

## VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

### City of Detroit RFP# 19BW2717

### Building Envelope and Structural Assessment Report

### Monnier Elementary School

#### Basic Property Information: COD 7-Monnier-13600 Ward

<b>Short Name:</b>	Monnier
<b>Address:</b>	13600 Ward Avenue, Detroit, Michigan 48227
<b>Year Built:</b>	1923
<b>Additions Built:</b>	None
<b>Outbuildings:</b>	None
<b>Year Vacated:</b>	2007
<b>Building Footprint:</b>	190 feet x 245 feet
<b>Square Footage:</b>	57,225 sq. ft.
<b>Number of Stories:</b>	2
<b>Building Height:</b>	33 ft.



<b>Current Ownership:</b>	City of Detroit	<b>Structural Framing System:</b>	<ul style="list-style-type: none"> <li>▪ Cast-in-Place Concrete</li> <li>▪ Brick Masonry</li> <li>▪ Structural Steel</li> <li>▪ Wood</li> </ul>
<b>City Council District:</b>	7	<b>Exterior Wall System:</b>	<ul style="list-style-type: none"> <li>▪ Cast stone</li> <li>▪ Limestone</li> <li>▪ Brick</li> </ul>
<b>SNF District:</b>	NA	<b>Window System(s):</b>	<ul style="list-style-type: none"> <li>▪ Wood-Framed</li> <li>▪ Aluminum Frame Covers</li> <li>▪ Aluminum Sashes</li> </ul>
		<b>Roofing System(s):</b>	<ul style="list-style-type: none"> <li>▪ Built-up Roof</li> <li>▪ Gravel Surfaced</li> <li>▪ Asphalt Shingles</li> <li>▪ Internal Roof Drains</li> <li>▪ Gutters</li> </ul>



### Assessment Summary

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<b>Assessment Date:</b>	February 11, 2020
<b>WJE Inspector(s):</b>	Cheryl Early; Sarah Rush
<b>Report Date:</b>	October 28, 2020
<b>Building Risk Index:</b>	<b>55.81</b>

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### Cost Estimate

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<b>Base Rehabilitation Cost Estimate:</b>	\$1,604,540
<b>Preparation for Rehabilitation Work:</b>	\$900,000
<b>Mechanical, Electrical, Plumbing, Fire Protection (\$80/sq ft):</b>	\$4,578,000
<b>Sub-Total</b>	\$7,082,540
<b>Contingency (25%):</b>	\$1,770,635
<b>Sub-Total</b>	\$8,853,175
<b>Overhead and Profit (15-18%):</b>	\$1,327,976
<b>Sub-Total</b>	\$10,181,151
<b>Escalation (6% for 2 years)</b>	\$610,869
<b>Sub-Total</b>	\$10,792,020
<b>Architectural and Engineering Design Services (20%):</b>	\$2,158,404
<b>TOTAL COST ESTIMATE:</b>	\$12,950,424

## 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 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 main 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 facade from grade, using binoculars as needed. Roof levels were inaccessible due to safety concerns pertaining to access ladder conditions. On the interior, WJE performed a walkthrough of accessible areas of each floor of the building. Limited access to the attic was obtained near the roof hatch. The basement level is flooded, and thus, was not accessed. The interior finishes are in a state of deterioration, 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 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 classroom wings of the primarily U-shaped footprint of the two-story building extend outward to the east from the main portion of the building which fronts Ward Street. The auditorium/gymnasium space extends to the west at the south end of the front facade.

The facade generally consists of two-wythe clay brick masonry with clay tile and brick masonry backup, though one exterior wall area at the north facade is constructed with concrete brick. Cast stone and limestone accent units frame the entrances, window sills, and coping and cornice elements at the top of the walls. The window lights are grouped together to create larger window areas, and generally align vertically between the first and second floors. The windows consisted of original wood framing with aluminum covers and aluminum replacement windows installed within the original openings, though the aluminum components are largely missing.

The sloped roofing assembly consists of three-tab asphalt shingles over plank wood sheathing and wood rafters. These sloped roof areas drain to internal sheet metal gutters that are inset into the cast stone cornice. The gutters generally tie into the internal roof drain conductors located within the building envelope, though some roof areas drain to exterior downspouts. The low-slope roof areas, located between the sloped roof areas, consist of internally drained, gravel surfaced, bituminous built-up roof (BUR) with granulated cap sheet base flashing.

The structure consists of concrete beams spanning between concrete columns and supporting concrete tee joist-slabs formed with clay tile units for the floor systems. Steel columns are exposed at the common wall between the gymnasium and corridor. Steel trusses, composed of steel angle members, clear span the gymnasium space and support dimension lumber (2x) members and wood plank decking. The stairwells consist of brick masonry bearing walls. The sloped, wood framed roof structures integrate metal tie rods which frame into the top of the exterior masonry wall or the wood roof framing, depending on location. The tie rods are anchored to the exterior wall assembly with rectangular metal plates which are exposed on the exterior in multiple locations. The metal tie rods extend at least to the corridor support line.

Although initial observations of the existing conditions are concerning based on the magnitude of the failure of the interior finishes, the building is in a repairable state. The majority of the observed damage results from water infiltration through the roof or exterior wall assemblies. Repair of the interior roof drains and associated piping, replacement of the roofing assemblies, and repair of localized steel shelf angles within the facade are recommended to maintain the good condition of the building's structural system. The existing windows require replacement (frames and sash). The building's structural system is generally in good condition, though localized structural repairs are needed near the damaged internal roof drains. A majority of the interior finishes require replacement. Further detail of the observed distress is provided below.

### Facade

The masonry walls are in fair condition. Localized cracking and displacement of the masonry was observed, which is primarily attributed to prolonged water penetration into the wall assembly and corrosion of the embedded steel support elements. At least two previous masonry restoration projects

have been completed at this building based on the observed brick unit replacement types. These past projects appear to have included installation of flashing at isolated window heads, rebuilding of localized parapet areas, and masonry repairs at the chimney. The repaired areas are generally in good condition, though cracking and outwardly displaced masonry was observed at some shelf angles where flashing was added, which indicates continued corrosion of the embedded steel elements. Rehabilitation of the building should include repair of these masonry elements to mitigate continued deterioration of the exterior wall assembly, development of potential falling object hazards, and water infiltration to the building interior.

Cast stone and limestone copings are present at the perimeter of the low-slope roof areas. The limestone coping units located over the gymnasium and stage wing are in good condition. The cast stone coping units located elsewhere on the building are in poor condition and have been capped with sheet metal. Several cast stone units are cracked and spalled, and the sheet metal cap is corroded and has weathered and failed sealant at the seams. Rehabilitation of the building should include replacement of the sheet metal, and repair or replacement of the cast stone copings.

The surface mounted plates that engage the tie rods to the exterior walls are present at the top of the walls and located below the sloped roof areas. These plates and tie rods likely were installed to provide supplemental lateral support for the top of the masonry wall to resist the roof thrust resulting from the sloped wood framed roof. Evidence of brick displacement or other distress was not observed at these areas, nor was evidence of prior masonry repair. The exposed plates are recommended to be cleaned, assessed, and recoated. Localized replacement of the tie rods may be required as described below.

The mechanical penthouse walls contain significant spalling of the brick masonry units due to water penetration, freeze thaw damage, and the presence of mortar with higher strength than the individual brick units. These deteriorated walls should be rebuilt.

The aluminum covers over the original wood window frames are displaced or missing at some window locations. Where visible, the original wood frames exhibited severe decay and the window sashes are typically missing. At some locations, steel pulley elements that remain from the original operable sash components are visible within the frame elements, which may be contributing to the corrosion staining on the stone sills below. Plywood coverings, which were previously installed over some original windows are displaced or missing, which is permitting unintended weather exposure to the interior elements and reduces building security. Such temporary window coverings should be maintained to mitigate further water infiltration-related distress and deter vandalism. The wood framed building entrances also show evidence of decay. Rehabilitation of the building should include replacement of the window and door assemblies.

## Roofing

The roofing assemblies are in poor condition. Visible areas of the low-slope membrane roofing are cracked, worn, and exhibit seam failures. Some areas of the asphalt shingles are missing at the sloped roof areas, and sheet metal flashing elements at adjacent terminations are generally missing or pulled away from the substrate surfaces. Rehabilitation of the building should include removal and replacement of the existing roofing assemblies.

At the base of the sloped roof areas, the internal sheet metal gutters are corroded, displaced, and have cracked seams in some areas. The cast stone cornices below are water stained and contain localized cracks and spalls. At roof areas that drain to exterior downspouts, the exterior downspouts are damaged and sometimes missing, resulting in significant moisture penetration and freeze-thaw damage to the masonry below. The internal roof drains and drain piping are typically failed, which permits water into the building interior. Rehabilitation of the building should include replacement of the internal gutter, downspout, drain, and drain pipe systems.

## Structure

In general, the structure is in good condition. Many of the interior finishes are extant, but the finishes near damaged roof drain locations are severely damaged. The structure exhibits signs of initial deterioration related to the water infiltration at these isolated locations.

The majority of the wood framing of the roof above the fan room is visibly saturated with fungal growth present. Daylight was observed between the sections of wood plank roof deck, indicating the roofing has failed over this space. The fan room roof structure is recommended to be replaced and should be coordinated with the replacement of the roofing assembly.

At the junction between the bay window low roofs and the second story exterior wall, in the northern kindergarten room and at the southern stairwell and entrance, concrete deterioration was observed due to water infiltration from the roofing and facade systems. Significant cracking is present in the brick masonry in the southern stairwell related to the water infiltration in this area. The masonry will require rebuilding of at least the inner wythe, and the concrete will require partial depth overhead repairs.

The wood framed, sloped roof structure is restrained from roof thrust acting on the perimeter masonry walls with the steel tension rods, as observed from both the exterior and at select areas of the interior where the finishes are missing. At the exterior brick masonry wall of Classroom 200, the tension rod is corroded and expanded at the interior face of the wall. This tension rod may require full replacement; however, evaluation of the exterior walls in this area is recommended to verify the purpose and need for these components.

Surface corrosion was observed at exposed steel structural elements due to deteriorated finishes from extensive water infiltration. The exposed steel is recommended to be cleaned, assessed, and recoated. Vertical cracking of the masonry was observed on both the exterior and interior gymnasium and stage perimeter walls. The masonry distress is likely related to corrosion of the steel bearing plates or columns embedded within the masonry; however, further investigation into the cause of the cracking is warranted.

The balcony floor structure and supporting structure in the gymnasium consist of wood construction and were visibly wet. In addition, the wood roof framing between the steel trusses that support the roof over the gymnasium was visibly wet and water was ponded in the plumbing trench located below the locker rooms underneath the eastern balcony. Localized reinforcement or replacement of the wood roof framing and balcony framing is anticipated and should be coordinated with facade repairs and roof replacement as applicable.

Ponded water was observed in the basement level preventing access to the basement spaces. The basement should be dewatered, which will allow for assessment of the basement level structure prior to the implementation of other recommendations stated herein.

## **Miscellaneous**

The top surface of the floor in the second-floor janitor's closet is visibly dropped to the southwest. Distress was not observed on the underside of this floor structure in the Stage Dressing Room below. Further investigation should be performed to review the displacement and evaluate the floor structure to determine if this is a structural issue or related only to the interior finish materials.

Many of the finishes of the classroom walls, specifically those oriented perpendicular to the exterior wall, and the finishes of the stairwell walls, are cracked vertically or diagonally along the length of the walls and previous repair efforts to address the cracks were evident. The cracking may be related to thermal or volumetric changes in the wall materials or relative stiffness of the walls within the structural frame system of the building. Further assessment of these cracks is recommended. If the underlying cause of the cracking is not determined, the cracks may recur after rehabilitation and remain an ongoing maintenance item.

PLOT PLAN  
 MOMMIER SCHOOL  
 BOARD of EDUCATION  
 CITY of DETROIT  
 Landscape Department  
 Drawn by S.H. Nov. 14, 1924.

3.80 Acres.

N. 

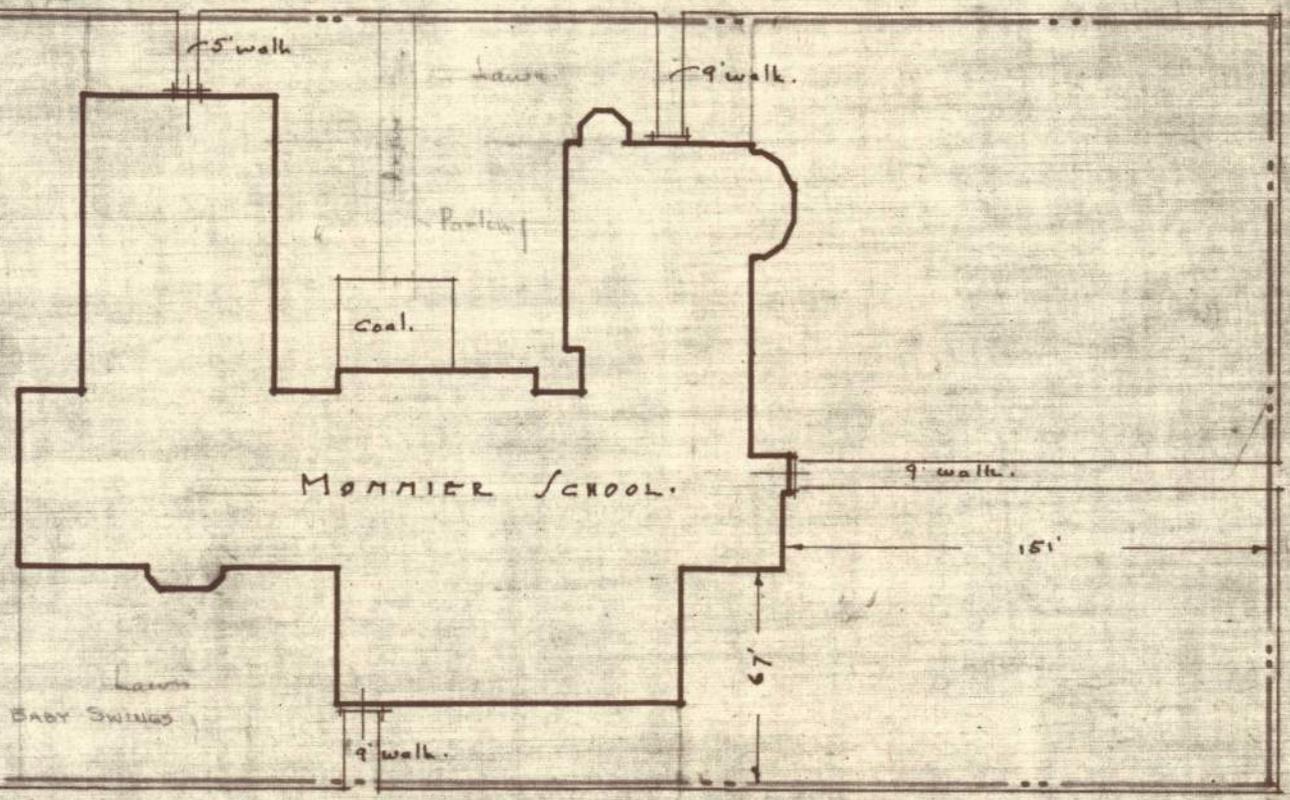
Scale 1" = 60'

SORRENTO Av. 50'

DAVISON AVE 50'

Alley

Playground.

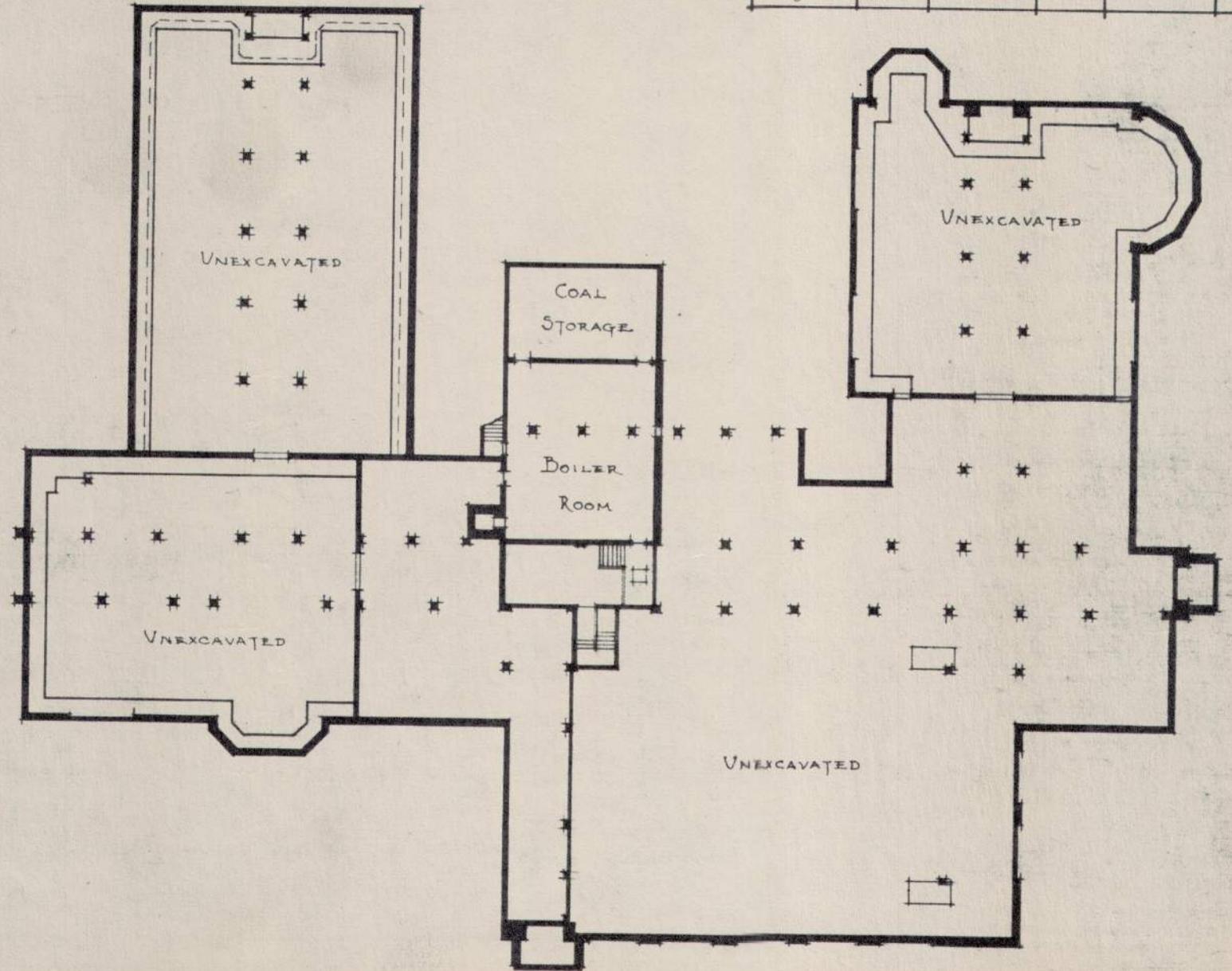


WARD AVE. 50'

• MONNIER SCHOOL •

DEPT. of ARCHITECTURAL ENGINEERING  
• BOARD of EDUCATION •  
DETROIT, MICH.

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
<i>Jed</i>	9-10-24	SCHULZ	11-6-24	G.L.S.	11-6-24



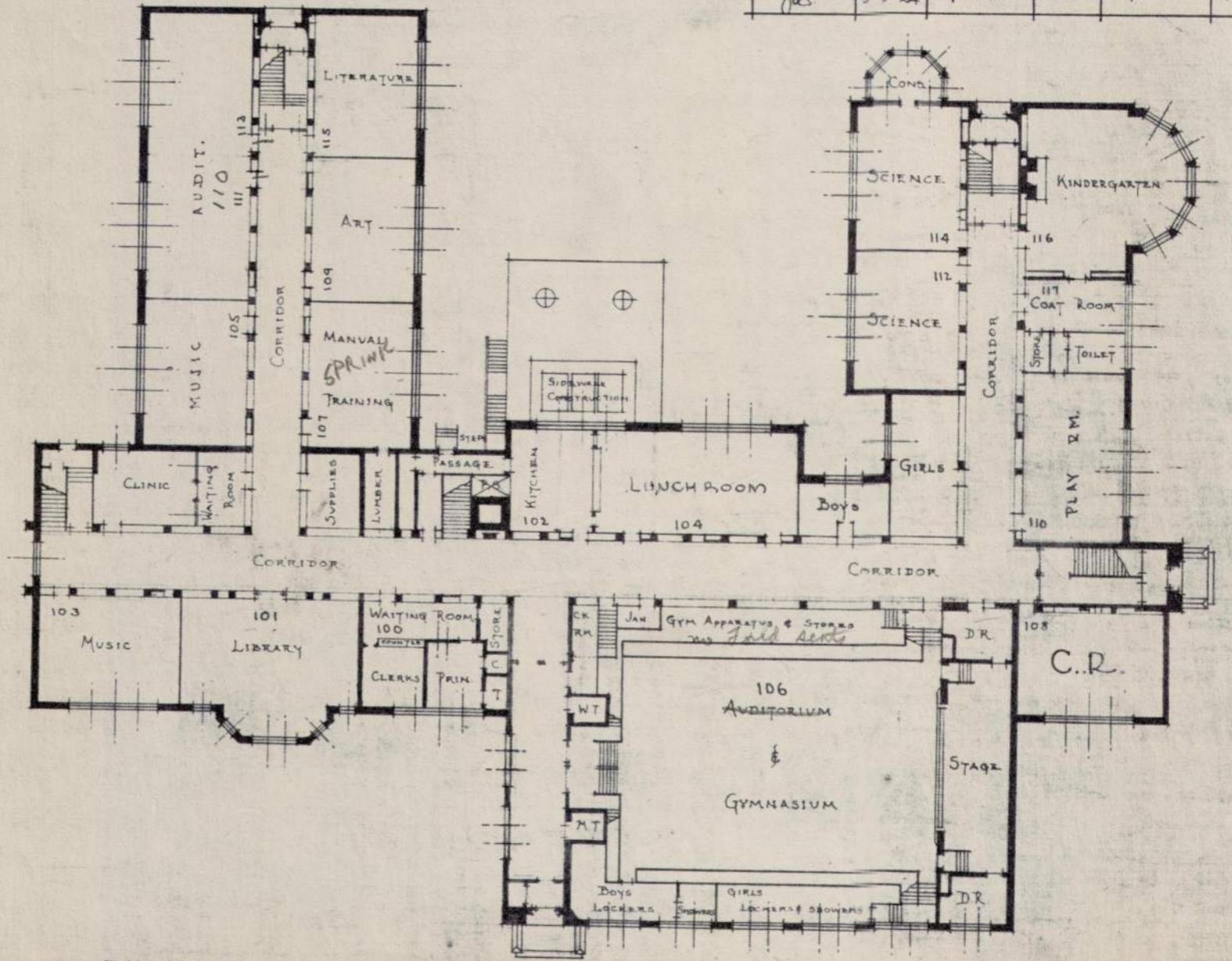
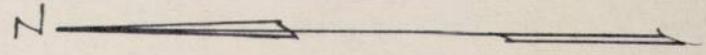
• BASEMENT PLAN •  
SCALE: 1" = 32'-0"



• MONNIER SCHOOL •

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DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
J.E.B.	9-9-24	G.L.S.	11-6-24	G.L.S.	11-6-24

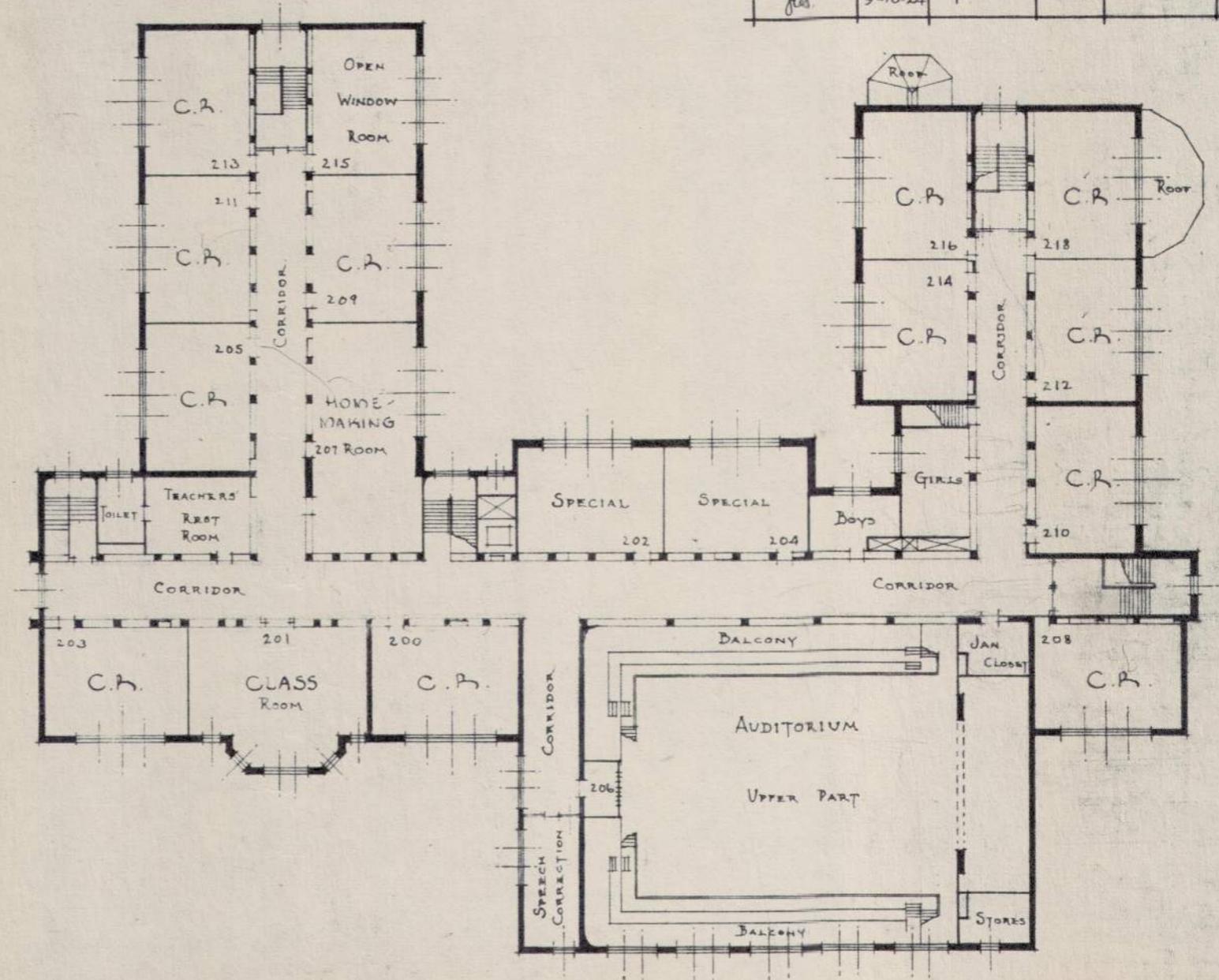


→ • FIRST FLOOR PLAN • ←  
 SCALE: 1" = 32'-0"

° MONNIER SCHOOL °

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 DETROIT, MICH.

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
<i>Jel</i>	9-10-24	G. L. S.	11-6-24		



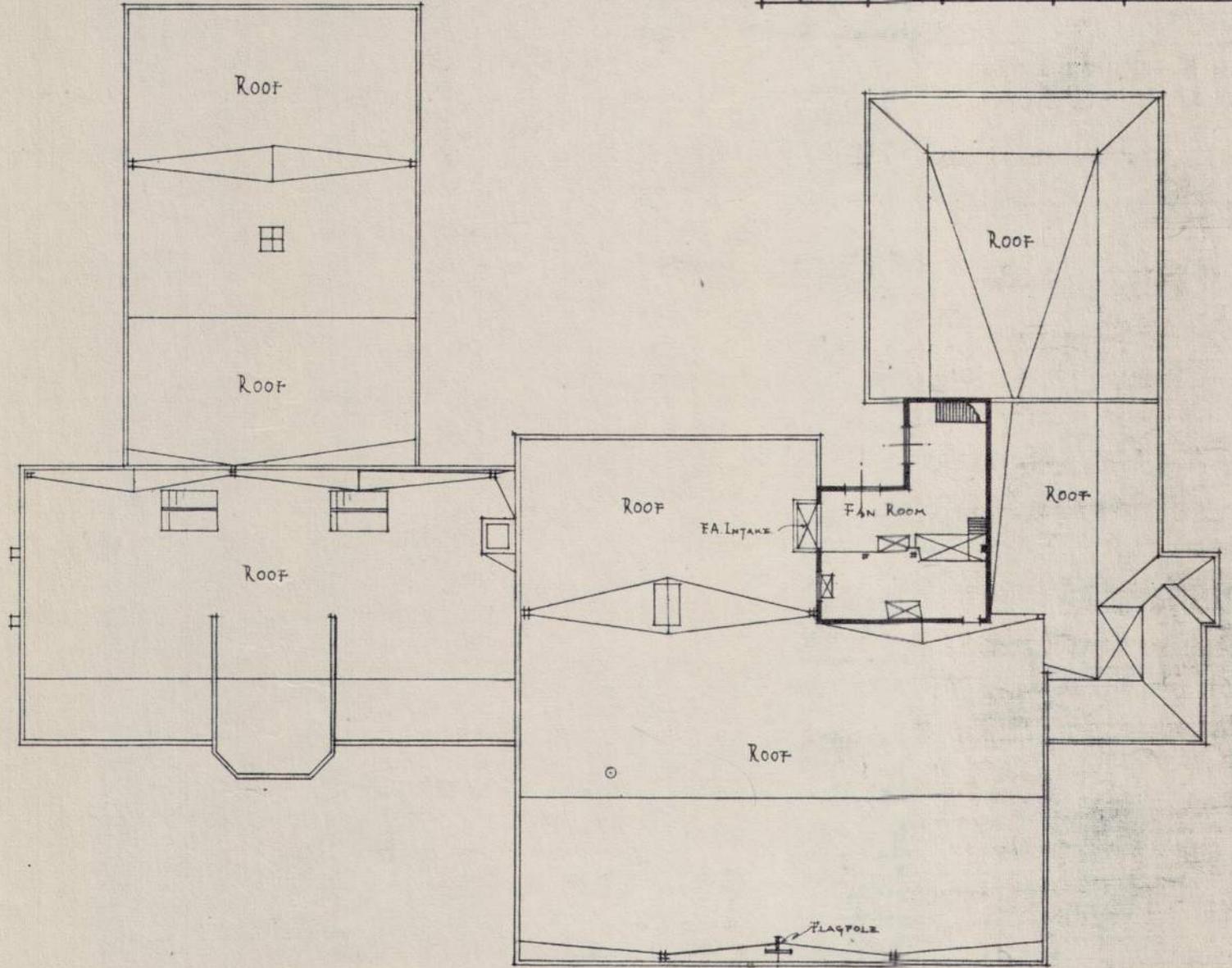
° SECOND FLOOR PLAN °

→ SCALE: 1'-0" = 32'-0" ←

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DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
JES	9-10-24	G.L.S.	11-6-24		



• ROOF PLAN •  
SCALE: 1'-0" = 32'-0"