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VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Kosciusko Elementary School

Basic Property Information: COD 7-Kosciusko-20390 Tireman

Short Name:	Kosciusko
Address:	20390 Tireman Avenue, Detroit, Michigan 48228
Year Built:	1955
Additions Built:	None
Outbuildings:	None
Year Vacated:	2007
Building Footprint:	225 feet x 150 feet
Square Footage:	35,120 sq. ft.
Number of Stories:	2
Building Height:	26 ft.

Current Ownership:	City of Detroit
City Council District:	7
SNF District:	WCR

Structural Framing System:	■ Cast-in-Place Concrete ■ Long Span Metal Deck ■ Structural Steel
Exterior Wall System:	■ Clay Brick ■ Limestone ■ Granite ■ Cast-in-Place Concrete
Window System(s):	■ Aluminum
Roofing System(s):	■ Built-Up Roof ■ Slag Surfaced ■ Internal Roof Drains ■ Granulated cap sheet base flashing

Assessment Summary

Assessment Date:	March 03, 2020
WJE Inspector(s):	Cheryl Early; Sarah Rush; Andrew Lobbestael
Report Date:	October 26, 2020
Building Risk Index:	**46.01**

Cost Estimate

Base Rehabilitation Cost Estimate:	$716,750
Preparation for Rehabilitation Work:	$900,000
Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft):	$2,809,600
Sub-Total	$4,426,350
Contingency (25%):	$1,106,587
Sub-Total	$5,532,937
Overhead and Profit (15-18%):	$829,940
Sub-Total	$6,362,878
Escalation (6% for 2 years)	$381,772
Sub-Total	$6,744,650
Architectural and Engineering Design Services (20%):	$1,348,930
TOTAL COST ESTIMATE:	$8,093,580

ASSESSMENT METHODS

Visual Survey

As requested, Wiss, Janney, Elstner Associates, Inc. (WJE) performed a visual review of the building envelope and structural systems 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 and roof levels using binoculars as needed. On the interior, WJE performed a walkthrough of accessible areas of each floor of the building. Limited access to the attic was obtained near the roof hatch. The interior masonry wall finishes have been compromised by vandalism, exposing the structural framing systems in multiple 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 nor 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 primarily rectangular two-story building extends along the west facade to the north for the multi-purpose room. Single story mechanical spaces extend eastward along the northern facade of the multi-purpose room creating a small central courtyard space at the first floor level.

The facade generally consists of clay brick masonry veneer with concrete masonry (CMU) back-up. Limestone masonry accents are present at the window sills and at a horizontal band near the base of the wall, while granite accents are present near the main south entrance. Aluminum ribbon windows and storefront assemblies were present but are now largely missing.

The internally drained, low-slope roof assembly consists of a slag surfaced, built-up roofing (BUR) system with granulated cap sheet base flashing and a perimeter gravel stop over what appears to be an original BUR or cold tar pitch roof system. Portions of structural framing are exposed on the facade, including exterior cylindrical columns and areas of the roof deck that form sloped soffits.

The building structure consists of cast-in-place concrete and long span metal decking supported by structural steel and concrete framing. The steel columns are encased in concrete cast with round cardboard forms. The beams between the columns are generally flush with the long span metal deck system and could be steel or concrete construction. In the larger auditorium and multi-purpose spaces, the beams are exposed and are built-up, rectangular box sections. Precast concrete planks form the floor structure of the first-floor classrooms and are located over crawl space areas. The floor structure of the first-floor corridor consists of a flat concrete slab forming the top of the basement plenum space. The structures of the boiler and coal storage rooms are of cast-in-place concrete slabs, beams and walls.

Secondary framing elements consist of a gypsum plank ceiling/plenum floor structure which extends over the second-floor corridor and steel angle lintels over openings in the CMU walls. It is undetermined if the interior CMU masonry walls are intended to be a part of the lateral force restraint system for the building.

In general, the building is in good condition with limited deterioration observed within the structural systems, facade, and interior finishes. The majority of the aluminum ribbon windows and storefront assemblies are missing, which has been attributed to scrapper activities; replacement of these assemblies will be required for future reuse of the building. The roof system is deteriorated in some regions, resulting in localized, minor water infiltration into the building interior. Localized maintenance repairs to the roofing assembly and drainage elements may be performed to extend the service life of the existing systems. Further detail of the observed distress is provided below.

Facade

The facade is generally in serviceable condition with localized areas of distress. Minor masonry distress included water staining, corrosion staining, paint failure, and localized cracking of the brick masonry veneer and limestone sills. These conditions are largely attributed to deferred maintenance, water infiltration into the roofing and wall assemblies, and corrosion of the embedded steel elements. The steel shelf angles above the ribbon windows contain minor surface corrosion. Exposed steel surfaces should be cleaned and painted. Portions of the exterior walls are missing and damaged in areas related to vandalism

activity on the interior. Rehabilitation should include repair of these areas to mitigate future distress within the wall assembly or the exposed structural elements.

The majority of the aluminum framed ribbon windows and entrance storefront assemblies are missing. Where storefront assemblies remain, localized damage and deterioration was observed, such as bent frames or missing glass. The window openings have been boarded up with OSB sheathing in some locations and metal panels in other locations. The ribbon windows were anchored to the limestone sills at frequent intervals, and steel brackets were visible at head joints between sill units where spalls or mortar deterioration was present. This configuration suggests that the original lateral load path for the window assembly passes through the stone sills to the CMU back-up, which should be considered in the design of future replacement window assemblies. Rehabilitation of the building should include replacement of the ribbon windows and entrance storefront assemblies.

Roofing

The roofing assembly is generally in fair condition. The slag surfaced, built-up roofing system with modified bitumen flashing contains only localized areas of visible distress, including seam failures, cracking, ponded water, and vegetation growing from seams. Some of the internal drains and drain piping have failed. These conditions are resulting in water infiltration within the building interior, which is largely concentrated within the main corridor walls and gymnasium. Localized maintenance repairs to the roofing assembly and drainage elements may be performed to extend the service life of the existing systems in conjunction with more substantial repairs at isolated drains and conductors.

Roofing material is bleeding onto the brick wall surfaces on the north and south facades. Based on these observations and the age of construction, the lower roofing assembly is believed to be original to the 1955 building construction and consist of either a BUR or a cold tar pitch roof. The material on the facade is attributed to softening of this original roofing material, which is caused by external temperatures that are higher than the material softening point. It is common practice to envelope the edge of the roofing in felt prior to installing a second roofing assembly in order to prevent the observed bleeding condition. Removal of this material from the wall surface is possible, though it will be difficult to achieve a completely clean surface without causing distress to the brick masonry veneer. This condition is anticipated to continue until the roofing assemblies are removed or until a localized repair at the roofing edge is performed.

Structure

The 1955 structural system is in excellent condition with isolated areas of distress related to deferred maintenance of the envelope systems and vacant condition of the building.

Concrete repairs are recommended at the concrete slab roof above the transformer room at the north end of the building and the roof of the vaulted coal storage room, noting that not all of the cracks in the slabs require repair provided the roofing and/or waterproofing systems above these slabs are properly repaired.

Many of the CMU walls are cracked at exterior wall corners, near precast lintel bearings, and at interior walls. Further investigation is recommended to determine the cause of the distress, but it is suspected to be related to the water infiltration occurring and thermal or volumetric changes in the wall materials. Cracking within select walls, such as interior classroom walls, may be related to the relative stiffness of the

walls within the structural building frame system. Repointing of the cracked mortar joints and replacement of cracked units is recommended. These cracks may recur after rehabilitation and remain an ongoing maintenance item unless the underlying cause of the cracking is further assessed and mitigated.

Corrosion is present on the long span metal deck and ceiling systems[1], especially in the multi-purpose room ceiling. Corrosion of the metal deck is not a structural concern if it was used as a form deck but could be a structural concern if is behaving compositely with the concrete. Additional investigation would be required to determine if the deck is composite. At a minimum, the exposed steel is recommended to be cleaned and re-coated with a rust inhibiting paint as part of the rehabilitation effort. Further investigation into the condition of the structure above the corroded metal ceilings is also recommended, especially at the built-up box girder bearings.

Miscellaneous

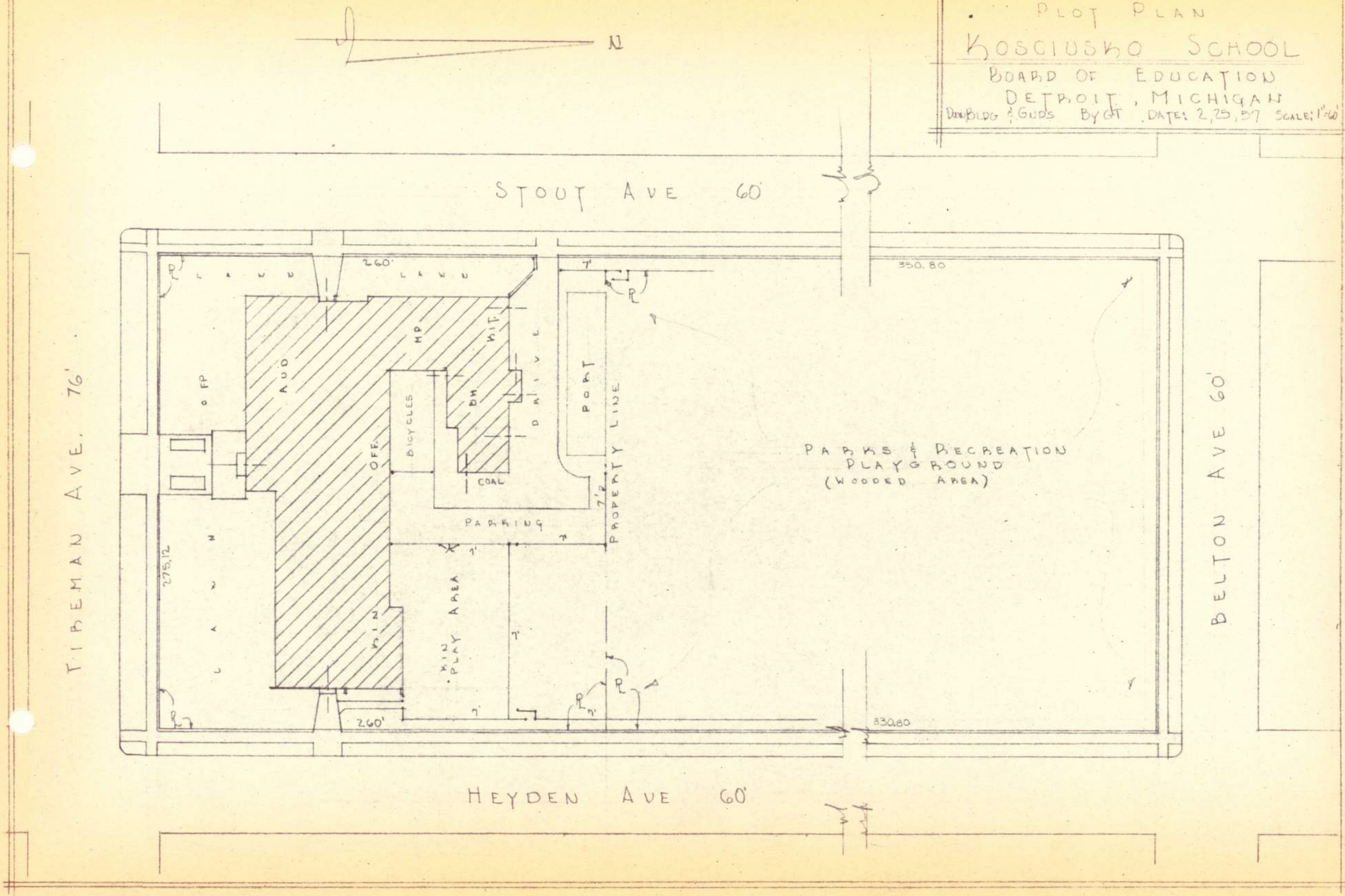
Some localized masonry infill areas and partition walls are damaged from vandalism during the removal of plumbing and heating elements. Repair of these partition walls is recommended as appropriate for potential new use of the spaces.

The steel and gypsum plank ceiling above the second-floor corridor is damaged from water infiltration in one location and will require replacement of the gypsum plank in this area. We recommend cleaning and painting the exposed steel frame of this system with a rust inhibiting paint.

The hoist elevator pit in the boiler room was flooded during the site assessment. The source of the water may be related to a leaking water line nearby. The leak is recommended to be addressed and the pit dewatered.

[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.

Plot Plan
Kosciusko School
Board of Education
Detroit, Michigan
Div. Bldg & Gnds   By GT   Date: 2,25,57   Scale: 1"=60'



KOSCIUSKO SCHOOL

DEPT. OF ARCHITECTURAL PLANNING
BOARD OF EDUCATION
DETROIT, MICHIGAN

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
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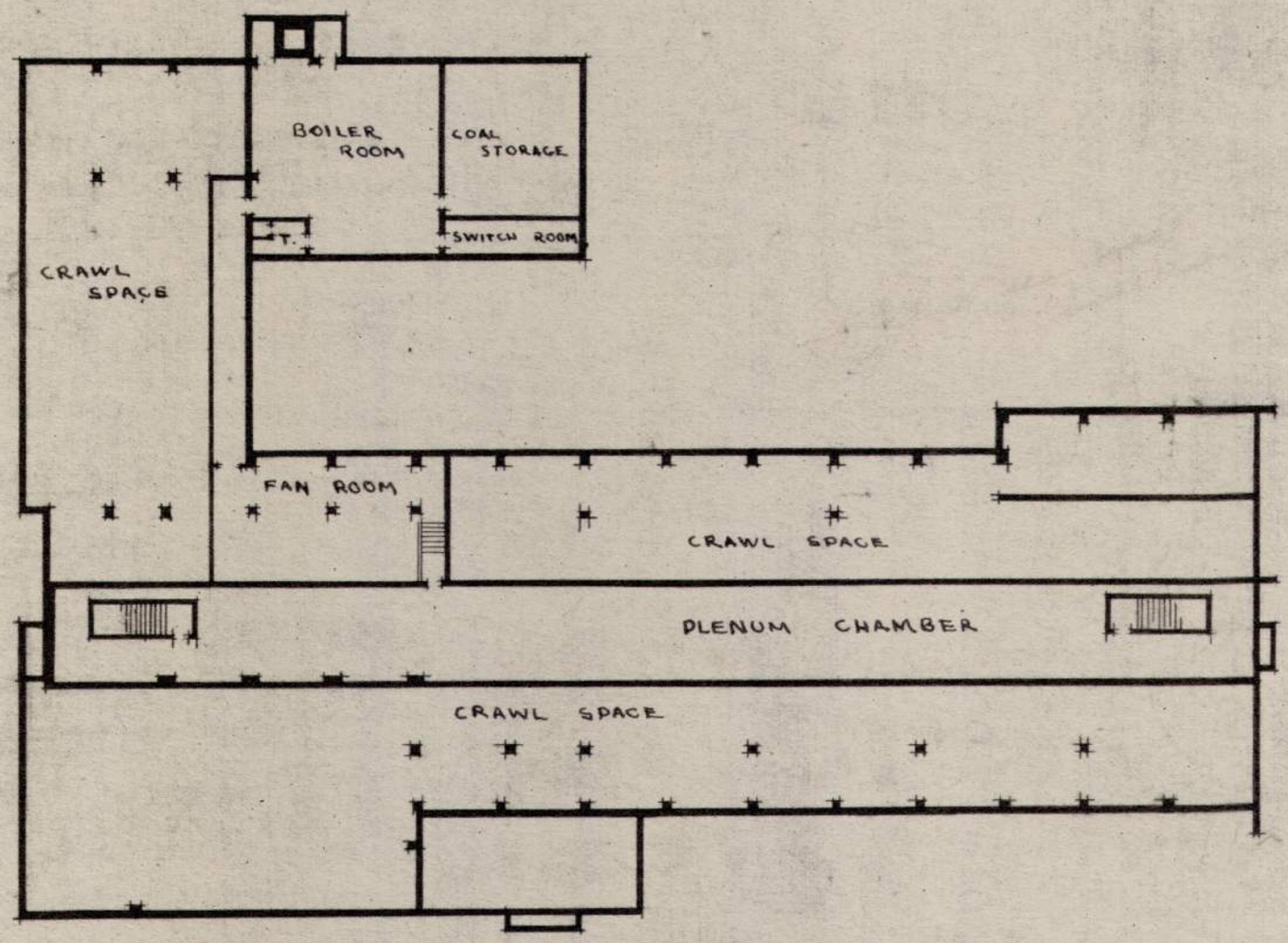

BASEMENT PLAN SCALE: 1"=32'

KOSCIUSKO SCHOOL

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DETROIT, MICHIGAN

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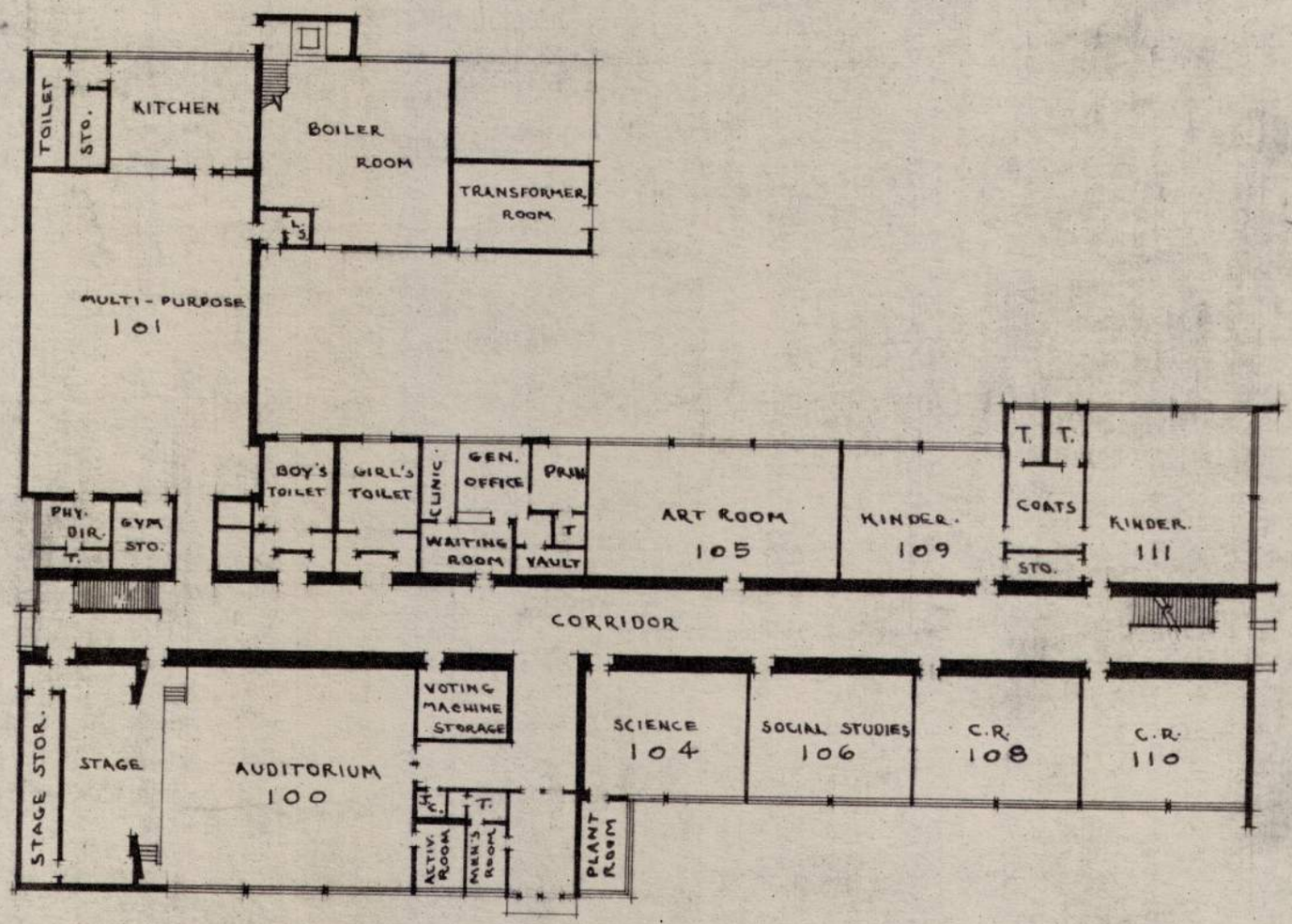

FIRST FLOOR PLAN SCALE : 1" = 32'

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DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
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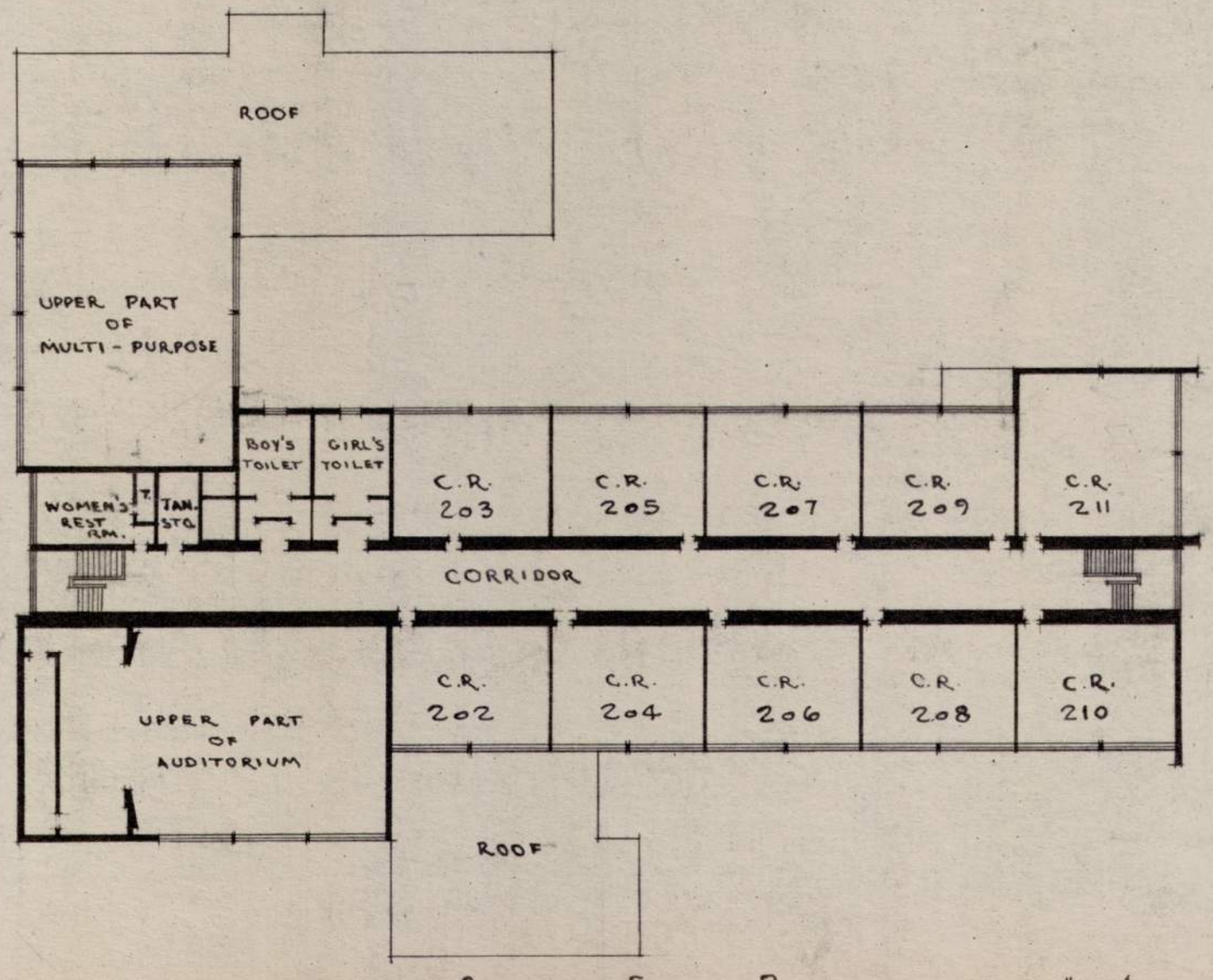

SECOND FLOOR PLAN SCALE: 1" = 32'