick and limestone masonry was observed near upper corners of walls and at window heads due to corrosion of adjacent steel window lintels and/or confined expansion of the brick masonry. Repairs should include grinding and pointing cracked and debonded mortar joints, replacing isolated cracked brick units, rebuilding displaced masonry with appropriate lateral tie and expansion joint detailing, and repairing corroded lintels with improved flashing details. Previous repairs include localized repointing and steel lintel repairs, which are generally in serviceable condition.

The brick gable end walls contain minor stairstep cracking that aligns with the roof level, and may be caused by corrosion of the structural steel roof purlins that bear on the masonry wall. Further investigation is recommended to verify the cause and extent of distress and to develop appropriate repairs. At a minimum, the cracks should be grinded and pointed or sealed, and monitored for continued distress.

Significant masonry deterioration is present at the projecting bay entrances and the projecting bay of the kindergarten room on the south facade due to prolonged water penetration into the wall assembly. The observed distress includes efflorescence, water staining, mortar erosion, and spalled brick and limestone masonry from cyclical freeze-thaw conditions. Similar deterioration was also observed in areas adjacent to missing downspouts. At the projecting bays, further investigation is required to determine the source of the water, though likely sources include failed roofing, base flashings, and/or drain conductors which may be concealed within the exterior walls. Water-related distress within the interior finishes was not readily visible at the entrances or near the missing downspouts, though localized water damage was observed within the kindergarten room. Repairs should include replacing localized spalled brick and limestone units, grinding and pointing deteriorated mortar, and cleaning the masonry surfaces once the sources of water infiltration have been verified and addressed.

Multiple limestone units contain minor surface spalls near the drip edge, which is indicative of prolonged moisture exposure, though repair of these units is not required for serviceability. Corrosion staining is present in isolated regions of the limestone sills, though distress is not readily visible in the adjacent masonry. This staining could be from corrosion of steel hardware components in the original wood window assemblies that have since been removed, or from the protective metal coverings currently installed over the windows. Corrosion staining on the masonry surfaces can be cleaned. Isolated limestone units are displaced at windows where the aluminum replacement windows are missing. These units should be removed and reset.

The clay brick masonry chimney is distressed, exhibiting cracking and displacement near the top of the chimney. The brick should be rebuilt and the limestone coping units should be reset with improved cap flashings. Isolated regions of cracked or debonded mortar should be grinded and pointed.

A majority of the aluminum replacement windows on the second floor, and approximately half of the windows on the first floor, are missing and require replacement. The operable sashes are also typically missing within the first floor windows that remain, leaving only the non-operable lites above. The interior

aluminum trim is generally missing from the first floor windows and cracked glass is present in isolated regions. Exterior trim that conceals the original wood frames is missing or displaced in some regions, exposing wood decay, though this condition was most prevalent where the aluminum replacement windows were completely missing. Windows within the higher-to-reach areas, such as the stairwells, are intact with little-to-no distress. Due to the extent of missing and damaged components, a majority of the windows within the building will likely require replacement, though repairs will be possible in some regions, particularly within the first floor and stairwells. A majority of the exterior doors are missing, damaged, corroded, or barred/welded shut, and warrant replacement.

The conservatory on the east side of the courtyard is overgrown with vegetation. Approximately half of the glass and aluminum frame enclosure is missing. Although vandalized with graffiti, the glass of the remaining half is intact. The partial height brick masonry walls at the perimeter are in good condition. The conservatory can be cleared of the vegetation and the enclosure repaired or replaced.

Roofing

The roof level was not accessible, but the visible portions of the perimeter asphalt shingled roof areas were assessed from grade. The asphalt shingles appear to be racked rather than staggered, so that joints between shingles typically align, which may contribute to the roofing failures by allowing water to penetrate the joints. The steep-sloped roof areas exhibit localized distress and areas with missing asphalt shingles and flashing, including areas where the wood plank decking is exposed. The flashing at the transition from the low-slope roof to the gabled roof was also damaged or missing in isolated areas. Replacement of the missing and damaged shingles and flashing elements are needed to mitigate further distress, and localized repairs to the wood sheathing will be required. Temporary measures are recommended in the near term to stabilize the observed deterioration and mitigate additional distress to the structural system. Missing downspout sections should be replaced to alleviate additional deterioration to the masonry exterior. Paint on the galvanized steel gutters and downspouts is peeling and should be recoated for improved durability and aesthetic.

Though the low-slope roof areas were inaccessible, nor visible from grade; ponded water visible in aerial photographs and isolated water damage observed within the interior ceiling finishes indicate localized areas of roof damage are present above the southern play room and above the projected entrance bays. Replacement of the roofing assembly in these regions is anticipated. The remaining interior ceiling finishes below the low-slope roofs are dry, suggesting the roofing is performing well and likely only requires maintenance-type repairs.

Structure

Although areas of the plaster finishes are water damaged in many locations throughout the building, the structure is minimally exposed. Generally, the condition of finishes is indicative of the condition of the structural elements behind.

Where exposed, the second-floor concrete structure is in good condition. The slab portions of the tee joist-slab construction are cracked and water stained in isolated locations, including the bay window located on the south facade. Although some of the cracks are recommended to be repaired depending upon location and severity of the cracking, not all of the cracks require repair. Other minimal concrete

distress is present in the northeastern play room along the north wall where corrosion staining is present on the underside of the concrete slab and the steel reinforcing is partially exposed. Up close assessment is required to determine if concrete repairs are required of these regions once water infiltration into the roof assembly is addressed.

The structure of the steep-sloped roofs consists of wood plank decking spanning between steel purlins which are supported on built-up steel trusses. The wood decking is water stained with fungal growth present. For an approximate two-foot width along the exterior wall at the southernmost stair, the decking is missing which is permitting a direct path for water infiltration into the building. An estimated twenty-five percent of the wood decking of the steep-sloped roof area is recommended to be replaced due to water infiltration from the damaged and missing roofing. The structural steel elements are recommended to be cleaned, assessed and recoated with a rust inhibiting paint as part of the roof deck replacement effort.

Approximately five feet of ponded water was observed in the basement level preventing access to the basement spaces. The basement should be dewatered allowing for assessment of the basement level, prior to the implementation of the recommendations stated herein.

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.

Cracking in the plaster walls between the classrooms and in stairwells may be related to water infiltration into the building, thermal or volumetric changes in the wall materials or relative stiffness of the walls within the structural frame system of the building. These cracks may recur after rehabilitation and remain an ongoing maintenance item unless the underlying cause of the cracking is further assessed and mitigated.

· ELIZABETH · COURVILLE · SCHOOL
· DETAIL · OF · SITE ·

· DEPT · OF · ARCHITECTURAL · ENGINEERING ·
· BOARD · OF · EDUCATION ·
· DETROIT · MICH ·

DRAWN BY	DATE	CHECKED	DATE	APPROVED	DATE
A.Y.S.					

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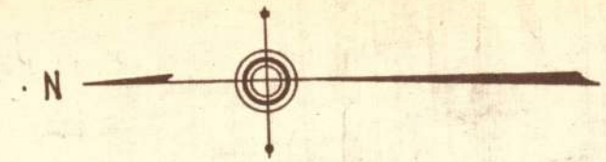
REVISED 2-17-26		S.L.O. 8-14-23



· LUMKIN · AVE · 50' ·

· GRIXDALE · AVE · 50' ·

· ST · AUBIN · AVE · 80' ·

· NEVADA · AVE · 66' ·

7' Fence

886.57'

253.43'

SURFACED PLAYGROUND

ADDITION 1930

GARDEN & PLAY

DRIVE

GARDEN

1926

GARDEN

ADDITION 1926

NEW · BUILDING
1922

55'-0"

50'-0"

293.67'

LAWN

SCALE · 1" = 100'

ELIZABETH COURVILLE SCHOOL
BASEMENT PLAN

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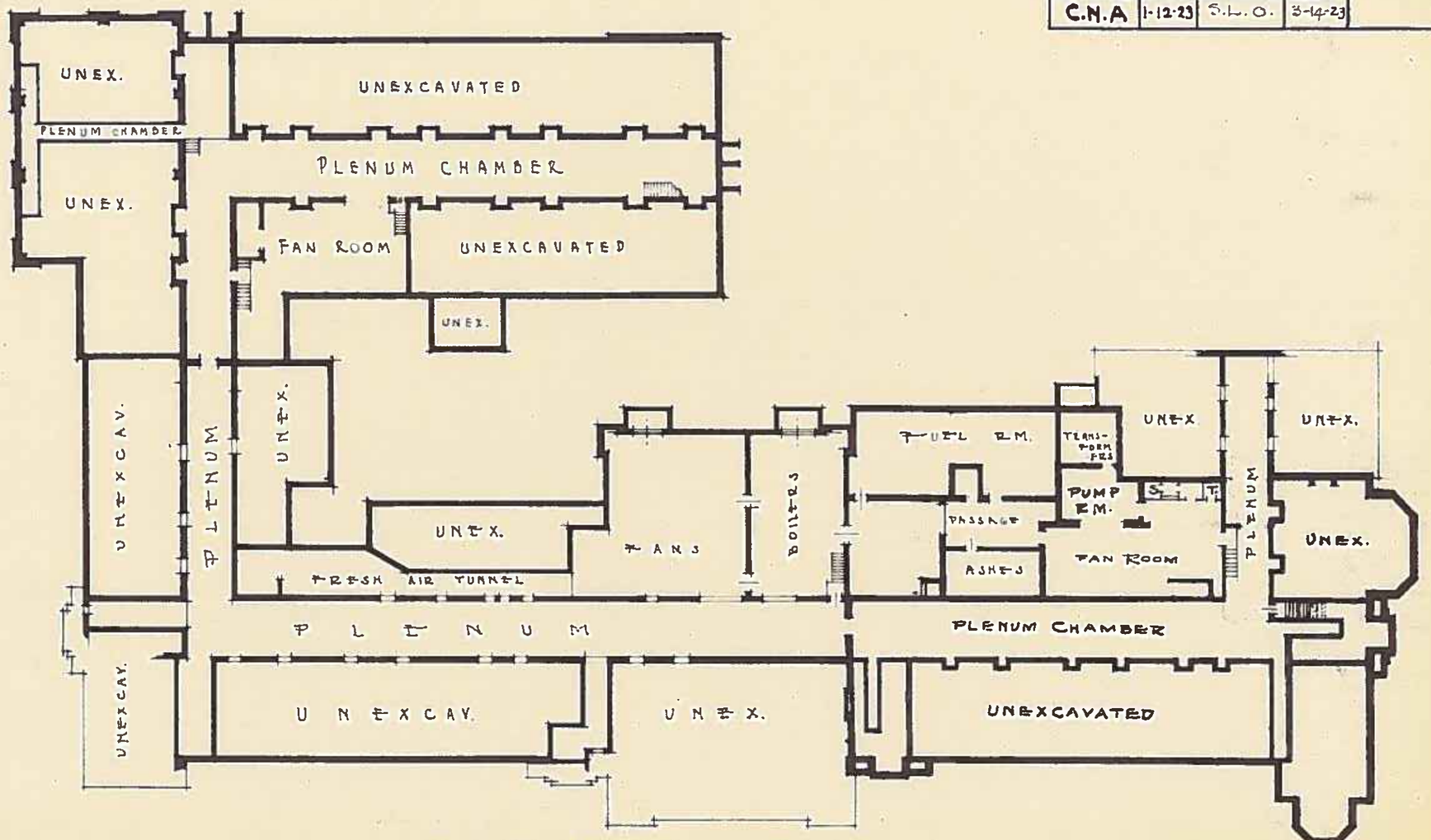
C.N.A	1-12-23	S.L.O.	3-14-23



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

ELIZABETH · COURVILLE · SCHOOL
FIRST · FLOOR · PLAN

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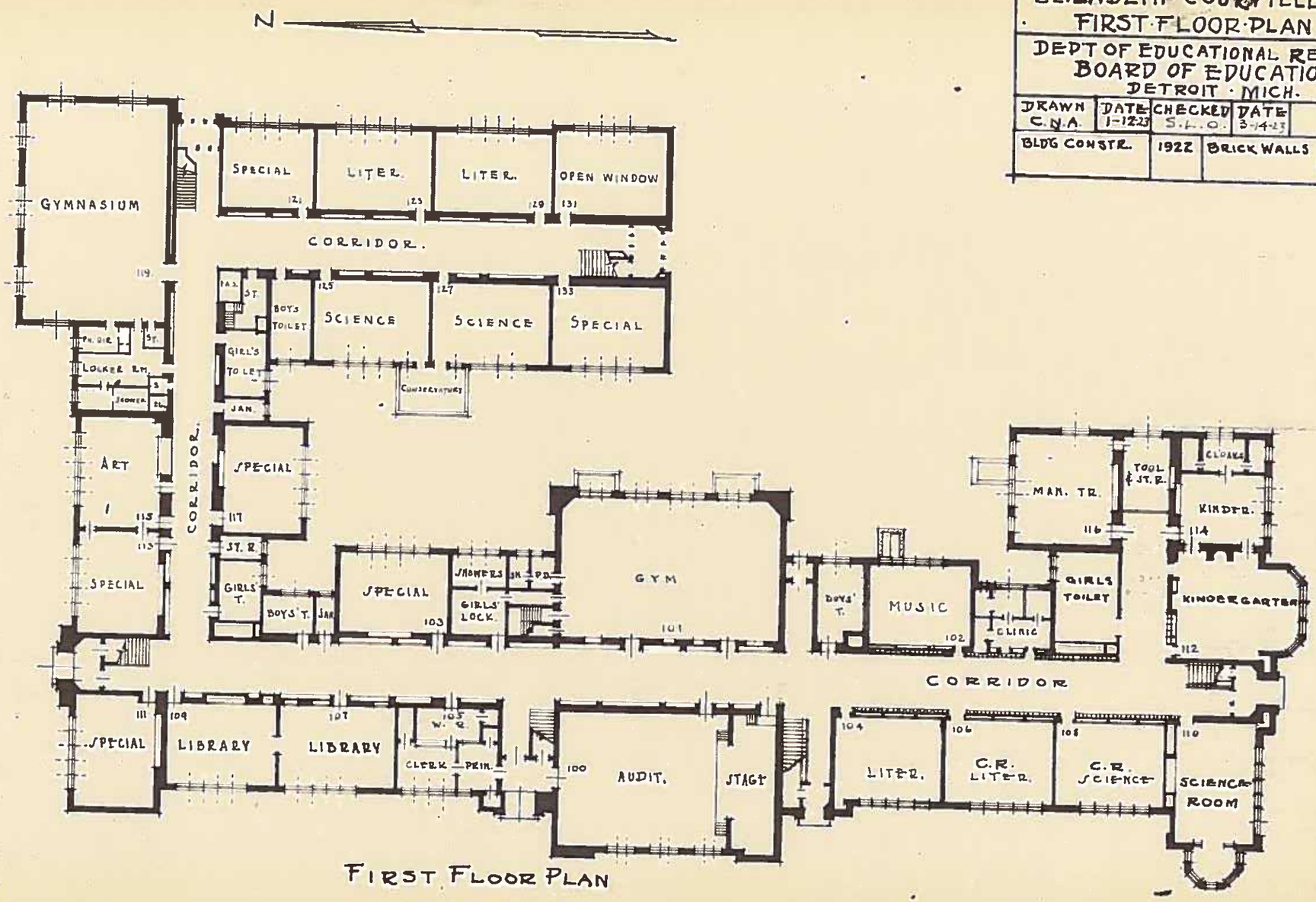

FIRST FLOOR PLAN

Scale 1/32" = 1'-0"

ELIZABETH · COURVILLE · SCHOOL
SECOND · FLOOR · PLAN

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DRAWN	DATE	CHECKED	DATE	
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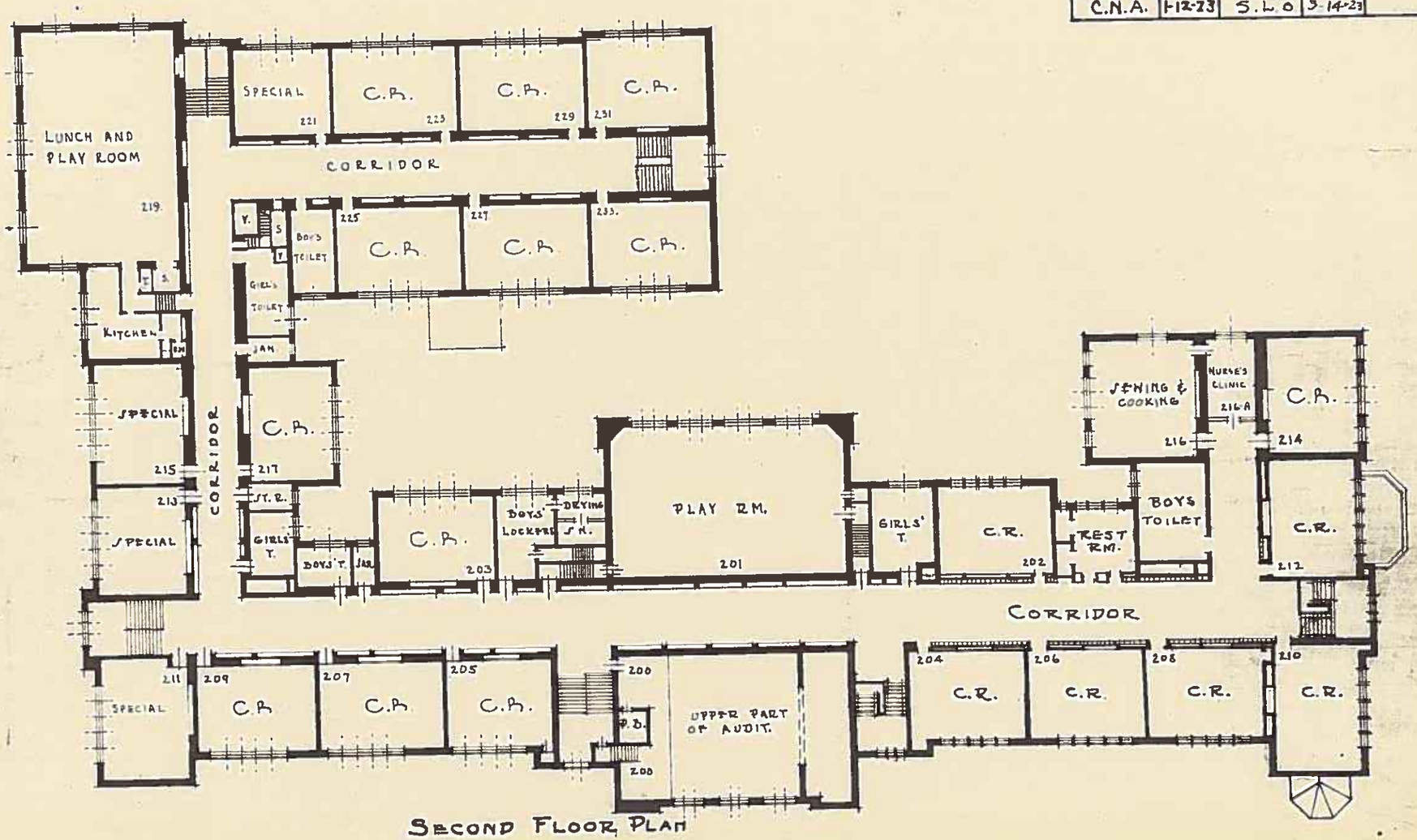

SECOND FLOOR PLAN

Scale 1/32" = 1'-0"