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VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Sampson Elementary School

Basic Property Information: COD 6-Sampson-6075 Begole

Short Name:	Sampson
Address:	6075 Begole Street Detroit, Michigan 48210
Year Built:	1911
Additions Built:	1920, 1921
Outbuildings:	None
Year Vacated:	2007
Building Footprint:	210 feet x 240 feet
Square Footage:	76,851 sq. ft.
Number of Stories:	3
Building Height:	40 ft.

Current Ownership:	City of Detroit	**Structural Framing System:**	▪ Cast-in-Place Concrete ▪ Precast Concrete ▪ Brick Masonry ▪ Wood
City Council District:	6	**Exterior Wall System:**	▪ Brick ▪ Limestone
SNF District:	NA	**Window System(s):**	▪ Wood ▪ Aluminum
		Roofing System(s):	▪ Modified Bitumen (assumed) ▪ Internal Roof Drains ▪ Scuppers ▪ Stone Ballast

Assessment Summary

Assessment Date:	March 19, 2020
WJE Inspector(s):	Cheryl Early; Sarah Rush
Report Date:	November 22, 2020
Building Risk Index:	**91.48**

Cost Estimate

Base Rehabilitation Cost Estimate:	$2,470,500
Preparation for Rehabilitation Work:	$900,00
Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft):	$6,148,080
Sub-Total	$9,518,580
Contingency (25%):	$2,379,645
Sub-Total	$11,898,225
Overhead and Profit (15-18%):	$1,189,822
Sub-Total	$13,088,047
Escalation (6% for 2 years)	$785,282
Sub-Total	$13,873,330
Architectural and Engineering Design Services (20%):	$2,774,666
TOTAL COST ESTIMATE:	$16,647,996

ASSESSMENT METHODS

Visual Survey

As requested, Wiss, Janney, Elstner Associates, Inc. (WJE) performed a visual review of the building envelope and structure to assess the viability of the building for reuse. WJE was joined by Mr. Andrew Wald of Interboro Partners and Ms. Jennifer Ross of City of Detroit Planning and Development Department. During the time on site, Mr. Wald gathered information pertinent to the general building site and layout of the building, and Ms. Ross assessed the condition of the historic fabric of the building.

WJE performed a visual review of the building facade from grade, using binoculars as needed. Roof levels were inaccessible due to a lack of roof ladder access. 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 finishes are in a state of deterioration in localized areas, exposing portions of the structural framing systems in these locations. Up-close examination of building elements and destructive inspection openings involving the removal of building finishes to review underlying conditions were generally not performed.

WJE's observations were documented with tablets and digital photography. WJE has shared our field data with Interboro Partners; City of Detroit Planning and Development representatives; and A.M. Higley Company, the cost estimator for this project. Each observed condition is documented in the field data and assessed as discussed under "Risk Characterization" below. A summary of the conditions observed is provided in the "Building Overview" section below.

Limitations of Assessment

Limited to four hours on site, WJE visually assessed the exposed portions of the building envelope and structure. Recognizing the limitations on visually detecting distress from afar and the limitations on detecting concealed internal distress, the assessment may not include all current conditions. As such, completion of this assessment is not an indication, certification, or representation that all deterioration or hazards have been observed or recorded, including underlying deterioration not evident from the building exterior or interior. Additionally, the conditions of the building elements discussed herein are exposed to further damage and deterioration due to the existing condition and unoccupied status of the property, and as such, WJE cannot state the conditions discussed herein will remain unaltered and as observed during the visual survey. However, we have performed these assessments in accordance with the requirements of applicable regulations and the applicable standard of care for architects or structural engineers performing such services.

WJE identified structural or building envelope issues that have significant impact on the viability of future reuse of the property. Items posing little risk such as regular maintenance items are not included in the assessment. The assessment was limited to within the walls of the building; on-grade walkways, access roads, parking lots, landscaping, play structures, or other site features were excluded from this assessment. The assessment, remediation, and identification of hazardous materials (e.g., asbestos, lead, etc.) or other environmental issues were also excluded. Based on WJE's past experience with building rehabilitation projects, WJE has assumed existing mechanical, electrical, plumbing, interior finishes, and other building

systems are anticipated be removed and replaced with future reuse of the building, and as such, were not included in WJE's assessment.

Document Review

WJE performed a cursory review of documentation provided by Interboro Partners to gain familiarity of the property. The documentation provided included:

- Site Plan (included with this report)
- Floor Plans (included with this report)
- Environmental Reports
- National Register of Historic Places Registration Form

Other documents, such as original construction drawings, specifications, or maintenance records, were not made available for our review.

Risk Characterization

WJE has categorized each significant area of distress, damage, or deterioration observed with a systematic methodology to provide an objective, quantitative characterization of its relative condition and associated risk, or its Condition Risk Index (CRI). The CRI is based on the primary building system affected by the condition and the condition's severity, prevalence, and the associated consequence of failure. A higher CRI score indicates that observed conditions embody relatively higher risk than conditions with a lower CRI. The CRI is the product of each of the rankings below multiplied and normalized to meet a maximum score of 100 per condition.

Specifically, the CRI assigns a numerical value to the following:

- System (Structural, Roofing, Facade, Other)
  Conditions affecting the structure are assigned a higher rating than those affecting the facade or roofing systems. Other includes items such as non-load bearing partition walls and exterior steps, and are assigned a lower rating.
- Building Performance Impact (Minor, Moderate, Advanced, Critical, Imminently Hazardous)

  This parameter addresses the severity of the impact of the observed condition on the performance of the affected building system. Imminently Hazardous is assigned the highest rating. For example, a crack in a concrete slab may be a minor distress, but a damaged prominent skylight is considered advanced distress. Imminently hazardous conditions are discussed immediately with Interboro Partners and the City of Detroit representatives.
- Size/Distribution (Isolated/Infrequent/Frequent/Widespread/Pervasive)

  In short, this parameter rates how large and/or frequent a condition is with respect to the entire affected building system/component. Pervasive is assigned the highest rating. Examples include: an isolated step crack in a masonry wall versus pervasive corrosion of metal floor decking throughout a building.

- Consequence of Failure (Low, Moderate, High)

  This parameter allows inspectors to exercise judgment regarding general risk to the public, considering the unoccupied status of the buildings. High is assigned a higher priority, and, for example, might be assigned to a condition whose failure would result in potential harm within the public right of way. Conditions rated with a high consequence of failure are discussed immediately with Interboro Partners and the City of Detroit representatives.

The CRI for each observed condition is summed to calculate a total Building Risk Index (BRI), as provided in this report. The reported BRI is therefore a numerical expression of the relative risk present at one property, as compared to other properties in the scope of this assessment.

Both the CRI and the BRI are expressions of WJE's professional opinion of the relative significance of an observed condition to other building conditions, and the collective relative risk of the structural and building enclosure elements of this property. Neither the CRI nor the BRI are an expression of actual risk or probability of occurrence of any event. The CRI for each condition is tabulated in WJE's electronic field notes. The BRI provides a numerical tool for the project team and the property owners to compare and make decisions about this property and the other properties included in this overall effort, in context with the cost estimate, market analysis and community input. Both the CRI and BRI are intended only for this assessment project. The numerical values do not have substantive meaning beyond the context of the Vacant Historic School Buildings Disposition Plan project.

Recommendations

Recommendations developed in the assessment are conceptual and are intended for budgetary and planning considerations. Recommendations are provided within the narrative below, and in the field data provided. It is not the intent or purpose of this report or the field data to direct a contractor to bid, or otherwise implement, the recommendations. Significant additional investigation by various professional disciplines is necessary to develop appropriate scopes of repair and rehabilitation efforts to enable the re-use of any facility included in this assessment.

Cost Estimating

The rehabilitation costs are opinions of probable construction cost and have been developed with the assistance of A.M. Higley Company, a contractor familiar with rehabilitation of historic buildings. The costs have been developed for evaluating the relative cost of repair of distressed conditions as well as establishment of order-of-magnitude repair budgets. They are based on national construction cost data, adjusted based on the local construction market, and our experience with similar past projects.

Understanding the rehabilitation cost may vary depending on type of future occupancy, this assessment assumes the building will be rehabilitated to a weathertight and "grey box" condition with unfinished walls, flooring and ceilings; no mechanical, electrical, plumbing or other building systems installed. The costs assume the rehabilitation work would occur in 2022 and are not inflated should the work occur in future years.

In addition to this "grey box" base rehabilitation cost, an allowance, based on percentage of costs and square footage of the building, is delineated for:

- Preparation for Rehabilitation Work
- Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft)
- Contingency (25%)
- Overhead and Profit (15-18%)
- Escalation (6% for 2 years)
- Architectural and Engineering Design Services (20%)

The preparation for rehabilitation work item includes mobilization, hazardous material abatement as well as salvaging for potential later duplication or re-installation pertinent historic interior finishes identified by the City. For the purposes of the cost estimating effort, all roofing replacement or repair work is recommended to be performed with like-kind materials; all windows are assumed to be replaced with new commercial window assemblies in lieu of restoration of existing elements, and any exterior doors are to be repaired or replaced in like-kind. Where like-kind materials may no longer be available, WJE will offer alternative materials for the cost estimating purpose. For rehabilitation design and construction efforts, further evaluation of each of these elements is recommended. All work is recommended to be performed as per the Secretary of Interior's Standards for The Treatment of Historic Properties.

The condition-based subdivision of repair recommendations used to develop the base cost estimate is not representative of how a repair program could be implemented to remediate building conditions. Moreover, the costs assume that all repairs would be remediated in the same rehabilitation project. Execution of separate repair projects, or phasing of the rehabilitation project, could result in increases in the total repair cost. Furthermore, the final scope of repair work and the actual repair costs may vary depending on underlying or concealed conditions that were not apparent during our limited assessment.

Overall

The original portion of the building was constructed in 1912, with additions constructed in both 1920 and 1921 projecting to the west and north of the original building, respectively resulting in a 'J'-shaped structure. The roofs of each section of the building are low-slope surfaces. Punched wood framed windows are present at each floor, including windows located directly at grade which allow daylight into basement rooms. The first and second floor levels have nearly identical layouts.

The facade primarily consists of multi-wythe clay brick masonry laid in running-bond with no header courses visible within the exterior wythe in the field of the wall. Limestone accents are present throughout the facade at the entrances, window sills, coping, and the belt course. A limestone cornice wraps around the building perimeter, located at the head of the second story windows, with a brick masonry parapet above. Windows are wood framed with aluminum caps while the doors are metal framed.

The roofing could not be assessed in the field, but based on available aerial images, the original portion of the building appears to consist of modified bitumen roofing with an aluminum coating while the building additions are likely a gravel surfaced, bituminous built-up roof. All roof areas are internally drained, though scuppers and downspouts are also present at the north wing addition.

The original 1912 structure consists of wood joist and rafter construction spanning between mass masonry exterior walls with structural steel beams and columns located within the central corridor walls. The structural floor and roof systems of the additions consist of concrete tee joist-slab construction with stay-in-place clay tile forms. The auditorium roof is framed with gypsum planks supported on structural steel beams. The vaulted flat slab and supporting beams at the fuel room are comprised of conventionally reinforced concrete.

Although initial appearances of the existing conditions are concerning based on the magnitude of the failure of the finishes, the building is in a repairable state. Despite the lack of roof level access, the roof drains were visibly failing from the interior and several mechanical units were missing, both of which provide openings for direct water infiltration into the building interior. Given the damages observed on the interior due to failures in the roof system, it would be reasonable to consider replacement of the roofing, including roof drains and associated conductors, to mitigate further damage to the interior finishes and structural elements. Localized roof repairs may be possible in some roof areas to extend the service life of the existing assemblies. The windows and doors are largely missing or damaged and require replacement. The facade is generally in fair condition with the observed distress largely resulting from water infiltration and subsequent corrosion of embedded steel elements. The wood structural systems of the original building are significantly deteriorated near roof drain locations at the exterior walls, but the structure is in good condition. The steel reinforcing of the vaulted slab and beam structure of the fuel room is exposed and significantly corroded, warranting concrete repairs. Further detail of the observed distress is provided below.

Facade

The masonry is generally in serviceable condition, though distress related to water penetration is present in localized areas. At least two previous masonry repair projects have been completed at the building based on the observed brick unit replacement types and variations in the repair detailing. These past projects included localized flashing repairs, rebuilding of localized brick areas, and localized repointing of

mortar. One of the masonry repair projects included appropriate detailing and largely remains in good condition. Repairs performed during the other, possibly older, effort show indications of continued deterioration. Severe corrosion of the steel lintels was noted at some locations, which has resulted in significant cracking and outward displacement within the brick masonry and limestone accent bands adjacent to the lintels. Locations containing significant masonry distress should be rebuilt with new steel lintels and appropriate flashing details; some replacement limestone units will be required. Lintels with only minor corrosion and limited masonry distress may require only maintenance repairs to extend the life of the associated elements, such as cleaning and painting the exposed steel surfaces. Isolated cracked brick units should be replaced and deteriorated mortar should be grinded and pointed. These repairs are recommended to mitigate further distress within the wall assembly.

A majority of the mortar within the joints at the brick parapets is deteriorated, which likely relate to deficiencies in the roof terminations and flashings. Where downspouts are present, some sections are missing, resulting in water-related deterioration of the brick and mortar below. Some previous repointing repairs in these regions are visibly distressed. Repairs should include grinding and pointing of distressed mortar to mitigate further water penetration within the wall assembly. Similar pointing repairs are recommended at the projected limestone entrance surrounds and cornice, where widespread mortar deterioration is present.

Common brick is present at the base of the facades with unsound patch materials and debonded membrane flashing materials at some locations. Where the common brick is exposed, the masonry was generally sound with localized areas of mortar deterioration. Rehabilitation of the building should include removal of the unsound patch and membrane materials, repointing of unsound mortar, and installation of an appropriate surface-applied repair material and waterproofing detailing to mitigate water penetration into the wall assembly and further masonry distress.

The brick masonry chimney contains localized step cracks and areas of visibly displaced masonry, indicating that the chimney as a whole may have experienced lateral or torsional stresses, and the lateral support system between the individual brick wythes may be compromised in some areas. Close-up investigation should be performed to verify the extent of distress and determine appropriate repairs, as the roof level was inaccessible during our assessment. Anticipated repairs include repointing localized step cracks and monitoring to determine if the distress progresses. If the distress recurs, repairs are anticipated to include crack repairs with supplemental reinforcing and possible reconstruction or pinning of displaced masonry. A deteriorated metal strap is also present near the limestone chimney cap; repairs should include removal of the strap and improved detailing at the cap to mitigate water penetration.

The majority of the windows are missing or damaged with missing sashes, missing and decayed frames, missing and displaced aluminum covers, and/or broken glass. Plywood covers the windows and should be maintained to mitigate further water infiltration-related distress and deter vandalism. Many of the metal doors are dented or corroded. Rehabilitation of the building should include replacement of window and door assemblies.

Roofing

The roof areas were not accessed at the time of this assessment due to a lack of roof ladder access. Where visible from grade, vertical roofing terminations are failed, including open and displaced flashings with

base flashings that were no longer adhered to the masonry substrates. The observed masonry deterioration within the parapet further suggests that water is penetrating into the wall assembly, potentially due to failed base flashings or joints between the coping units. A majority of the water infiltration within the building interior was observed to be a result of failed drains, drain conductors, and missing rooftop mechanical equipment, though several classrooms on the upper floors remained dry. Rehabilitation of the building should consider removal and replacement of the existing roof assemblies and replacement of the internal drains and conductors, and external downspouts. However, repairs may be possible in some regions to extend the service life of the existing roof assembly.

Structure

Overall, the structure is in good condition, but the amount of water infiltrating the building, primarily at the roof drain locations, is causing localized deterioration and decay of the structural systems.

In particular, the wood floor systems at the exterior walls of the original portion of the building are fully deteriorated creating unsafe conditions in these areas. The floor does not require temporary repair provided access is prohibited until full replacement of the structural floor members and decking can be implemented as part of the rehabilitation of the building.

The concrete tee joist-slab floor and roof systems of the building additions are exposed in select areas and were wet at the time of the assessment. The vaulted slab and beam system over the fuel room at the basement level is in poor condition with corroded steel reinforcement exposed for extended lengths of the slab and beam spans. Previous concrete repairs of the beams have failed. Stalactites are extending down at the crack locations in the flat slab structure. Partial depth concrete repairs are required at the majority of this slab and beam system, although alternative solutions to replace the structure or infill the basement space could be considered.

Water infiltration has caused corrosion of isolated gypsum roof planks located over the auditorium, steel lintels throughout the building, and deterioration of clay brick masonry most notably at the roof drain locations. Each of these areas require appropriate repairs for the respective material, but none are of significant structural concern due to their limited occurrences within the building.

Miscellaneous

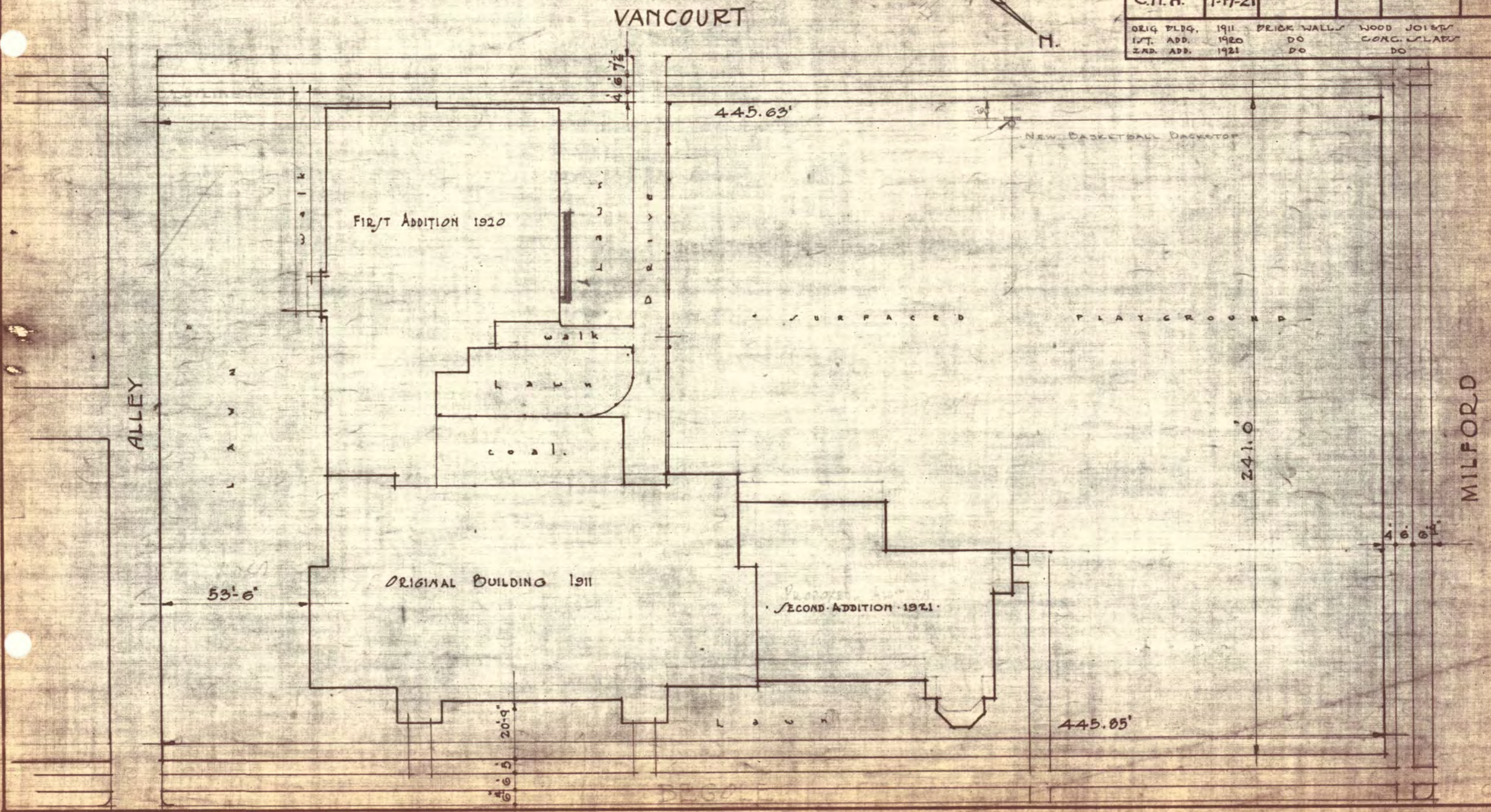
The interior walls of the north addition are cracked at mid-length of the walls. Repairs had been attempted at some of the crack locations. Further investigation is recommended to determine the cause of the distress, but it is suspected to be related to the water infiltration occurring and thermal or volumetric changes in the wall materials. Cracking within these walls may be related to the relative stiffness of the walls within the structural building frame system. Repair of the plaster finishes is recommended if the walls and finishes are to remain with the new building use. These cracks may recur after rehabilitation and remain an ongoing maintenance item unless the underlying cause of the cracking is further assessed and mitigated.

SAMPSON SCHOOL
DETAIL OF SITE
scale 1" = 40'-0"

DEPT. OF ARCHITECTURAL ENGINEERING
BOARD OF EDUCATION
DETROIT MICH.

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
C.M.A.	1-17-21				

ORIG BLDG.	1911	BRICK WALLS	WOOD JOISTS
1ST. ADD.	1920	DO	CONC. SLABS
2AD. ADD.	1921	DO	DO

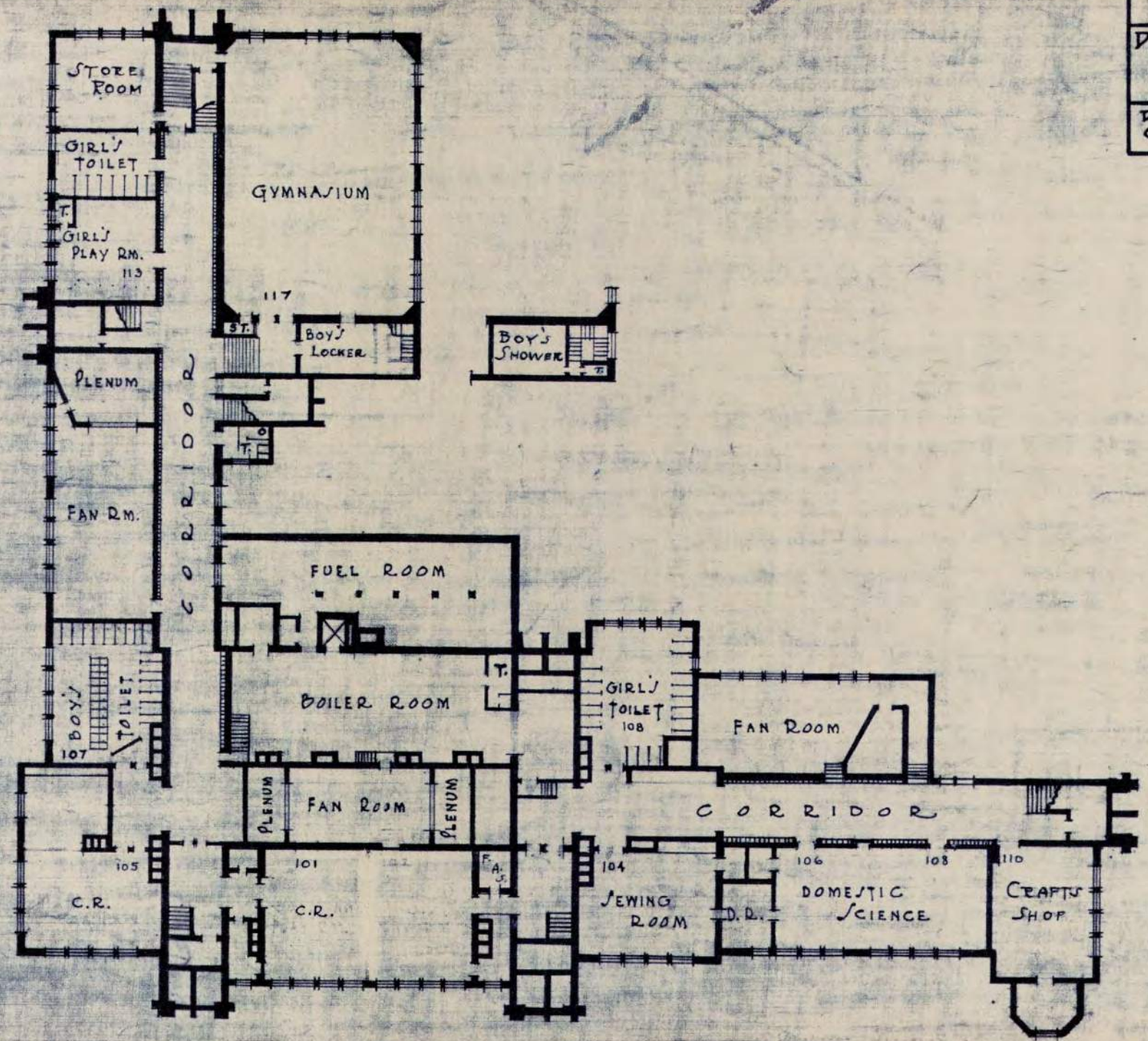


SAMPSON SCHOOL
BASEMENT FLOOR
Scale 1" 32'-0"

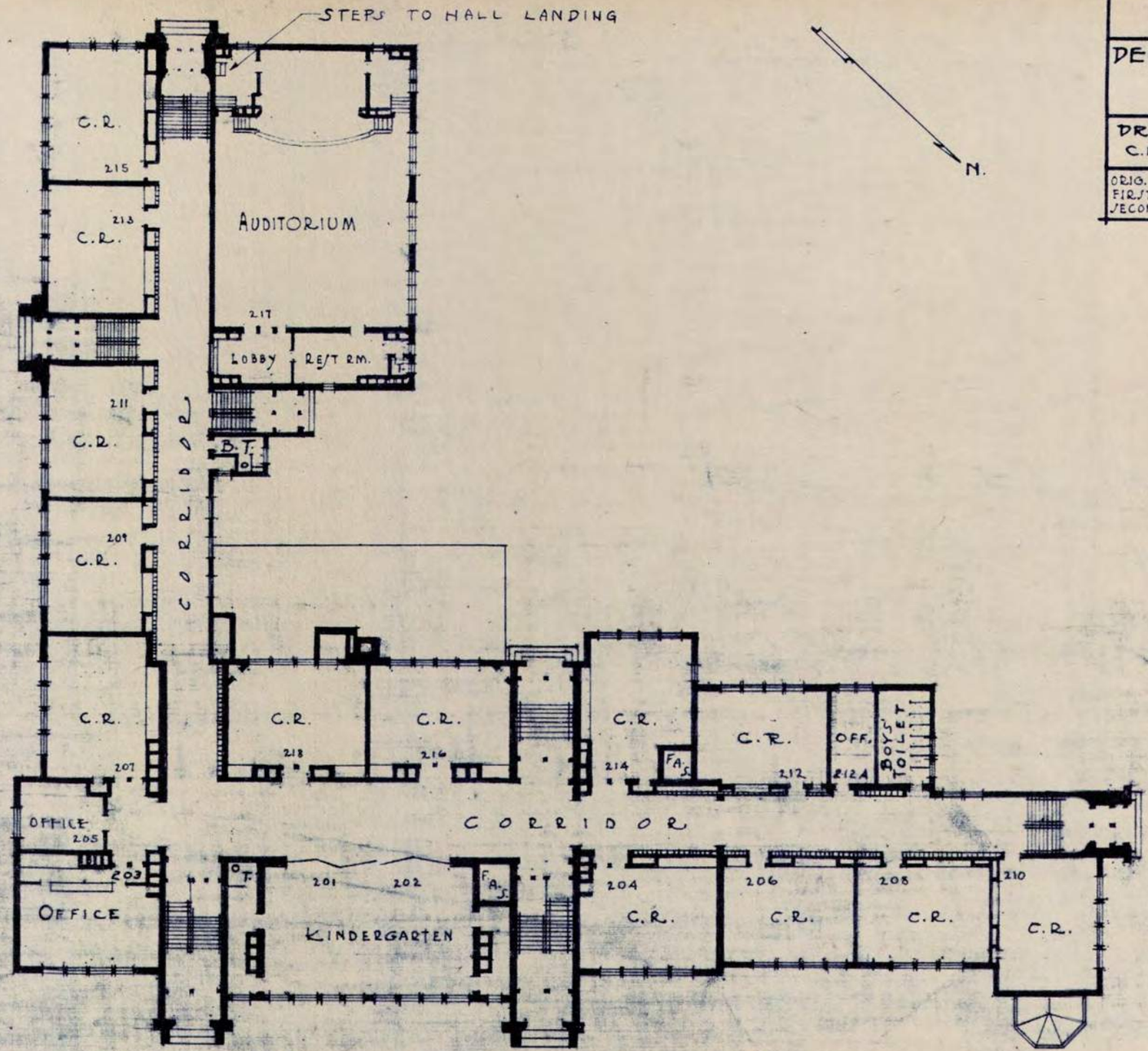
DEPT OF ARCHITECTURAL ENGINEERING
BOARD OF EDUCATION
DETROIT MICH.

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
C.H.A.	1-17-21				

REVISED. 7-11-46. R.D.



BASEMENT PLAN
SCALE - 1/32 = 1'-0"



FIRST FLOOR PLAN
SCALE-1/32" = 1'-0"

N.

SAMPSON SCHOOL
FIRST FLOOR PLAN
Scale 1" = 32'-0"

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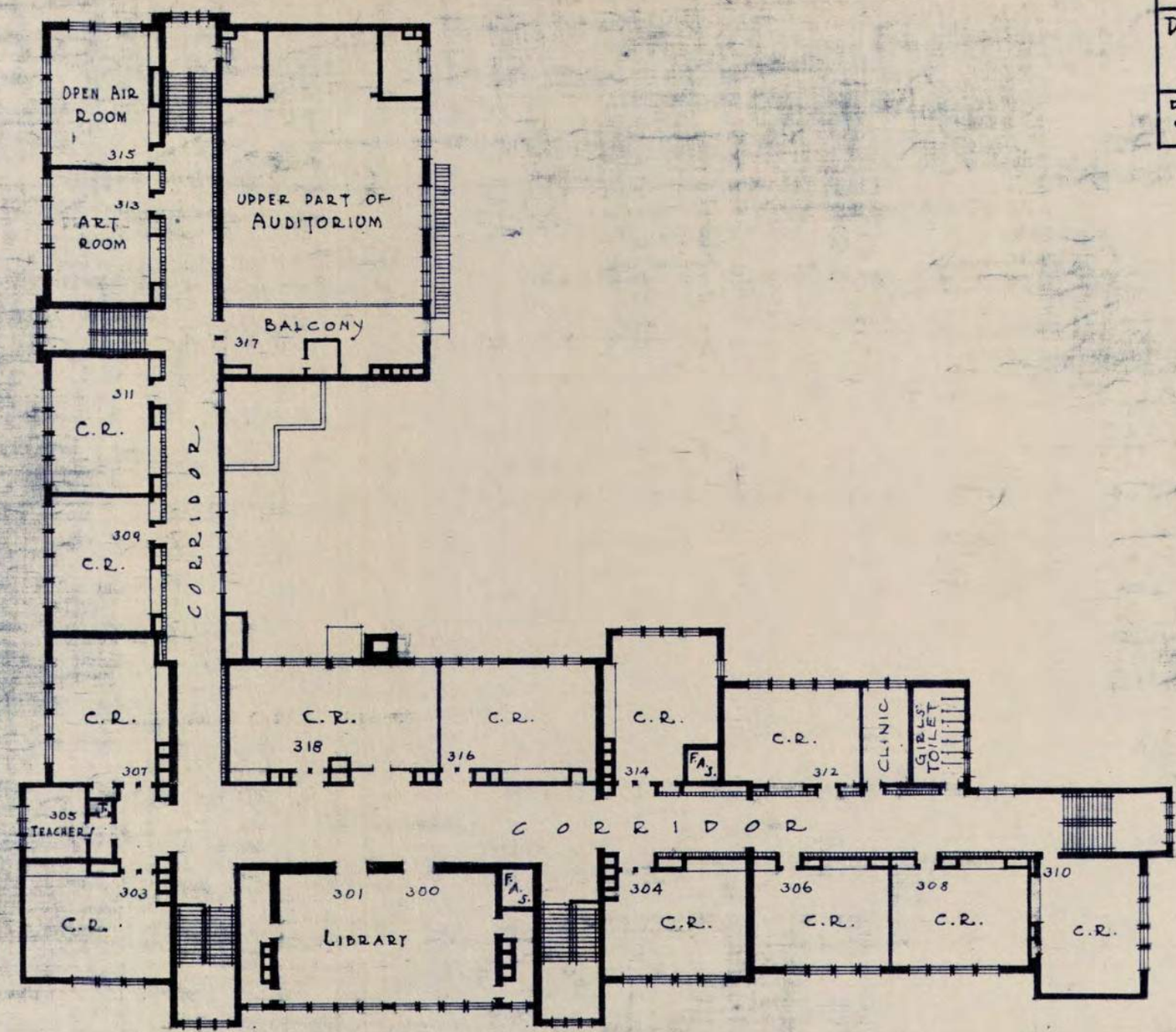
DETROIT MICH.

DRAWN	DATE	CHECKED	DATE	APPROVE	DATE
C.N.A.	1-17-21				

ORIG. BLDG.	1911	BRICK WALLS	WOOD JOIST
FIRST ADD.	1920	DO.	CONC. SLABS
SECOND ADD.	1921	DO.	DO.

REVISED. 7-11-46. R.D.



SECOND FLOOR PLAN
SCALE - 1/32" = 1'-0"

SAMPSON SCHOOL
SECOND FLOOR PLAN
Scale 1" = 32'-0"

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DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
C.M.A.	1-17-21				

REVISED. 7-11-46. R.D.