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VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Bethune Elementary/Middle School

Basic Property Information: COD 2-Bethune-10763 Fenkell

Short Name:	Bethune
Address:	10763 Fenkell Street, Detroit, Michigan 48238
Year Built:	1922
Additions Built:	1925, 1929, 1931
Outbuildings:	Powerhouse
Year Vacated:	2010
Building Footprint:	145 feet x 265 feet
Square Footage:	67,586 sq. ft.
Number of Stories:	2
Building Height:	32 ft.

Current Ownership:	City of Detroit	**Structural Framing System:**	▪ Cast-in-Place Concrete ▪ Brick Masonry ▪ Structural Steel ▪ Wood
City Council District:	2	**Exterior Wall System:**	▪ Brick ▪ Limestone ▪ Cast stone
SNF District:	NA	**Window System(s):**	▪ Aluminum ▪ Wood
		Roofing System(s):	▪ Built-up Roof ▪ Internal Roof Drains

Assessment Summary

Assessment Date:	February 20, 2020
WJE Inspector(s):	Sarah Rush; Cheryl Early
Report Date:	October 26, 2020
Building Risk Index:	**71.89**

Cost Estimate

Base Rehabilitation Cost Estimate:	$2,505,800
Preparation for Rehabilitation Work:	$900,000
Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft):	$5,406,880
Sub-Total	$8,812,680
Contingency (25%):	$2,203,170
Sub-Total	$11,015,850
Overhead and Profit (15-18%):	$1,101,585
Sub-Total	$12,117,435
Escalation (6% for 2 years)	$727,046
Sub-Total	$12,844,481
Architectural and Engineering Design Services (20%):	$2,568,896
TOTAL COST ESTIMATE:	$15,413,377

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 envelopes from grade and lower roof levels, using binoculars as needed. Upper roof levels were inaccessible due to safety concerns pertaining to the access ladder condition. On the interior, WJE performed a walkthrough of accessible areas of each floor of the buildings, including areas of the basement that were not flooded. Limited access to the attic was obtained near the roof hatches. The interior finishes are in a state of deterioration in localized areas, exposing portions of the structural framing systems to view 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 buildings; 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 buildings, 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

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 original two-story building was of a nearly square footprint. An addition in 1930 extended the building to the south from the western end of the south facade of the original building. A year later, another addition extended the remaining portions of the south facade to the south while creating a central courtyard space between the original and additions. A powerhouse was also constructed with the last addition and is connected to the main building at the basement level.

The facade generally consists of multi-wythe clay brick masonry with concrete block masonry (CMU) and clay brick masonry backup. Limestone and cast stone masonry accents frame the entrances, window sills, coping, and horizontal bands, with cast stone elements largely concentrated within the original 1922 building area. Clay tile copings are present at some of the upper roof levels not visible from grade. The building entrances consist of wood surrounds and transoms with replacement metal door inserts. The windows generally consist of original wood framing with aluminum covers, and sashes that have generally been replaced with aluminum inserts. Similar facade elements are present within the walls facing an interior courtyard. The low-slope roofing consists of an internally drained, bituminous built-up roofing (BUR) system with flood coat and granular cap sheet base flashing.

The structures of the original building and the three later additions consist of a concrete beam and column system with load bearing masonry walls in select locations. Depending upon location in the building, the floor and roof structures consist of concrete tee joist-slab construction formed with stay-in-place clay tile and concrete masonry. Masonry elements include multiwythe brick, clay tile and brick composite walls, gypsum block, and CMU walls with brick veneer, depending upon location within the building. The roof structure is sloped to internal drains and is in good condition. A large steel-framed skylight in the roof of the gymnasium space provides ample light into this large space.

A freestanding powerhouse is present on the south end of the property and is accessible from the basement spaces of the main building. The powerhouse has a similar limestone and brick masonry facade with metal doors and steel-framed windows. A brick masonry chimney adjoins the powerhouse.

In generally, the buildings are in serviceable condition with the majority of observed distress resulting from water infiltration due to damage at the copings and deterioration of the internal drains. Failed and missing roof drains and missing mechanical roof vents are allowing a significant amount of water to collect within localized areas of the building interior. On the north end of the building, roof drains are positioned within the exterior walls and have failed, resulting in significant distress within the surrounding masonry. Some of the limestone and clay tile copings have been removed and are damaged, with fractured pieces generally sitting on lower roof levels or grade; these conditions are attributed to vandalism. Repair of the roofing and drains are critical elements to maintain the sound condition of the existing structure. Windows and doors require replacement. Further assessment of the structure is required of the central northern classrooms and the classrooms located directly south of the central courtyard. Further detail of the observed distress is provided below.

Facade

The facade is generally in fair condition. Minor localized cracking and mortar erosion within the brick and stone units was observed and is attributed to water infiltration and corrosion of the embedded steel elements. Previous masonry repairs have been performed at the building, including flashing repairs, rebuilding localized areas of masonry, and replacing localized cast stone units with limestone. These past repairs are generally in good condition, though one rebuilt brick area on the south facade has re-cracked and is outwardly displaced. Brick at the exterior face of the parapets is showing signs of distress, including mortar deterioration and brick spalling, which may be caused by deterioration of the copings or roofing terminations. Rehabilitation should include repair of these distressed masonry and steel support elements to mitigate further distress within the wall assembly and building interior.

Significant masonry deterioration is located near the entrance on the north facade of the original 1922 construction. On this facade, roof drains are positioned within the exterior walls and are failed, resulting in significant distress to the surrounding masonry cladding and infill. The observed distress includes spalling of brick and cast stone units surrounding the building entrance, mortar erosion, efflorescence and water staining, and sheets of ice on the wall surfaces. Rehabilitation should include significant masonry repairs within this region.

Some of the limestone and clay tile copings have been removed and are damaged, with fractured pieces generally laying on lower roof levels or grade. Portions of the brick masonry parapet at these locations are also missing or damaged. Removal of these units has been attributed to vandalism to access the copper flashing elements located below. In some areas where the flashing has been removed, the roofing membrane is pulled away from the masonry substrate, exposing the wall cavity and building interior to water infiltration. In areas where the fractured pieces of stone are currently laying on the lower roof levels, the roofing membrane is typically damaged, likely due to punctures caused by the falling stone material. Rehabilitation should include replacement of the missing coping units and parapet repairs.

The majority of the windows are missing or damaged with missing sashes, displaced frames, decay, and broken glass. The wood surrounds and transoms at the exterior doors contain significant distress including fractured and decayed elements, decay, and paint failure. The metal doors within these wood surrounds are typically corroded near their bases. Rehabilitation of the building should include replacement of the window and door assemblies, and replacement or restoration of the wood surrounds.

Roofing

The upper low-slope roof levels were not accessed due to safety concerns with the roof access ladders. However, the lower roof level on the south end of the building and over the north entrance could be viewed from the building interior. Where visible, the roofing assemblies were significantly deteriorated with cracking, seam failure, organic growth, and ponded water. Failed and missing roof drains and missing mechanical roof vents are allowing a significant amount of water to collect within localized areas of the building interior, including select corridors, classrooms, and the gymnasium. Several mechanical rooftop vent hoods are currently located within the interior courtyard. Rehabilitation of the building should include replacement of the existing roof assemblies, internal drains, drain pipes, and mechanical systems as appropriate.

Structure

The interior plaster, wood, vinyl composite tile and ceiling finishes are deteriorating, although they are still intact in portions of the building and can be matched or replicated if desired. Generally, the condition of finishes is indicative of the condition of the structural elements behind. Overall, the structural systems are in good condition.

Glass is broken and missing in the skylight in the gymnasium allowing rain and snow to collect on the gymnasium wood floor. In addition, the roof drains located at the center steel roof truss bearings at the east and west walls of the gymnasium are damaged and are allowing significant water infiltration into the gymnasium. During our assessment we observed icing of the adjacent wood roof deck, masonry walls and wood flooring directly below these drains. The water infiltration has resulted in corrosion of the steel roof framing, which requires cleaning, assessment and recoating. After further assessment, it may be determined that the wood roof deck requires localized replacement in the vicinity of the drains, and the brick masonry wall may require partial reconstruction.

Concrete deterioration is present at the north entry and at each room on either side of the north entryway. The brick masonry exposed at the north wall on either side of the north entry doors is heavily iced. The concrete and masonry deterioration observed is related to significant water infiltration from the roofing and facade systems. Steel reinforcing is exposed on the underside of the second-floor joists in the northern classrooms, but this may be related to low concrete cover during original construction more than distress/spalling caused by the water infiltration observed in this area. Similar concrete distress is present at the classrooms located immediately south of the central courtyard. Localized partial depth concrete repairs will be required of the second-floor structure in these areas. Rebuilding of the masonry at the exterior wall at either side of the entryway may be preferred considering the extent of observed distress observed on both the interior and exterior surfaces of this wall.

The second-floor corridor ceiling is composed of gypsum planks spanning between structural steel members. Spot corrosion is present on the visible surface of the 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.

Powerhouse

The exterior cast stone and brick masonry facade and roofing contained similar distress to the main building. The paint on the original steel-framed windows has failed and the steel frame is corroded. The glazed tile interior walls are in good condition excepting water staining near the tops of the walls.

The roof structure is a board-formed concrete joist-slab system that is in good condition except at the north and south masonry bearing walls, where steel reinforcement is exposed on the underside of the slab. Ice and water infiltration, efflorescence, and concrete deterioration was observed in a corner of the powerhouse basement level. These sections of the roof slab and basement wall corner should be further assessed for partial depth concrete repairs; full depth replacement of the roof deck may be required in these areas.

Miscellaneous

In many of the non-structural walls separating classroom spaces, perpendicular to the exterior walls, there is vertical or diagonal cracking within the length of the wall. Previous repairs have been attempted at some of the cracks. The cracking may be related to volumetric changes of the 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 if these walls are to remain with potential new use of the spaces.

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.

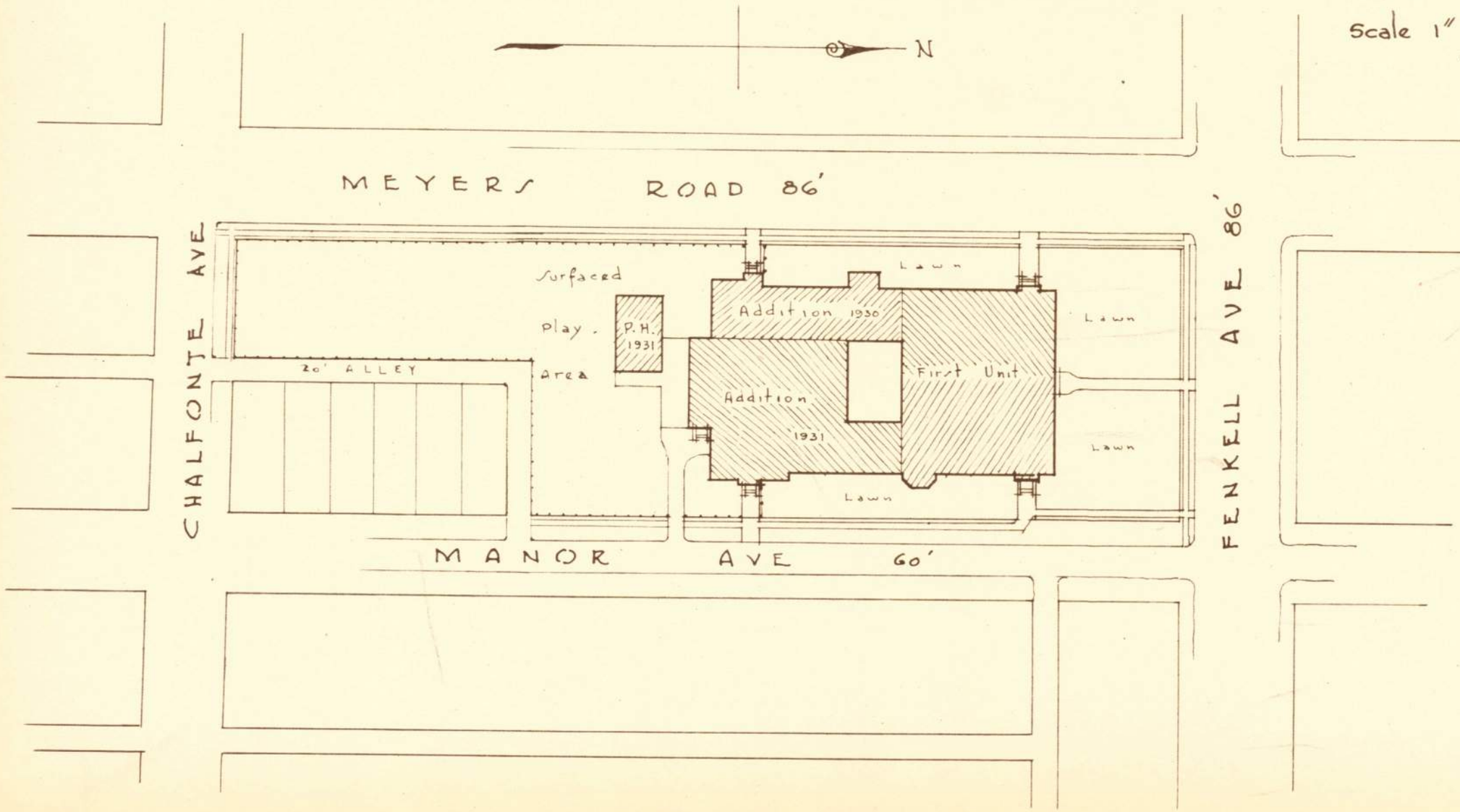
EDGAR GUEST SCHOOL
- PLOT PLAN -

DEPARTMENT OF BUILDING & GROUNDS
BOARD OF EDUCATION
- DETROIT MICHIGAN -

Drawn by LM March 15-32.

3.00 Acres.

Scale 1" equals 100'

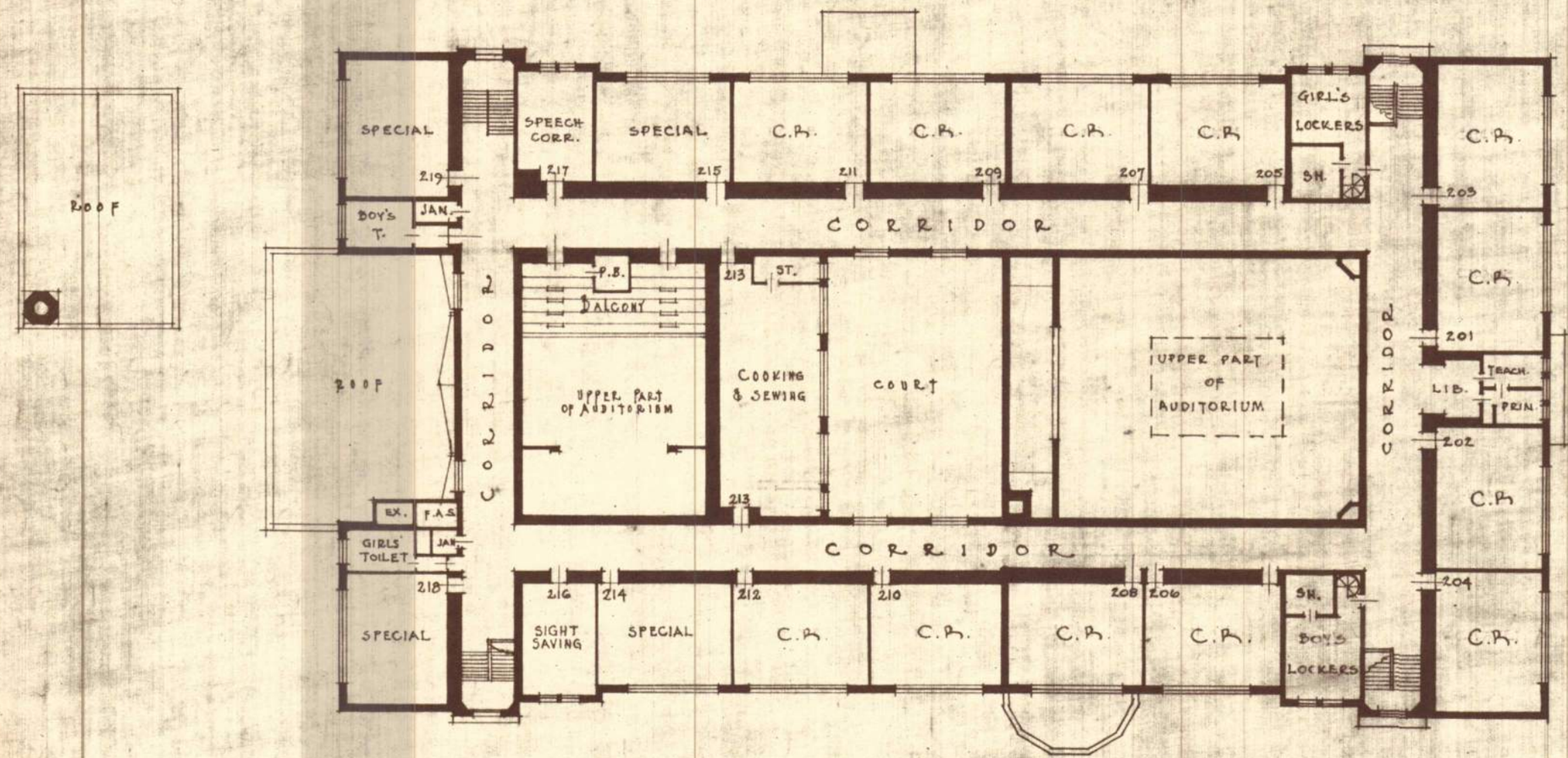


GUEST SCHOOL
SECOND FLOOR PLAN

DEPARTMENT OF BUILDING & GROUNDS
BOARD of EDUCATION
DETROIT MICH.

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
R.C.G.	11-6-29				

SCALE 1/32" = 1'-0"

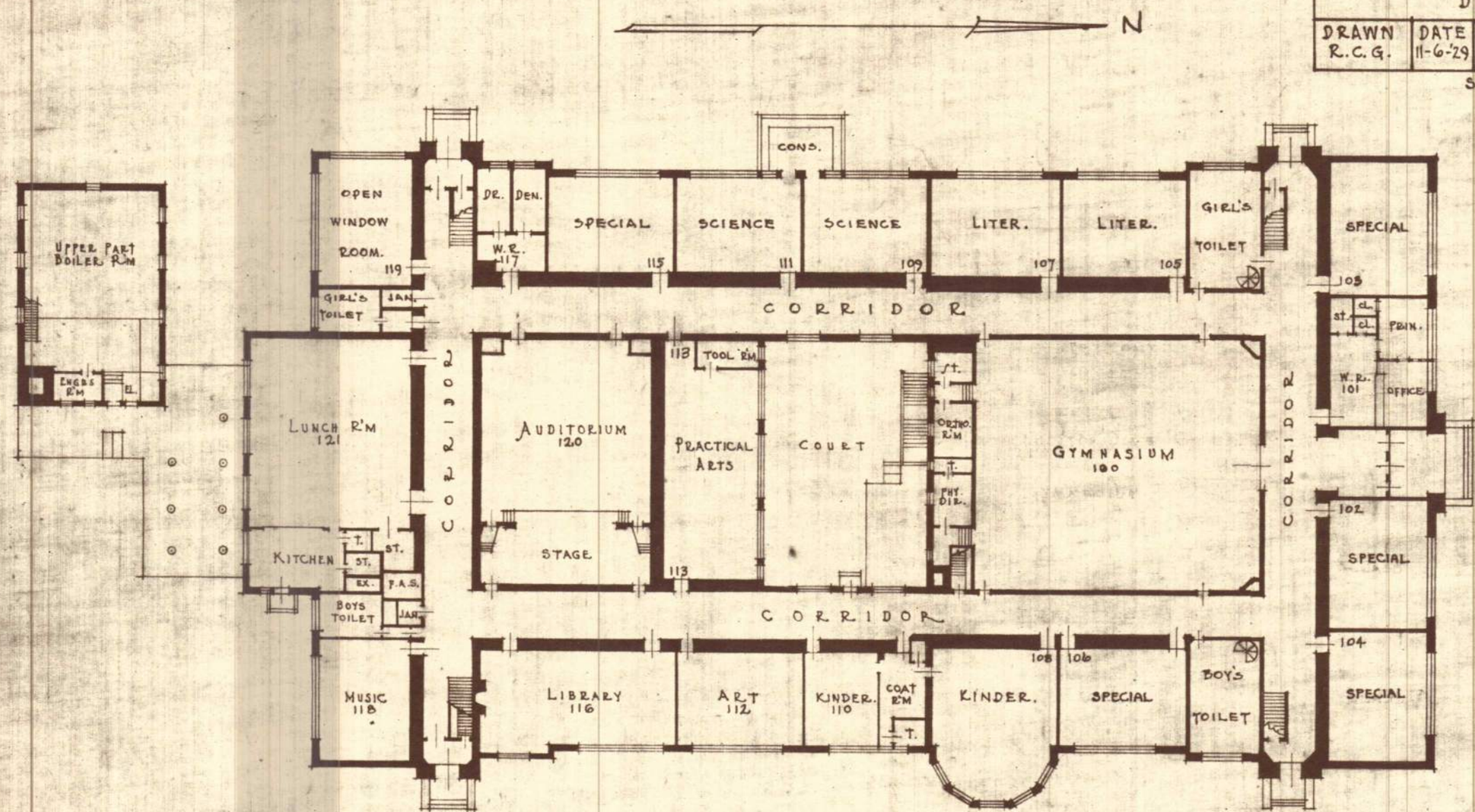


GUEST SCHOOL
FIRST FLOOR PLAN

DEPARTMENT OF BUILDING & GROUNDS
BOARD of EDUCATION
DETROIT MICH.

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
R.C.G.	11-6-'29				

SCALE 1/32" = 1'-0".



GUEST SCHOOL
BASEMENT PLAN

DEPARTMENT OF BUILDING & GROUNDS
BOARD of EDUCATION
DETROIT MICH.

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
R.C.G.	11-6-29				

SCALE 1/32" = 1'-0"