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VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Parkman Elementary School

Basic Property Information: COD 7-Parkman-15000 Mackenzie

Short Name:	Parkman
Address:	15000 Mackenzie Street Detroit, Michigan 48228
Year Built:	1940
Additions Built:	1948, 1952
Outbuildings:	Powerhouse
Year Vacated:	2005
Building Footprint:	210 feet x 155 feet
Square Footage:	40,788 sq. ft.
Number of Stories:	2
Building Height:	27 ft.

Current Ownership:	City of Detroit	**Structural Framing System:**	▪ Cast-in-Place Concrete ▪ Brick Masonry ▪ Structural Steel
City Council District:	7	**Exterior Wall System:**	▪ Brick ▪ Limestone
SNF District:	NA	**Window System(s):**	▪ Steel-Framed
		Roofing System(s):	▪ Modified Bitumen ▪ Internal Roof Drains

Assessment Summary

Assessment Date:	February 18, 2020
WJE Inspector(s):	Cheryl Early; Sarah Rush
Report Date:	November 20, 2020
Building Risk Index:	**46.08**

Cost Estimate

Base Rehabilitation Cost Estimate:	$1,275,700
Preparation for Rehabilitation Work:	$900,000
Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft):	$3,263,040
Sub-Total	$5,438,740
Contingency (25%):	$1,359,685
Sub-Total	$6,798,425
Overhead and Profit (15-18%):	$1,019,763
Sub-Total	$7,818,188
Escalation (6% for 2 years)	$469,091
Sub-Total	$8,287,280
Architectural and Engineering Design Services (20%):	$1,657,456
TOTAL COST ESTIMATE:	$9,944,736

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 buildings, 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 roof levels, using binoculars as needed. On the interior, WJE performed a walkthrough of accessible areas of each floor of the buildings, including the first floor of the powerhouse. The basement level is flooded, including the basement of the powerhouse, and thus, was not accessed. 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 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
- 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 original1940 building is a two-story structure, nearly square in footprint, and is located in the current southwest corner of the building. Within twelve years, two additions were added to the north and east, respectively, of the original building creating the current "U" shaped footprint of the building. The first addition was constructed in 1948; the second addition was constructed in 1952. A powerhouse, connected to the main building at the basement level, is located north of the 1948 addition.

The facade generally consists of multi-wythe clay brick masonry with concrete masonry (CMU) backup. Limestone masonry accents frame the entrances, window sills, coping, and horizontal bands. The building entrances contain original wood double doors, and the windows are original steel-framed windows. The low-slope roofing consists of a granular surfaced modified bitumen roofing membrane with aluminum faced base flashings. These roof areas are internally drained or contain hanging gutters.

The primary structural system consists of cast-in-place concrete floors spanning to concrete, or steel encased in concrete, beams and columns. Depending upon location within the building, the concrete roof and second floor are of flat slab and tee joist-slab with stay-in-place concrete masonry form construction. Both exterior and interior walls are of concrete masonry construction throughout the building. A portion of the first-floor structure over basement plenum spaces consists of precast concrete plank. The roof structure of the powerhouse consists of a board-formed concrete deck supported by steel beams and the perimeter masonry walls.

In general, the buildings are in good condition with the majority of observed distress resulting from water infiltration into the building due to removed and damaged copings and deterioration of the internal drains. Removed coping stones have allowed for direct water infiltration into the wall assembly and damage to the roofing and interior finishes. Repair of the roof elements are critical to maintain the sound condition of the existing structure. The original steel-framed windows and wood doors can be restored. Structural system distress was isolated in occurrence and is directly related to the distress in the building envelope. Further detail of the observed distress is provided below.

Facade

The masonry walls are in good condition, but are showing early signs of deterioration that will progress into more significant repairs if the ongoing bulk water infiltration into the wall assembly from deficiencies in the roofing and coping are not addressed. Localized areas of steel lintel corrosion was observed, which has resulted in masonry distress in some areas, including cracking, spalling, displacement and staining of the brick surfaces. The brick masonry is cracked near the top of the walls at some of the rounded building corners, which is attributed to corrosion of adjacent steel lintels or corroded anchors from adjacent wall mounted elements. Localized limestone units at the entrances are spalled due to corrosion of the embedded steel anchors. Rehabilitation of the building should include repair of the distressed masonry elements and embedded steel support elements to mitigate further distress.

The limestone coping units have been removed and set on the roof levels or are currently located at the base of the walls. Removal of these units has been attributed to vandals to access the copper flashing elements previously located below the coping stones. Where the flashing has been removed, the roofing

membrane is typically pulled away from the masonry substrate, resulting in bulk water infiltration at those regions. Rehabilitation of the building should include the installation of new flashings and resetting the existing coping stones. Some of the existing coping stones are cracked or damaged, and may require replacement units. In the near term, temporary repairs should be considered to address the ongoing water management issues and stabilize the observed deterioration within the wall assemblies and building interior.

The original steel-framed windows are in good condition with minor corrosion, paint failure, and localized areas of damaged framing elements and missing glass. Where exposed, the original wood exterior doors are generally in fair condition with minor decay and paint failure. The original window and door assemblies can be restored.

The original conservatory is also largely intact with minor deterioration of the wood and metal frame and glass elements. Rehabilitation of the building could include restoration of the original conservatory depending on the future building use.

Roofing

The roofing assemblies are in poor condition, largely due to the missing limestone and flashing elements and deterioration of the internal drains. Localized cracking and seam failures were observed, and deterioration of the roof insulation was noticed underfoot in several areas. Water was ponded at some drain bowls, and organic growth was observed in some areas. A majority of the water infiltration within the building interior was observed to be a result of failed drains pipes, which are positioned within the interior walls, though several of the classroom wall and ceiling finishes were intact and dry. Rehabilitation of the building should include removal and replacement of the existing roof assemblies and replacement of the internal drains and drain pipe systems. In the near term, temporary roofing repairs should be considered to address the ongoing water management issues and stabilize the observed deterioration within the wall assemblies and building interior.

Structure

The structure is in good condition; exhibiting distress at only isolated locations.

Water staining was apparent throughout, but more noticeably in the eastern, 1952 addition where active water infiltration was observed between the concrete and concrete masonry stay-in-place formwork. At the east, single story alcove on the southeast corner of the building, the reinforced concrete roof deck is deteriorated at its exposed edge, resulting from missing flashing and roofing deterioration of this small roof area. Concrete repairs at this location are recommended to be coordinated with the recommended roofing repairs.

In the gymnasium, steel corrosion, primarily of the perforated metal ceiling system but also of the steel roof beams, is present at the perimeter of the ceiling. In the powerhouse, the exposed steel beams are corroding in the proximity of the roof drain. From a distance, the corrosion in each location appears to be minor, but should be further assessed to determine if reinforcement of the steel is required and to verify the condition of the structural roof deck above the perforated ceiling system. After assessment and at minimum, the steel is recommended to be cleaned and re-coated with a rust inhibiting paint.

The second-floor corridor ceiling of the 1952 addition 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 multiple 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 in this area of the building.

Approximately three feet of ponded water was observed in the basement level preventing access to the basement spaces. The portions of the basement walls and underside of the first-floor structure visible from the point of access are in good condition with no distress observed. The basement should be dewatered allowing for assessment of the basement level, prior to the implementation of the recommendations stated herein.

Miscellaneous

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

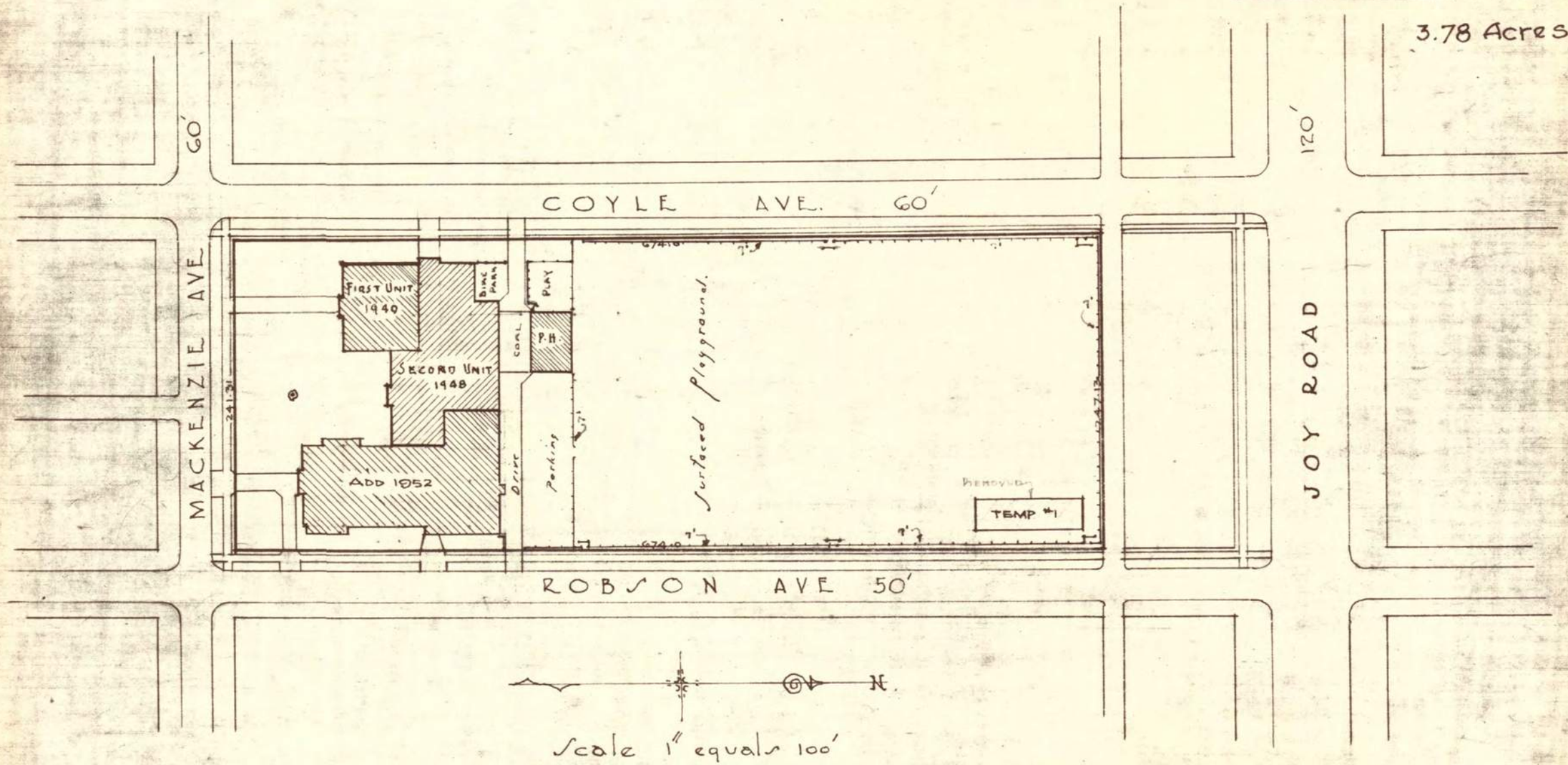
Some of the CMU walls are cracked at exterior wall corners and along interior walls, most notably the east and south walls of the gymnasium. Repairs had been attempted at some of the crack locations. Further investigation is recommended to determine the cause of the distress, but it is suspected to be related to the water infiltration occurring and thermal or volumetric changes in the wall materials. 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.

PARKMAN SCHOOL
PLOT PLAN

ARCHITECTURAL PLANING DEPT.
BOARD OF EDUCATION
DETROIT MICHIGAN

Drawn by LM. Oct 23/30 Revised by S4. 1948 Feb. Revised 5/19/55 DC. Revised 6/22/55 G.J.

3.78 Acres.



Scale 1" equals 100'

Revised 6/19/63 P.C.

PARKMAN
BASEMENT PLAN

ARCHITECTURAL PLANING DEPT.
BOARD OF EDUCATION
DETROIT, MICHIGAN

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
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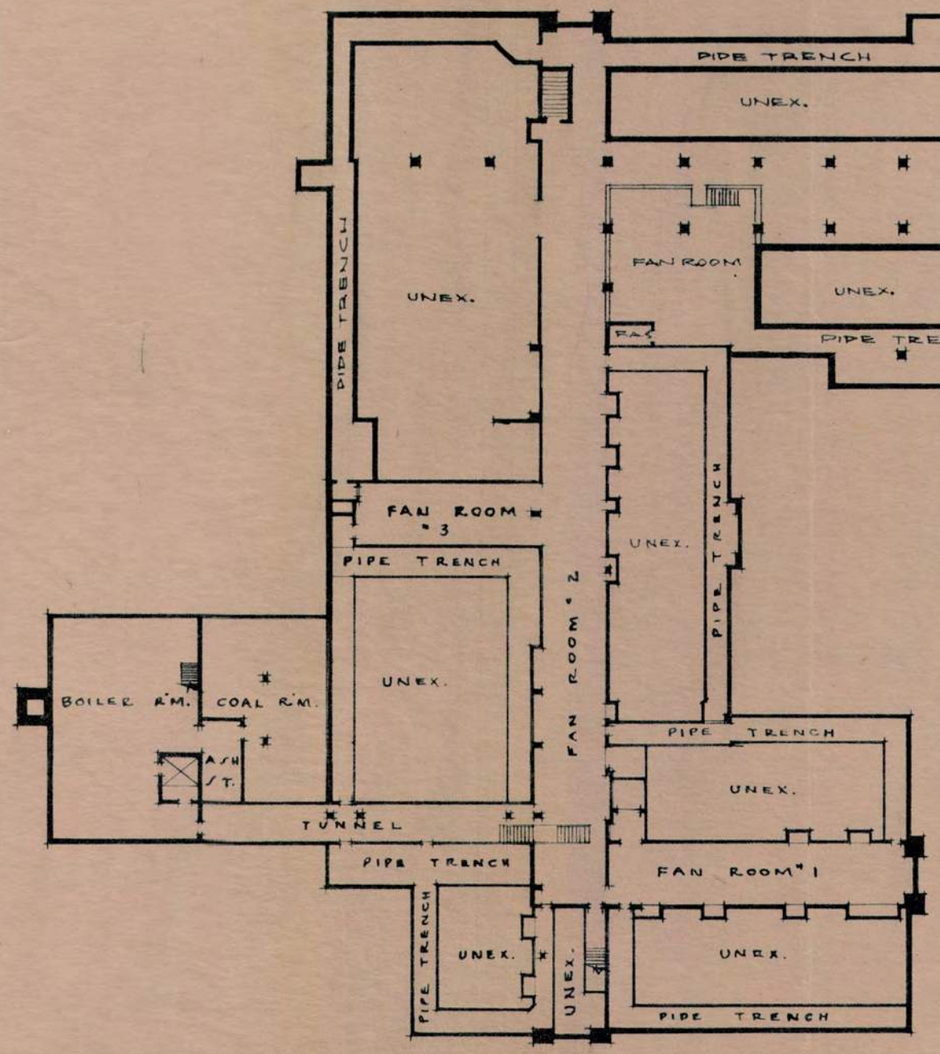

Revised 5/19/53

PARKMAN
FIRST FLOOR PLAN

ARCHITECTURAL PLANING DEPT.
BOARD OF EDUCATION
DETROIT, MICHIGAN

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
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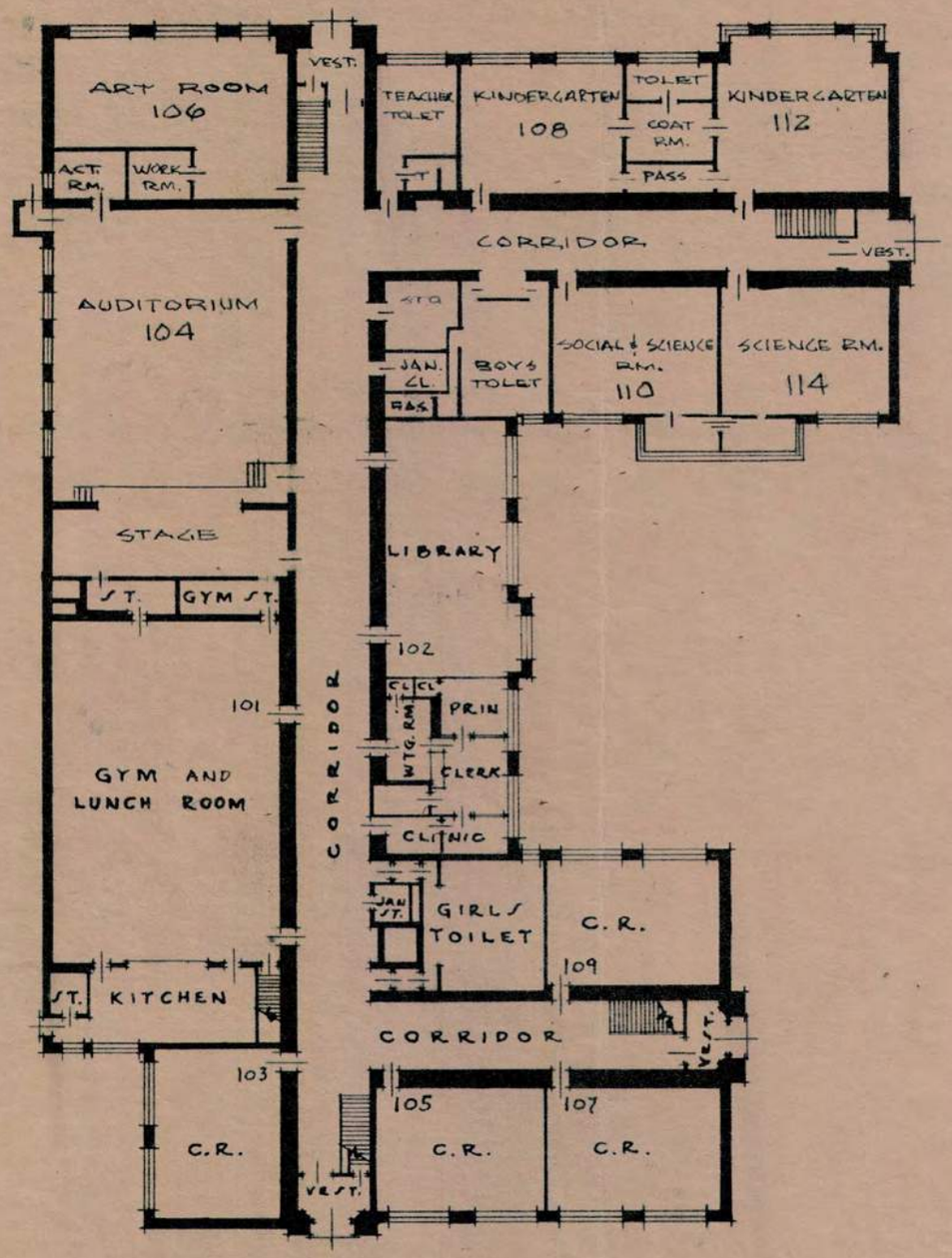

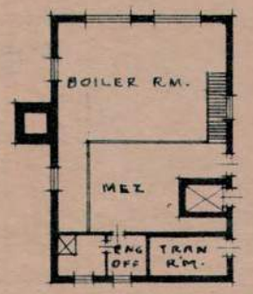

REVISED 5/19/53 R.C.

PARKMAN
SECOND FLOOR PLAN

ARCHITECTURAL PLANING DEPT.
BOARD OF EDUCATION
DETROIT, MICHIGAN

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
G.H.M.	11-29-46	LANSING	7-16-53		

SCALE 1/32" = 1'-0"