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VACANT HISTORIC SCHOOL BUILDINGS DISPOSITION PLAN

City of Detroit RFP# 19BW2717

Building Envelope and Structural Assessment Report

Fisher Magnet/Burbank School

Basic Property Information: COD 3-Burbank-15600 E State Fair

Short Name:	Burbank
Address:	15600 East State Fair Street, Detroit, Michigan 48205
Year Built:	1930
Additions Built:	1943, 1948, 1992
Outbuildings:	Powerhouse
Year Vacated:	2006
Building Footprint:	450 feet x 205 feet
Square Footage:	86,346 sq. ft.
Number of Stories:	2
Building Height:	33 ft.

Current Ownership:	City of Detroit
City Council District:	3
SNF District:	G7M

Structural Framing System:	■ Cast-in-Place Concrete ■ CMU ■ Structural Steel ■ Wood
Exterior Wall System:	■ Brick Masonry ■ Limestone ■ Cast Stone ■ Terra Cotta
Window System(s):	■ Steel ■ Aluminum
Roofing System(s):	■ Gutters ■ Internal Roof Drains ■ Modified Bitumen (assumed) ■ Built-up Roofing ■ Gravel Surfaced

Assessment Summary

Assessment Date:	June 09, 2020
WJE Inspector(s):	Cheryl Early; Sarah Rush
Report Date:	November 10, 2020
Building Risk Index:	**64.26**

Cost Estimate

Base Rehabilitation Cost Estimate:	$2,587,600
Preparation for Rehabilitation Work:	$900,000
Mechanical, Electrical, Plumbing, Fire Protection ($80/sq ft):	$6,907,680
Sub-Total	$10,395,280
Contingency (25%):	$2,598,820
Sub-Total	$12,994,100
Overhead and Profit (15-18%):	$1,299,410
Sub-Total	$14,293,510
Escalation (6% for 2 years)	$857,610
Sub-Total	$15,151,120
Architectural and Engineering Design Services (20%):	$3,030,224
TOTAL COST ESTIMATE:	$18,181,344

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 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 envelope from grade and roof levels, using binoculars as needed. The roof over the east 1990s addition was inaccessible due to a lack of ladder access to the roof hatch. On the interior, WJE performed a walkthrough of accessible areas of each floor of the building. The basement level is flooded and 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 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 building is comprised of multiple building areas with varying facade, roof, and structural assemblies. The school was originally constructed in the early 1930s on the northwest end of the property and was rectangular in plan. A large addition was constructed in the early 1940s at the southwest portion of the property, which completes the U-shaped plan of the current western portion of the building. A second addition was constructed in the late 1940s, which includes a second-story expansion and a small single-story construction on the southeast side of the building that houses a gymnasium/cafeteria. Another large expansion was completed on the east side of the property in the early 1990s, more than doubling its previous footprint. A powerhouse with connecting vaulted slab areas at the basement level is located within the interior courtyard that is confined between the main west and east building areas. A large screen wall with an overhead door is present on the south facade, which serves as the courtyard entrance, and conceals the powerhouse from view from the exterior.

The original building and 1940s facades are similar in construction and generally consist of clay brick masonry with concrete masonry unit (CMU) and concrete brick backup. Decorative brick masonry coursing is present at the building entrances, pilasters, and spandrels. Limestone units accent the building entrances, window sills, parapet copings and are present at horizontal bands below the first floor windows and above the first and second floor windows. Decorative terra cotta units are present at pilasters above the entrances and between windows, as well as in the center of the spandrels. Original steel-framed windows are present in punched wall openings and the building entrances consist of conventional steel doors. Some window openings have been infilled with brick masonry. The low-slope roof consists of an internally drained, smooth surfaced, modified bitumen or built-up roofing (BUR) system. Gutters and downspouts are present on some lower roof areas in lieu of internal drains. Small rooftop penthouses are present at the main roof of the original building, which have pitched roofs covered with asphalt shingles over structural wood framing. The floor and roof structures consist of concrete tee joist-slabs spanning between the exterior walls and concrete beam and column systems located within the corridor walls of the original building. In the 1940s era construction, the floors consist of concrete flat slabs spanning to a concrete beam and column system. The concrete beams and columns for either era of construction could be of structural steel members encased in concrete in lieu of reinforced, cast-in-place concrete.

The facade of the 1990s addition at the east end of the property primarily consists of brick masonry veneer in a running bond and cast stone belt courses with CMU backup. Aluminum windows are present in punched wall openings and building entrances consist of convention steel doors and transoms. A bronze colored sheet metal roof edge flashing extends around the building perimeter and sheet metal copings are present at rising walls throughout the roof areas. The low-slope roof consists of an internally drained, gravel surfaced, bituminous BUR with granular cap sheet base flashing. The roof structure consists of metal deck over open web steel joists which span between load bearing CMU walls. Steel beams are located over openings in the CMU load bearing walls. The roof structure is sloped, and spray-applied fireproofing is present on the steel framing. A fan room with a concrete and steel beam framed floor structure is located above the central most rooms of the addition.

Overall, the original building and 1940s additions are in good condition, though significant masonry and roofing distress will need to be addressed as part of a rehabilitation effort. Damage to these systems are largely related to missing limestone coping units at the parapets and subsequent prolonged water penetration into the masonry wall assembly. The large 1990s addition is in good condition with only minor repairs recommended to maintain the building systems; however, isolated windows facing the courtyard are missing and will require replacement. The structural systems throughout the building are in excellent condition with isolated areas of distress observed which are primarily caused by water infiltration through failed areas of the building envelope or vandalism activity. Further detail of the observed distress is provided below.

Facade

The exterior masonry walls are generally in fair condition. The facade of the original building and 1940s additions exhibit signs of deterioration (i.e. cracking and spalling) consistent with masonry that is exposed to prolonged water penetration and freeze/thaw cycling of entrapped moisture. This water penetration is primarily related to deficiencies in the roofing and copings. These conditions should be addressed in the near term to avoid worsening of the distress to the level at which significant repairs are required. Isolated cracking and masonry displacement were also observed throughout the facade, which is primarily attributed to corrosion of the embedded steel support elements. Though isolated areas of masonry distress are present within the east 1990s addition, the majority of the 1990s facade is in good condition.

At the original building and 1940s additions, cracked and displaced areas of brick masonry were observed near the top of the wall at building corners and spalled brick masonry was observed at both sides of the parapets. The existing limestone coping units have been removed and set on the roof adjacent to the parapets at several locations, likely due to vandalism to access the copper flashing elements previously located below the coping stones. Where flashings have been removed, the top of the masonry parapet is fully exposed and the roofing membrane is typically pulled away from the masonry substrate, resulting in a direct avenue for moisture penetration into the masonry wall assembly below. Therefore, most of the masonry distress at the upper wall areas and parapet is due to water penetration and freeze/thaw deterioration where the copings and flashings were removed and/or failed. On the south end of the west facade, the extent of water infiltration has resulted in significant water staining, efflorescence, and mortar deterioration. Rehabilitation of the building should include a combination of isolated masonry repairs (i.e. repointing, localized brick rebuild) and full-depth rebuild of the parapets where displacement and instability are most severe. In addition, the parapet repairs should include installation of new flashings and resetting, or replacement, of the existing limestone coping stones. In the near term, temporary repairs and coverings over the exposed masonry parapets should be considered to address the ongoing water management issues and stabilize the observed deterioration within the wall assemblies and building interior.

Numerous limestone header units are spalled, cracked, or displaced at the horizontal band above the second floor windows and at the intermittent banding course above the first floor windows. The cracking and spalling is located at the top and bottom edges of the stone units. The localized spalling at the top of the units is due to corrosion of embedded lateral anchors, which are exposed in some locations, and the spalling at the base of the units is due to corrosion of embedded steel lintels below. The limestone header units are recommended for removal and replacement/resetting to adequately repair the corroded steel

elements, and in conjunction with the recommended parapet rebuilding work. Some terra cotta units located at the top of the masonry pilasters are cracked near corroded steel window lintels or near corners that are confined by the adjacent masonry and were not able to accommodate differential movement of the surrounding materials. Some terra cotta units exhibit localized spalls or corrosion staining on the surface, which is attributed to water penetration and corrosion or lintels above or embedded anchorage. Rehabilitation of the building should include repair of these limestone and terra cotta elements to mitigate water infiltration into the wall assembly and building interior, and to mitigate further distress in the facade elements.

Beyond the regions of concentrated masonry distress, localized lintels are corroded, resulting in isolated step cracks and debonded mortar. Isolated vertical cracks are present in the brick masonry chimney, which should be repointed. These regions should be repaired by grinding and pointing deteriorated mortar, replacing isolated cracked brick units, and removing masonry to clean and paint the steel lintels with improved water management details and flashings.

The original steel-framed windows are in serviceable condition. Minor levels of surface corrosion, paint failure, and localized areas of damaged framing elements and missing glass were observed. The aluminum windows within the east 1990s addition are in good condition where present, though windows are missing on the facades facing the interior courtyard. Louvers within the rooftop units over the original building are missing. The conventional steel doors generally exhibit minor dents, corrosion near the base, missing glass within lites and transoms, and failed sealant, though several door leaves are missing or are significantly damaged. Rehabilitation of the building should include repair of the existing window and door assemblies and replacement of isolated windows, louvers, and doors as required.

A conservatory is located on the south facade of the original building within the west courtyard. The cast iron frame elements are largely intact with some missing components and minor corrosion observed throughout. Glass is missing in the lites of the original wood window frames and the wood framing exhibits paint failure and wood decay. Significant vegetation has taken root on the interior of the space and is extending through the roof and walls. The window system will likely require replacement after the vegetation is removed. However, the structural frame can be salvaged, cleaned, assessed, and re-coated if desired with isolated framing elements in need of replacement. Alternatively, replacement of the entire conservatory window and structural frame system may be a viable, cost-effective option depending on future building use.

Roofing

The roofing assemblies over the original building and 1940s addition are generally in poor condition, largely due to the missing limestone copings and copper flashing elements, damaged base flashings, and deterioration of the roofing at internal drains. Localized cracking and seam failures were observed throughout the surface of the exposed roof membrane, and “soft spots” were noticed when walking across the surface of the roof, which is indicative of wet, moist, or displaced roof insulation. Several rooftop mechanical units are missing, resulting in openings through the roof into interior space below. Water was ponded at some drain bowls, and organic growth and vegetation were observed in some areas of the roof surface and near failed drains. Rehabilitation of the building should include removal and replacement of the existing roof assemblies and replacement of the internal drains and drain pipe systems

at these building areas. Repairs to the roofing perimeter may be possible in some regions to extend the service life of the existing system in lieu of replacement as an immediate temporary measure.

The roofs over the east 1990s addition are in good, serviceable condition and require only minor maintenance-type repairs to extend the service life of the existing systems.

At the original building penthouses, the roofing is missing and significant decay of the wood plank sheathing and wood framing was observed. These roofs will require reconstruction (structural and roofing) during rehabilitation of the building. Alternatively, these penthouses could be demolished and/or modified to fit the needs for the new building use.

Structure

Beyond the wood roof framing for the penthouses at the roof level of the original building and isolated concrete and masonry distress related to water infiltration and vandalism, the structural systems of the original building and additions are in excellent condition. The few structural concerns are described below.

Isolated areas of concrete distress were observed in the 1940s addition, including cracking of the flat concrete slabs and cracking of the spandrel concrete beams. Many of the cracks in the slabs are oriented parallel to the span of the slab, thus may not require repair providing water infiltration is mitigated through envelope repair efforts. Localized areas of partial depth concrete repair are anticipated for select spandrel beams in Classrooms 202 and 205, and isolated locations of the flat slab systems throughout the 1940s addition. The concrete is recommended to be further evaluated for potential freeze-thaw material distress in areas of significant water infiltration.

Isolated areas of masonry distress were observed throughout the interior of the building. Arch action appears to be supporting a segment of brick masonry wall at the doorway for Classroom 205; proper support for this masonry should be provided if the doorway is to remain with the new building use. In the 1990s addition, the CMU has been vandalized and removed in the locker rooms, leaving steel roof beams minimally supported on the CMU that remains. Proper support for the roof beams is to be provided.

In the 1940s gymnasium, corrosion is present along the length of at least one of the box beams located below a perforated metal ceiling system which is also visibly corroded. Step cracking, previously repaired, was observed in the CMU exterior wall below a box beam and may be related to corrosion of the beam at that location. Further investigation of the condition of the box beams, especially at the beam bearings, and the roof structure above the ceiling system is recommended.

The basement was not fully accessible during the walkthrough inspection due to ponding water in the fan room. However, WJE was able to make observations from the basement plenum in the northeast corner of the building. The concrete slab-on-ground, walls, beams and slab exhibited no distress where accessible. The basement should be de-watered allowing for additional assessment of the basement level prior to the implementation of the recommendations stated herein.

Miscellaneous

Cracking within select walls and wall finishes, such as interior classroom and stairwell walls, may be related to the water infiltration occurring, thermal or volumetric changes in the wall materials, or the relative stiffness of the walls within the structural building frame system. Repointing of the cracked mortar joints

and replacement of cracked CMU 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. Vertical cracking in the CMU walls was also prevalent in the gym and auditorium spaces of the 1990s addition. The vertical cracking is suspected to be related to roof drainage systems constructed within these walls, and the masonry can be repointed and cracked units replaced after the drainage systems are properly repaired.

Some localized masonry infill areas and partition walls are damaged resulting 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 extant attic catwalk over the second-floor corridors consists of nominal 2x boards on flat supported on steel ceiling framing members. Water staining and fungal growth were common on these boards. Consideration to replace the catwalk to meet current code requirements as required for potential new building use is recommended.

PLOT PLAN.
BURBANK SCHOOL.

DEPT. of BUILDING & GROUNDS.
BOARD of EDUCATION.
DETROIT MICH.

drawn by. SJ.
3. 11. 35.

SCALE 1" = 60'

STATE FAIR AVE 66'

CRUSADE AVE 60'

REX AVE 60'

TACOMA AVE. 60'

LAWN

FIRST UNIT 1931.

40'

207'

℄

DRIVE

597.47'

Surfaced.

PLAYGROUND.

COAL

P. H.

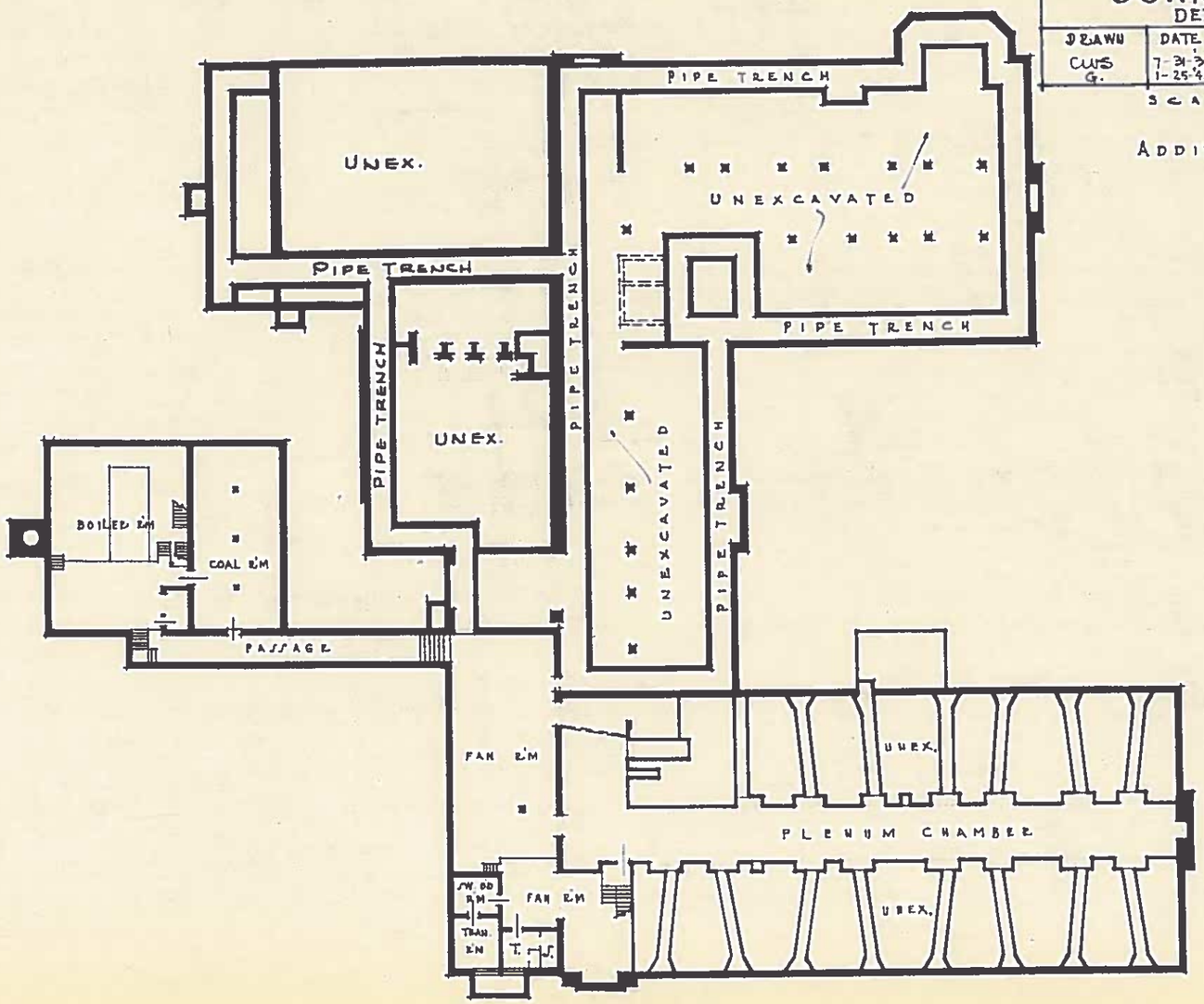
BURBANK SCHOOL
BASEMENT PLAN

DEPARTMENT OF BUILDINGS & GROUNDS
BOARD OF EDUCATION
DETROIT — MICHIGAN

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
CWS G.	7-31-31 1-25-43				

SCALE 1/32" = 1'-0"

ADDITION FEB. '44.

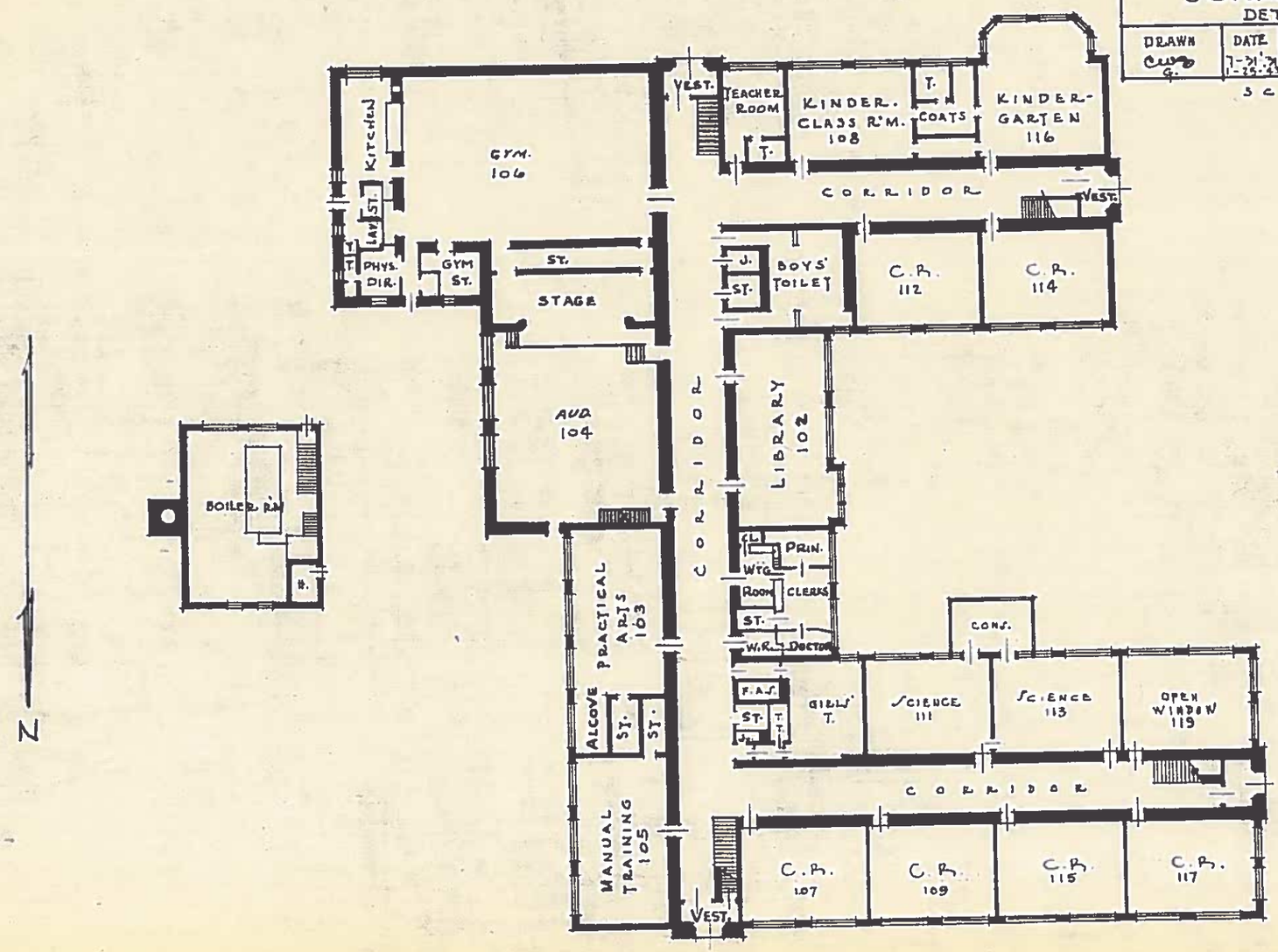


BURBANK SCHOOL
FIRST FLOOR PLAN

ARCHITECTURAL PLANNING DEPT.
BOARD OF EDUCATION
DETROIT — MICH

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
C.W.S. G.	7-21-41 1-25-43				

SCALE 1/32" = 1'-0"



BURBANK SCHOOL
SECOND FLOOR PLAN

ARCHITECTURAL PLANNING DEPT.
BOARD OF EDUCATION
DETROIT — MICH

DRAWN	DATE	CHECKED	DATE	APPROVED	DATE
CWB	8-1-31				

SCALE 1/32" = 1'-0"